

Agricultural Risk Financing in a Disaster-Prone Society: A Special Focus on World Bank's Agricultural Grant in Enugu State, Nigeria.

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Abstract

This paper explored the significance of risk financing in agricultural business farms such as Enugu state where disasters are prevalent. It examined the impact of risk transfer and risk retention on agricultural activities in the research area. The study employed a survey research design. The study population was farmers in Enugu state, while a convenient sampling technique was used to select 255 farmers across 17 local governments of the state that participated in the study. An appropriate sampling technique was used to collect data from the selected respondents (farmers). Linear regression analysis was employed to validate the research hypothesis at a 0.05 significant level. The findings showed that risk financing significantly impact agricultural activities in Enugu state. Therefore, major recommendations were that Farmers should join the Nigeria Agricultural Insurance Scheme (NAIS) for all Agricultural Risks Insurance Coverage, Buy Agricultural Insurance Coverages from other reputable agricultural Insurers to stabilise income during the periods of loss, adapt risk reduction practices such as drip irrigation, tile drainage, trap crops or resistant varieties, etc. The study contributes to knowledge by identifying various ways farmers can finance the risks associated with farm produce, such as retaining such risks internally by making other financial provisions for them or buying agricultural insurance from insurance companies or enroll in the NAIC Scheme.

Keywords: Agriculture, Agricultural-risks, APPEALS-Project, Risk-Financing, Agricultural Practice

1.0 Introduction

Agro Processing, Productivity Enhancement and Livelihood Improvement Support- APPEALS Project is a six-year project developed by the Federal Ministry of Agriculture and Rural Development (FMARD) in collaboration with the World Bank and other stakeholders (APPEALS Project, 2023). The project, also known as the Green Alternative, built on the legacy of the Agricultural Transformation Agenda (ATA) is in line with the Agricultural Promotion Policy (APP) 2016-2020 of the federal government of Nigeria, and was developed to support policy thrusts on Food Security, Local Production, Job Creation and Economic Diversification (World Bank, 2023). Six states of the Federal Republic of Nigeria including; Enugu, Lagos, Cross River, Kano, Kaduna and Kogi State have benefited from the project which has improved the processing ability and agricultural activities across the states (Hamzat, 2023). The aim of the grant was to improve the agricultural productivity of small-and medium-scale farmers and improve value chain (World Bank, 2019).

The need to secure necessary grant by farmers for farm operations is unquestionable, but doing so follows with a lot of risks. With this development, Eric, (2013) opined that agricultural financial institutions and agricultural cooperatives often encounter risk from those who benefit from their grants since their abilities to satisfactorily repay debts and contract delivery obligations are negatively impacted. Hence, the lenders' willingness to provide grants or to continue to give needed funding in the future is dependent on the convinced evidence of the judicious usage of previous grants (Drollette, 2019). The reason is not farfetched, farmers encounter agricultural risks that may affect production and reduce the anticipated yields. Given the changing structure of the agricultural industry, managing risk has become vitally important to the success of agricultural operations (Okotie, 2018). However, risk financing exists because of the need to maintain an uninterrupted business operation and maintain cash flow (Evbuomwan, 2016). Risk financing plans may therefore, reduce losses encountered by farmers.

Risk financing involves an act or arrangements focusing on the provision of funds that are reliable, and at a minimal cost, in order to pay the losses exposed to by an individual or an entity. Adam, Alessandro and Vincent, (2020) opined that agricultural risks involve adverse consequences, such as lower harvests and earnings, and sometimes may include catastrophic events like financial insolvency, food insecurity and instability in a farmer's health. Frances and Dylan, (2022) also noted that Farmers' losses exposures may include the uncertainties surrounding prices, climate conditions, yields, earnings and other factors which could affect a farmer's income. These losses are the major reasons behind the current food insecurity; causing poverty and hardship for families, especially in the developing countries (World Bank Group, 2016). Nevertheless, greater anticipated yields are basically one of the major advantages of embarking on a risky agricultural venture. Farmers are therefore, faced and live concurrently with risks which could have grievous effect (van-Winsen et al., 2013; Wauters, Van-Winsen, De-Mey, Lauwers, 2014).

