

TECHNOLOGY ADOPTION AND FOOD SECURITY: THE ROLE OF THE NIGERIAN AGRICULTURAL INSURANCE SCHEME

U. A. U. Onyebinama

Michael Okpara University of Agriculture, Umudike

ABSTRACT

The focus of this paper is on the potential role of the Nigerian Agricultural Insurance Scheme (NAIS) in protecting the farmer from the plethora of risks associated with the transfer and introduction of modern technologies. The scheme can improve farmers' access to credit when the insurance contract is used as collateral for loans. Farmers can therefore obtain the necessary capital to purchase new technologies. It can also provide the farmer some form of guarantee against the risk of failure resulting from the adoption and use of new technologies. Therefore, to the extent that technology adoption is constrained by risk and uncertainty and lack of access to credit, the insurance scheme can reduce or eliminate these constraints and induce farmers to use improved technologies.

INTRODUCTION

To increase agricultural output and productivity, methods of production incorporating new and improved technologies are often recommended to farmers. In some cases, farmers have been found to adopt and use recommended technologies readily. Farmers have also been found to be reluctant or unwilling to adopt and use some technologies. The behaviour of farmers with respect to the adoption and use of new and improved technologies has been the focus of numerous studies (Basu, 1969; Aloa, 1971; Voh, 1979; Mijindadi and Njoku, 1985). Most of these studies have almost always emphasized the relationship between farmers' personal characteristics such as age, household size, level of education, farming experience, etc and adoption. The role of socioeconomic, cultural and institutional factors such as risks and uncertainties, norms and tradition of the people, credit policies and programmes, agricultural insurance scheme etc have been unduly neglected.

A farmer's attitude towards the adoption of a new technology may not necessarily be a function of his personal history. A new technology or method of production is not only expensive but is often more risky. In low input subsistence activity, the farmer is relatively self-sufficient. Even then, the farmer adopts a number of strategies to reduce risks such as

diversification, keeping reserves, contracting prices in advance, choosing reliable enterprises, etc (Upton, 1973; Hazell and Valdes, 1985). With the adoption of new and improved technologies, the farmer becomes dependent on product and factor markets over which he has no control and which increases his exposure to risk situations. As a result, the farmer is either reluctant to adopt new technologies or, when he does, allocates his resources conservatively.

Therefore the objective of this paper is to identify the potential role of the Nigerian Agricultural Insurance Scheme in predisposing farmers to adopt new technologies, increase output and ensure food security. To achieve this objective, the paper is divided into sections. Section one is the introduction. Section two discusses the role of agricultural insurance in agricultural development. In section three, the role of NAIS in stimulating technology adoption and ensuring food security is discussed. Section four is the summary and conclusions.

AGRICULTURAL INSURANCE AND DEVELOPMENT

To induce the farmer to adopt and use new technologies and to allocate resources optimally, a form of guarantee needs to be provided for the farmer against the risk of failure due to the adoption and use of new and improved agricultural

technologies. Insurance can provide this guarantee.

Insurance is a major instrument of pooling or transferring risks (Irukwu, 1977) to other individuals or institutions who are better placed to bear the risks. The purpose of insurance is to compensate or indemnify the victim for the financial loss suffered as a result of risks (Ray, 1985).

Agricultural insurance is only a specialized branch of insurance. It is an important component of any agricultural development programme. It is essential for the sustained and steady development of the agricultural sector in developing economies (Ray, 1981). For instance, in low income and subsistence-oriented farming systems (as in Nigeria) adverse conditions due to risk elements may lead to decisions to decrease the level of family consumption or to partial liquidation of assets. Therefore, indemnity payments from an agricultural insurance scheme are needed to assure the farmer of some minimum level of income to maintain family consumption and nutritional levels, family social welfare and thus assure a more viable supply of farm labour (Barry and Frazer, 1976).