However, Fadun, (2017) noted that numerous risks can be financed by the transfer (insurance) of one's risk to an organization or retention of such risks through active/planned transfer or passive/unplanned risk transfer. Hence, the need to assess the impact of both means of risk transfers as a way of ensuring the safety of grants for agricultural activities, and most especially, agricultural activities in Enugu state.

1.1.Statement of the Problem

Agricultural risks may be transferred or retained internally, yet, farmers seem ignorant of these risk financing techniques. Each time an agriculturist engages in his/her agricultural business, the possibility of recording a loss exist, just like in other business ventures. Hence, risk is prevalent in agriculture (United State Department of Agriculture Risk Management Agency, 1997); (Eric, 2013). Yet, the 'God forbid' attitude have often taken the place of insurance and non-insurance means of prevaricating agricultural risks by Nigerian farmers. Agricultural risks have grievous effect on agricultural output and productivity because they destabilize rural entrepreneurs' (particularly commercial farmers) potentials to accumulate assets, establish or develop a farm, and gain access to health and education service (World Bank Group, 2016). While farmers are frequently confronted with numerous risks, farming in the recent time, due to market liberalization and globalization has grown to be riskier (David, 2013). Born out of these risks are the chances of injuries or losses. This is why risk is seen as the likelihood of adverse outcomes owing to uncertainty and inadequate awareness when making decisions (Sarah, 2009).

It is important to secure a grant or loan for large scale farming, but such may come with a lot of risks. A possibility exists that farmers who benefited from the APPEALS grant may encounter

certain risks resulting from the global economic crisis, floods, low or very high rainfall, storms and erosions, herders' activities, lack of access to agrochemicals to eradicate pests and diseases on their farms or pressure from climate change. Pests contribute majorly to crop losses and essentially one of the problems farmers faces (Chukwuma, 2014). A lack of adequate knowledge of how to solve this problem adds to the problem also. These risks combined may affect the aim of the APPEALS Grant if proper agricultural risk financing plans are not in existence. It is on this note that this study examined the Significance impact of risk transfer and risk retention techniques on agricultural activities, with a special focus on the World Bank's Agro-Processing, Productivity Enhancement Livelihood Improvement Support (APPEALS) project in Enugu state.

2.0 Literature Review

Concept of Risk

A risk is the chance of the happening of an event which may be harmful, leading to exposure to danger or loss of something that is valuable, potentially hindering achievement of the objectives of an individual or an organization (PARM, 2017). Ajemunigbohun and Oreshile, (2014) opined that risk as a multidimensional concept. In agriculture, risk is an uncertain event of any source which leads to a loss or damage to agricultural production and productivity and/or its associated farm household income Kahan, (2008). It is mainly concerned with adverse outcomes, including poor produces, incomes and can also involve catastrophic events, such as financial bankruptcy, food insecurity and human health problems (Adam, Alessandro and Vincent,2020). Risk is an inessential aspect of agricultural business. Hence, agricultural risk management provides a platform for agriculturist and farmers to be proactive and increase their capacity to assess, prepare for, absorb and adapt to risks. Therefore, Agricultural Risks are the uncertainties inherent in weather, yields, prices, Government policies, global markets, and other factors that impact farming

Insurance Risk Transfer

Insurance risk transfer entails a funded risk transfer practice where the consequences of probable losses exposures of an insured are borne by an insurance company in exchange of a fee (premium) as stipulated in the contract (Ibiwoye and Fadun, 2017). This form of risk transfer is the fundamental concept of the insurance sector, and involves a mechanism where one party (proposer) agrees to pay the other party (insurer) a certain amount of money (premium) for a specified loss which may or may not occur within the specific period. In this case, the insurer takes responsibility and pays the specified amount as long as the loss occurred within the time and manner specified in the policy. One of the most widely sort after risk transfer mechanism is insurance risk transfer. Aduloju, (2017) noted that items which are covered under farm insurance policy include:

- I. Agricultural produce, farming stock, livestock and growing crops
- II. Implement and utensils of husbandry
- III. Power driven plough, cultivators, and engines used in connection therewith
- IV. Livestock, with a limit in respect of any one animal
- V. Building used in connection therewith

In agricultural insurance, the sum insured in agricultural produce is often subject to a special condition of average (i.e. 75% condition), apart from livestock and implements, and utensils of husbandry. Though, farm dwelling houses and other interrelated walls, fences and gates are not under the condition of average. They are insured separately from other farm buildings. Regarding livestock insurance, the limit per animal is often the upper limit of the insurer's liability. This is

not usually affected by the consequence of underinsurance. For instance, if the sum insured for all his goats owned by a farmer is N250,000 with a limit of N10,000 on any goat. Assuming a goat valuing N15,000 dies in a flood, while the value of the whole goats is N300,000. Let us determine the insurer's liability

Solution: $\frac{\text{Sum Insured}}{\text{Value}} \times \text{Loss}$

$$\frac{250,000}{300,000} \times 15,000 = 12,500$$

The above illustration means that the policy limit of N10,000 will apply and the insure will not have to pay N12,500. This emphasizes the need to adequately insure livestock.

Non-Insurance Risk Transfer

A risk financing technique that is concerned with the assignment/allocation of all or a part of individuals or organisation's risks to a body other than insurance company is known as noninsurance risk transfer (Ibiwoye and Fadun, 2017). This process shifts all or parts of the risks from one party to another without any form of reliance on an insurance provider. The famous methods used in noninsurance risk transfer include:

- i. **Hold Harmless Agreement:** Hold harmless agreement involves a contract where a party (the indemnitor) agrees to assume the liabilities of the other party (the indemnitee). There is usually a unanimous agreement between the parties to the contract not to hold themselves liable for certain losses or damages. For example, a sub-contractor may pay losses to the main contractor in construction contract if certain specified losses occur.
- ii. **Indemnity Clause:** indemnity clause is a clause which indicates the responsibilities as well as liabilities of party it is a contractual provision requiring a party to pay another for definite loss, expenses, or costs. Both parties specify who stomachs the financial implications of some specified events.
- iii. **Hedging:** Hedging is a risk management strategy involved in financial transactions to offset the impending losses or benefits that may be incurred in the cause of business transaction. It is a financial instrument in which a particular asset is held so as to offset the risks that are associated by with another asset. The financial instrument that may be used in hedging to secure an investment against market fluctuation is derivatives

The Concept of Agricultural Activities

Agricultural activities relate to numerous ranges of practices involving the use of land, cultivation of crops, as well as the management of livestock. There are many types of agricultural activities that are carried out throughout the world. Hence, the types of agricultural activity adapted by a particular people may be determined by a number of factors such as market size, consumption, culture, population, government policies, level of income, and so on. Generally, the following types of agricultural activities have been in existence for decades:

Subsistence Farming: this involves small-scale farming mainly for personal consumption, a situation whereby farmers cultivate crops as well as raise livestock for family needs. A sort of farming where farmers retain all of their risk and hardly use chemical fertilizers due to poverty.

Shifting Agriculture: this is a type of agricultural activity where farmlands are usually cleared (often by burning) and cultivated for a short while, and abandoned again for a period of time, say 2 to 3 years before it is cultivated again. This practice preserves fertility of the soil.

Plantation Agriculture: plantation agriculture involves the cultivation of single crop such as coffee, palm trees, cocoa, rubber and so on, for export purposes. This form of agricultural activity is usually carried out by a government or business organization

Intensive Farming: intensive farming is concerned with an agricultural activity where yields are maximized through technology, extensive farming and large-scale investment. The focus is usually higher input and greater crop yield. It is also characterized by rotational grazing or concentrated feeding of livestock.