Agricultural insurance significantly and positively influences the managerial approach of farmers by encouraging them to take all measures necessary for the attainment of the highest levels of technical and economic efficiency (Pemberton, 1984). For instance one of the reasons for farmers' reluctance to embrace new technologies is limited access to credit (Abalu, 1981). An agricultural insurance scheme which provides guarantee for farmers credit when the insurance contract is used as collateral can reduce or eliminate this constraint thereby increasing the level and rate of technology adoption by farmers.

THE ROLE OF THE NIGERIAN AGRICULTURAL INSURANCE SCHEME

The Nigerian Agricultural Insurance Scheme (NAIS) was inaugurated in December 1987. The implementing agency, the Nigerian Agricultural Insurance Company (NAIC) was incorporated in June 1988. The objectives of the scheme are *inter-alia*, to promote greater agricultural production by enhancing greater confidence in adopting new and

improved farming practices and making greater investments in agriculture and to increase the flow of credit from lending institutions to farmers.

Three of the basic constraints to technology adoption by farmers in Nigeria relate to lack of awareness, risks and uncertainties, availability and cost of the new technologies. The implementation of NAIS should be such as to reduce or eliminate these constraints by:

- (a) Creating awareness of new methods and practices by specifying new methods and practices to be adopted and used in the production of insurable enterprises. Cover should be provided for only farmers who adopt and use the specified methods and practices. The practice of providing cover for every farmer who obtains credit from formal lending agencies should be jettisoned. The protection which the scheme provides for insured farmers should not cover only natural hazards such as pests and diseases, floods, erosion, and fire. The cover should also guarantee the farmer a minimum level of income in the event of failure resulting from the use of the new technology. The assessment of losses due to the use of a new technology should not present any serious problem. A simple 'with' or 'without' test can be applied. Estimates can be made of the minimum output of a farmer 'without' the new technology. If the output of a farmer who uses new technologies falls below this minimum, given the absence of occurrence of natural hazards, then the shortfall can probably be attributed to technical factors associated with the use of the new technologies. Such factors may result from the complexity of the new technology, and lack of compatibility with existing norms and practices in the farmers sociocultural milieu. Indemnity payments from the insurance contract should guarantee the farmer the minimum income realizable from his endeavour 'without' the new technology.
- (b) Making Inputs and other technologies available to farmers. It is also possible to link

input distribution to the insurance scheme. If the scheme specifies technologies to be used by farmers, it should assist the farmers to procure such technologies. In this regard the scheme can ensure that only genuine farmers have access to farm inputs especially those that are subsidized by government. This can eliminate middlemen and back market activities.

- (c) Improving farmers' access to credit. New technologies are often very expensive. As such most farmers are unable to purchase them due to lack of capital. Consequently, most farmers are trapped in the vicious circle of poverty-of low incomes, low savings and low investments. Therefore, to be able to use new technologies, farmers need credit. But the supply of credit to the agricultural sector is inadequate. Due to low returns and the high risk nature of agriculture, it is disadvantaged in the capital market (Igben, 1981). By guaranteeing farmers' credits through the use of the insurance contract as collateral, NAIS can increase farmers' access to credit. In the event of failure the indemnity payment can be used to pay off the farmers' debt. This will improve the farmers' credit rating with the lending agency, and put the farmer in good stead for new credit. The insurance agency itself can provide credit for the insured farmers. The premium which farmers pay to the insurance agency in advance, constitutes idle or loanable funds which can be mobilized for credit purposes. Such credit can be given to the insured farmers in kind, in form of the specified new technology or inputs, which the agency requires the farmers to adopt, or in cash to enable farmers compete for hired labour.

SUMMARY AND CONCLUSION

The Nigerian Agricultural Insurance Scheme (NAIS) has the potential to improve agricultural production and ensure national food security by inducing farmers to adopt new technologies. This potential needs to be fully exploited. The scheme

can substantially reduce or eliminate the constraints to technology adoption due to lack of awareness, risk and uncertainty and limited access to credit. Apart from providing cover for losses due to natural hazards, the scheme can also provide cover for losses resulting from the use of new technologies.