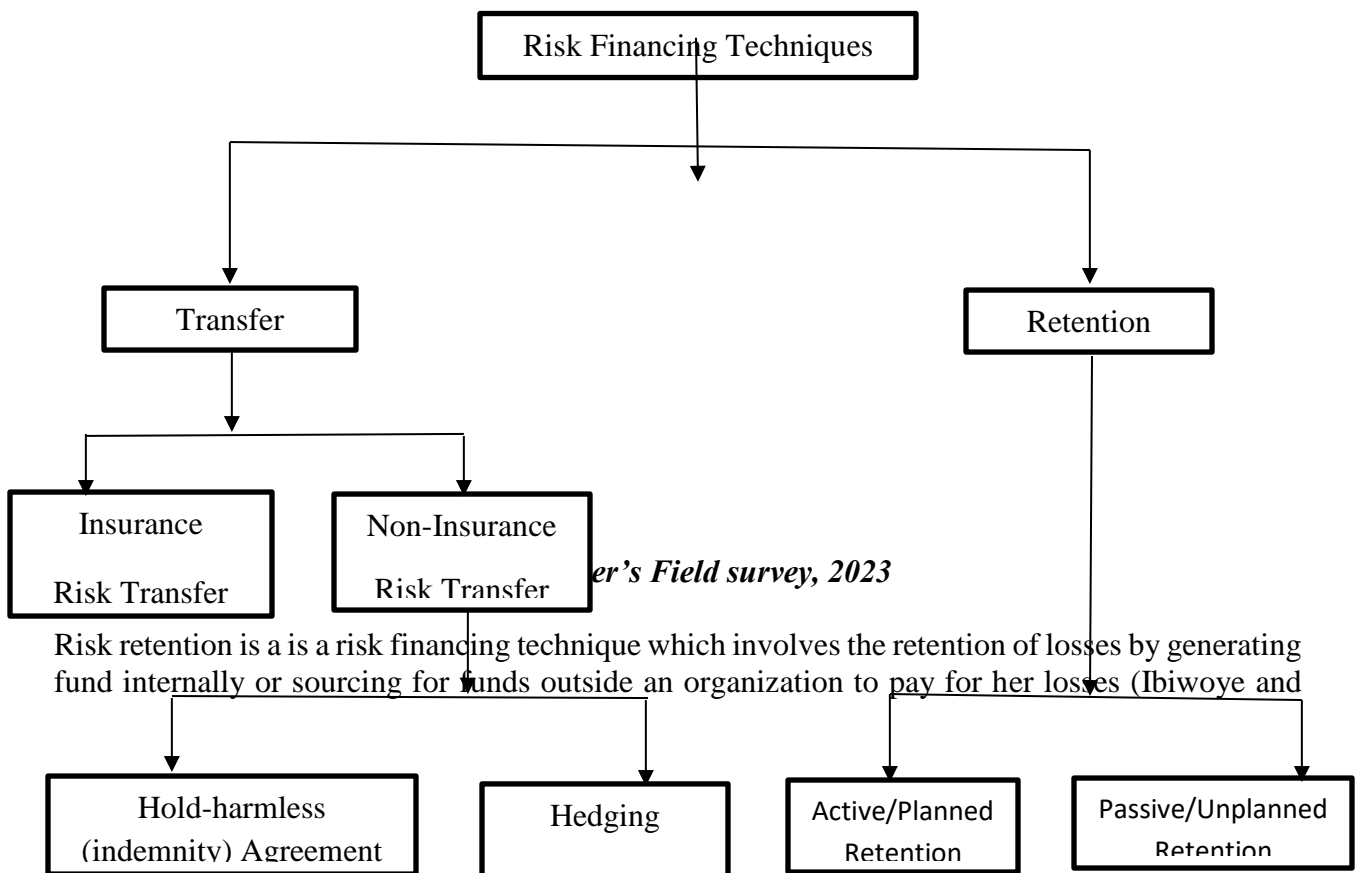
Mixed Agriculture: this involves crops cultivation as well as the rearing of livestock on the same farm. For example, corn and cow or birds may be grown by a farmer on the same farmland. Hence, the farmer can use the dung from the cow as a fertilizer for the corn.

Risk Financing

Risk financing involves the provision or generation of funds to pay for losses or offset the financial effect of unexpected losses experienced by a firm (Ibiwoye and Fadun, 2017). It involves the retention of risks, combined with the adoption of an explicit financing strategy to ensure that adequate funds are available to meet financial needs should a disaster occurs. This sort of financing can be established internally through the accumulation of funds set aside for future use or obtained externally through prearranged credit facilities (*ibid*). According to Boyer and Elliott (2013), Risk Financing is a conscious act or decision not to act that generates the funds to pay for losses and risk control measures or to offset variability in cash flow. Risk Financing measures are mainly grouped into two as stated and briefly explained below:

- a) **Transfers-** a risk financing technique involving a situation where a whole or part of an individual/firm’s risks are shifted to another party.
- b) **Retention-** risk retention is a risk financing technique where losses of an individual/firm are financed by raising funds internally. This technique is illustrated in the figure below as adapted by Ibiwoye and Fadun, (2017).

Figure 2.1 Risk Financing Techniques



Fadun, 2017). Retention can be the most economical way to finance a risk by an individual or an organization. Though, the individual or organization may be exposed to the most cash flow variability.

Active/Planned Retention: active or planned retention involves a situation where risks confronting an individual or an organization have been correctly identified and analysed. This is predominantly an intentional form of financing a risk by an individual or an organization. This sort of risk financing provides the risk management professional ample opportunities to select the most appropriate risk retention financing measure.

Passive/Unplanned Retention: passive or unplanned retention occurs when an individual or organization retains parts or all of its risks intentionally. This predominantly happens in a situation where losses cannot be insured or transferred to an insurer, or where a person or a firm fail to adequately identify or do proper assessment of their losses exposures. However, where retention is not properly planned by an individual or a firm, their risk financing goals may be affected and consequently limit the choice of retention funding.

2.1 Theoretical Review

Risk Aversion Theory (RAT)

Risk aversion is the tendency to avoid a risk by reducing the chances of its happening or not engaging in, or avoiding any activity that could lead to a risk. According to Pratt (1964) and Arrow (1965), this is predicated on the expected utility theory of decision making. Risk averse financiers prefer the safety of principal over the chances of greater return on their investments. The theory is important in this study because it lays emphasis on two important facts; the financier (World Bank, in this case) expects a return of the capital from the farmers who benefited from the fund; the farmers must take measures to ensure the safety of the finance by reducing the risks which they are exposed to. Risk aversion gives qualitative explanation to economic behavior in several situations where risk is present. If firms and individuals are not risk averse, insurance businesses will be crippled. Nevertheless, there are situations that defile risk aversion. Gambling perhaps is the most common activity that defiles risk aversion. Farmers are said to be risk averse if they prefer smaller and a more certain option when faced with two choices that have the same expected value. It was on this note that the theory of risk aversion was considered.

Empirical Review

The present study supports the opinions of former researchers who strengthened the significance of understanding agricultural risks. Just, (2003) observed that studies in the area of risks involving agricultural businesses have not significantly influenced bigger profession of why it is important to be risk averse sometimes. He maintained that researchers in the areas of agriculture have largely concentrated so much on other agricultural business challenges and do not see agricultural risks as an important issue worth discussing. He noted that researchers have emphasized so much on challenges of agricultural production, as little attention is paid on agricultural risk.

Chukwuma Sr, (2014) who carried a study on agricultural financing in Nigeria using primary data opined that over 60% of the Nigerian population are employed in agriculture either for commercial or personal consumption and that the government of Nigeria as well as financial and non-financial institutions, have been greatly involved in the provision of agricultural funds, fertilizers, and other farm assets over the years. However, Evbuomwan, (2016) argued that these provisions have been found not to be solving the problems faced by farmers in the country, that most of the provisions end up in the hands of very few individuals who embezzle them at the expense of the targeted group and that small scale farmers still depend largely on local farming technology. Again, he

argued that these provisions by the government and other bodies alike do not tackle the agricultural risks faced by farmers. Hence, the author argued that only a proper risk financing technique can ensure continuity after disaster.

Eze, Lemchi, Ugochukwu, Awulonu, and Okon. (2010), Daneji (2011), Yahaya and Osemene (2011), Iwuchukwu and Igbokwe (2012) used primary data to study the benefits accrued to the small scale farmers when government provide finance and other farm assets which help to improve or reduce agricultural risks, while Birthal (2017), Okoro and Nwali (2017), concentrated their studies on the benefits of banks' agricultural risk financing to small scale farmers and how this has been advantageous to the beneficiary farmers towards reducing risks and other challenges faced in the agricultural business. However, it was found that farmers do not manage grants well enough as much as they would if the funds were generated internally. Hence, it was suggested that such grants could be managed through insurance or no-insurance risk financing.

On the other hand, Ndikumana and Pickbourn (2017), based their studies on the contributions of aids and grants from donor organizations and donor countries to the farmers. The study found that money and other assets given to farmers are not judiciously utilized sometime, and that most farmers channel their grants into other uses such as vacation, purchases of lands and buildings for personal use rather than farming. Hence, it was suggested that agricultural insurance, proper risk financing as well as farmers education should be held at high esteem.