Input procurement and distribution can also become an important component of the scheme. If the scheme procures and distributes inputs to insured farmers, then black market activities will have been reduced or even eliminated since only genuine farmers will benefit from the scheme. The prospects of obtaining farm inputs will induce farmers to voluntarily participate in the scheme, instead of being compelled to do so by lending agencies.

Premium payments to the insurance agency constitute idle and loanable funds. Such deposits can be used to procure inputs, which can be given to insured farmers on credit. In addition, the scheme can provide guarantee for farm credit from other formal lending agencies and improve farmers' access to credit.

The problems, which will confront the insurance agency in a bid to effectively implement the scheme along these lines will relate basically to the availability of skilled manpower and adequate supervision and monitoring. Monitoring can be provided by other agencies whose operations impact on the operations of the insurance scheme. First, in terms of the adoption and use of new agricultural technologies, monitoring can be provided by the Agricultural Development Projects (ADPs). The Extension Services of the ADPs can recommend new technologies to the insurance agency and certify and recommend farmers who adopt such technologies to the insurance agency. Second, in terms of input procurement and distribution, the insurance agency may not have to handle inputs physically. The farmer can use the certificate of insurance provided by the insurance agency to procure inputs from supply and distribution agencies. This will prevent the insurance agency from involvement in input racketeering and other sharp practices.

REFERENCES

- Abalu, G.O.I. (1981). "The Green Revolution Strategy in Nigeria: Major Economic

- Problems and Issues". In: G. O. I. Abalu, Y. Abdullalil, and A. M. Imam (eds). *The Green Revolution in Nigeria*. Ahmadu Bello University, Zaria, Nigeria.
- Alao, J. A. (1971). "Community Structure and Agriculture: An analysis of Factors Influencing the Adoption of Farm Practices among Nigerian Farmers". Ph.D. Dissertation, Cornell University, Ithaca, NY, USA.
- Barry, P. J. and Frazer, D. R. (1976). "Risk Management in Primary Agricultural Production: Methods, Distribution, Rewards and Structural Implications". *American Journal of Agricultural Economics*, 58, (2): 286-295.
- Basu, A. C. (1969). "The Relationship of Farmer Characteristics to the Adoption of Farm Practices in Four Villages of Western State of Nigeria". *Bulletin of Rural Economics and Sociology*, 4: 76-95.
- Hazell, P. and Valdes, A. (1985). "Is there a Role for Crop Insurance in Agricultural Development". *Food Policy Statement No.5* Food Policy Research Institute Washington.
- Igben, M. S. (1981). "The Dynamics of Increased supply of Loanable funds to the Nigerian Agricultural Sector: The Role of the Central Bank". In: M. O. Ojo, C. C. Edordu, and J. A. Akingbade (eds) *Agricultural Credit and Finance in Nigeria: Problems and Prospects*. Central Bank of Nigeria, Lagos. Pp. 379-391.
- Irukwu, J. O. (1977) *Insurance Management in Nigeria*. The Caxton Press (W.A.) Ltd. Ibadan.
- Mijindadi, N. B. and Njoku, J. E. (1981). "Adoption of New farm Technologies by Agricultural Co-operatives – Rice Societies in Kano, Nigeria." *International Journal of Development Technology*, 3: 221-218.
- Pemberton, C. A. (1984). "Entrepreneurial Impact of Agricultural Insurance In Developing Countries". *Tropical Agriculture* Trinidad, 61 (4): 276-280.
- Ray, P. K. (1981). *Agricultural Insurance: Principles and Organization and Application to Developing Countries*. Pergamon Press, Oxford .
- Ray, P. K. (1985). *Economics of Crop Insurance*. Central Publishing Concern, Calcutta.
- Upton, M. (1973). *Farm Management in Africa*. Oxford University Press, Ltd. London.
- Voh, J. P. (1979). "An Exploratory Study of Factors Associated with Adoption of Recommended Farm Practices Among Giwa Farmers". *Samaru Miscellaneous Paper*, 73. IAR, Ahmadu Bello University Zaria, Nigeria.