This current study therefore, scrutinizes these reflections in more details through a literature review and analysis, in light of the recent initiatives on agricultural risk financing and mainly to the fact that farmers face numerous risks concurrently that may affect agricultural productivity if a more decisive risk financing actions are not taken.

3.0 Research Methodology

This study involved descriptive survey research design. This was most appropriate because the study was based on statistical relationship between measurable variables. It blends qualitative and quantitative data to provide relevant and accurate information. This research design studies a group of individuals or objects as representative of a larger group. Hence, this research design was suitable for this study because data was collected from a representative sample of farmers in Enugu State. The population of the study consisted of farmers in Enugu state Nigeria. Located in the South East Geopolitical Zone of Nigeria, Enugu state is bordered to the North by the states of Benue and Kogi, Ebonyi State to the east and southeast, Abia state to the south, and Anambra State to the west (Wikipedia, 2023). The state is divided into six agricultural zones namely; Agbani, Agwu, Enugu, Enugu-Ezike, Nsukka and Udi with over two thousand commercial and subsistent farmers (Ezema, 2023). Enugu State was considered in the study because it was one of the beneficiaries of the World Bank's Agro-Processing, Productivity Enhancement Livelihood Improvement Support (APPEALS) project.

The researchers used convenient sampling technique to select the farmers who took part in the study. Fifteen (15) questionnaires were distributed across the local governments in the state. Hence, the sample size for the study was two hundred and fifty-five (255) farmers who were randomly selected across seventeen (17) local government areas that make up Enugu state. A questionnaire that was used in data collection. The Likert scale measurement format of 'Strongly Agree', 'Agree', 'Strongly Disagree', and disagree, was adapted in the questionnaire. Inferential statistics described the data characteristics such as mean and overall mean, while Simple Linear Regression was used to test the stated hypotheses at 0.05 level of significance. The results of the data analysis reveal the extent of relationship between the independent and dependent variables.

Formulation of Hypotheses

The following hypothesis were formulated so as to achieve the aim of the study.

H₀₁: Risk Transfer has no significant impact on Agricultural Activities in Enugu State, Nigeria

H₀₂: Risk Retention has no significance impact on Agricultural Activities in Enugu State, Nigeria

3.1 Model Specification

The purpose of the model as specified here was to validate the research hypotheses. Hence, the model is on the impact of agricultural risk financing on agricultural activities. Its emphasis was on the relationship between insurance risk financing and non-insurance risk financing on agricultural activities in Enugu State. The equation of the model is given as:

$$y = \beta_0 + \beta_1x + \varepsilon$$

Where;

y= the dependent variable

beta_ 0 = y-intercept

beta_ 1 = slope of the regression line

x = independent variable

ε = error margin

Model 1

$$\text{AgricAct} = \beta_0 + \beta_1\text{Rtf} + \varepsilon_i$$

Where: AgricAct = Agricultural Activities

Rtf = Risk Transfer

Model 2

$$\text{AgricAct} = \beta_0 + \beta_1\text{Rrt} + \varepsilon_i$$

Where: AgricAct = Agricultural Activities

Rrt = Risk Retention

4.0 Results and Data Presentation

The data was presented and analysed in agreement with the specific objectives of the study. A total of two hundred and fifty-five farmers took part in the study.

Table 4.1: Descriptive Statistics of the mean rating regarding the significant effect of Risk Transfer on Agricultural Activities in Enugu State, Nigeria.

| N | Minimum | Maximum | Mean | Std. Deviation |
|------------|---------|---------|------|----------------|
| 255 | 1 | 4 | 2.31 | 1.131 |
| 255 | 1 | 4 | 2.25 | 1.171 |
| 255 | 1 | 4 | 2.12 | 1.060 |
| 255 | 1 | 4 | 2.07 | 1.053 |
| 255 | 1 | 4 | 2.66 | 1.241 |
| Total Mean | | | 2.30 | |

Source: SPSS Statistics Data analysis, 2024

Table 4.1 shows the means and overall mean response regarding the significant impact of risk transfer on agricultural activities in Enugu State, Nigeria. A total of 255 respondents produced a grand mean of 2.30, using the 5-point Likert scaling formular regarding the significant effect of risk transfer on agricultural activities in Enugu State.

Table 4.2. Descriptive Statistics of the mean ratings regarding the significant impact of risk retention on agricultural activities in Enugu State, Nigeria.

| N | Minimum | Maximum | Mean | Std. Deviation |
|------------|---------|---------|------|----------------|
| 255 | 1 | 4 | 2.44 | 1.081 |
| 255 | 1 | 4 | 2.33 | 1.198 |
| 255 | 1 | 4 | 2.12 | 1.028 |
| 255 | 1 | 4 | 2.35 | 1.136 |
| 255 | 1 | 4 | 2.45 | 1.159 |
| Total Mean | | | 2.34 | |

Source: SPSS Statistics Data analysis, 2024

Table 4.2 indicates the mean rating and grand mean of the respondents' responses concerning the significant effect of risk retention on agricultural activities in Enugu State, Nigeria. Again, the grand mean of 2.34 shows the extent of the respondents' agreement with the questionnaire items. Note, the questionnaire was constructed in a 5-pints Likert scaling format and distributed to the respondents.

Test of Hypothesis

Hypothesis One

Ho₁: Risk Transfer has no significant impact on Agricultural Activities in Enugu State, Nigeria.

Table 4.3. Result of regression analysis showing the significant impact of risk transfer on Agricultural Activities in Enugu State, Nigeria.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | |
|----------------------|-----------------------------|------------|---------------------------|----------------------------|----------|
| 1 | .981 ^a | .963 | .962 | .20247 | |
| Explanatory Variable | Unstandardized Coefficients | | Standardized Coefficients | t-value | p-value. |
| | B | Std. Error | Beta | | |
| Constant | .158 | .029 | | 5.415 | .000 |
| Risk Transfer | .932 | .012 | .981 | 80.712 | .000 |

Source: SPSS Statistics Data analysis, 2024

The result in table 4.3 shows that Risk Transfer ($\beta = .932$, $t = 80.712$, $p < 0.01$) has a significant effect on agricultural activities in Enugu State. Hence, the null hypothesis was rejected because the P-value is less than the level of significance > 0.05 . This underscores the importance of farm and agricultural produce insurance to ensure greater yields and food security. Hence, the result of the analysis revealed that risk transfer has 96% significant impact on agricultural activities in Enugu state.

Hypothesis Two

Ho₂: Risk Retention has no significance impact on Agricultural Activities in Enugu State

Table 4.4. Result of regression analysis showing the significant impact of risk retention on Agricultural Activities in Enugu State, Nigeria.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|---|----------|-------------------|----------------------------|
|-------|---|----------|-------------------|----------------------------|

| 1 | .991 ^a | .982 | .982 | .13994 | |
|----------------------|-----------------------------|------------|---------------------------|---------|----------|
| Explanatory Variable | Unstandardized Coefficients | | Standardized Coefficients | t-value | p-value. |
| | B | Std. Error | Beta | | |
| Constant | .077 | .021 | | 3.705 | .000 |
| Risk Retention | .946 | .008 | .991 | 117.960 | .000 |

Source: SPSS Statistics Data analysis, 2024

The result in table 4.4 reveals that risk retention ($\beta = .946$, $t = 117.960$, $p < 0.01$) have a significant impact on agricultural activities in Enugu State. In the same manner, the null hypothesis was rejected because the P-value is less than the level of significance > 0.05 . Hence, farmers may adapt risk retention technique as a means to guard against certain risks. This way, the premiums which would have been paid to the insurance companies may be saved. Therefore, the regression analysis shows that risk retention has 98% significant effect on agricultural activities in Enugu state.

Discussion of Findings

Our study was centered on the significance of agricultural risk financing in a disaster-prone society, with a particular attention on the World Bank's Agricultural Grant in Enugu State, Nigeria. The study revealed in table 4.3 that risk transfer has 96% significant effect on agricultural activities in Enugu state. Chukwuma Sr, (2014) in support to the concept of risk transfer reported that government, financial and non-financial institutions have all been financing agriculture in Nigeria, one way or the other. However, the Outbreaks of pests and diseases may have a very bad effect on yields, just the same way production may be affected by damage, human and animals grazing activities, fire or wind. Sadly, Evbuomwan, (2016) on the other hand, noted that government provisions for agricultural development end up in the hands of a few corrupt individuals. Given the high impact of risk transfer technique on agricultural activities in Enugu state, this study concludes that risk financing is a major tool to ensuring the security of grants to farmers, and ensure the judicious use of these grants for the intended purpose, not only in Enugu state but in Nigeria as a whole.

In the same way, table 4.4 indicated that risk retention has 98% significant effect on agricultural activities in Enugu state. Again, this is in consonant with the studies of Eze, Lemchi, Ugochukwu, Awulonu, and Okon. (2010), Daneji (2011), Yahaya and Osemene (2011), who assessed the impact of government grant on small scale farming. It was found by these studies that most farmers at small-scale level retain their risks internally rather buy insurance. However, it was noted that heavy risks may dislodge most small-scale farmers from farm activities except there is an insurance policy as a backup. Also, Iwuchukwu and Igbokwe, (2012) assessed the impact of government and banks grants on agricultural activities across Nigeria. In as much as there seem to be significant impact of the same on growth and development of agricultural activities, Okoro and Nwali (2017) opined that most farmers do not have good track records on the management of agricultural grants. Hence, proper and adequate risk financing techniques are of great importance if food security is to be ensured.

5.0 Conclusion and Recommendations

The main objectives of this study were to investigate the impacts of financing techniques such as risk transfer and risk retention on agricultural activities in Enugu state, Nigeria. The essence is to ensure that farmers manage the World Bank's Agricultural Grant in Enugu State judiciously by making adequate internal provisions to retaining those risks or transferring them to insurance companies. For this reason, relevant related literatures were revealed to support this study. A number of these previous researchers like Okoro and Nwali, (2017) noted that farmers have not judiciously managed previous grants effectively. The reason could be because of lack of back up plans to ensure continuous farming activities when major disasters strike. Given the great percentage of the impacts of the variables of risk transfer and risk retention techniques, this study concludes that risk financing mechanism is a major tool to ensuring safety and security of grants and other financial supports to farmers, as well as guaranteeing that those funds are used judiciously to bring about food security in Enugu state and Nigeria as a nation.

Recommendations

Given the great impact of risk financing techniques on agricultural activities in Enugu state, the study made some important recommendation, particularly for farmers who benefited from the APPEAL Project, as well as other farmers, stakeholders, the government, agricultural insurers and the general public for the improvement of agricultural activities all over the country:

Hence, the study advocated that farmers should join the Nigeria Agricultural Insurance Scheme (NAIS) for all Agricultural Risks Insurance Coverage. Farmers should buy Agricultural Insurance Coverages from other reputable agricultural insurers to ensure financial support during the periods of loss. The study equally recommended that the government should create a Noninsured Crops Disaster Assistance Program (NAP Coverage) as practiced in the United States to provide coverage to farmers in case of low yields, loss of inventory, or prevented farming due to natural disaster. Farmers should also adopt risk reduction practices such as drip irrigation, tile drainage, trap crops or resistant varieties. They should develop a marketing plan with realistic sales forecasts and target prices for agricultural produce. Agricultural produce should be marketed through multiple channels or outlets to reduce reliance on a single market. They should conduct necessary market research which is primarily centered on understanding the customers' needs and preferences, monitor financial ratios and enterprise benchmark, control or stop unnecessary family and household expenses, as all of this would ensure that the objectives of the grant are achieved.

Contribution to Knowledge

From the foregoing, the study has contributed to knowledge in the following areas:

The research has identified that risks financing significantly impacts agricultural activities in Enugu State. The study reveals that farmers can buy agricultural insurance or enroll in the NAIC Scheme in order to be compensated during a loss as a result of disaster. The study also contributes to knowledge by identifying that farmers can enroll in the Nigeria Agricultural Insurance Corporation (NAIC) as the same can provide insurance coverage to the farm and its produce. The study also reveals that agricultural risks can cause food insecurity in the state and the country over. Finally, the study can serve as a reference material to students, scholars and other researchers who may wish to carry out a similar study in other states.

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