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Role of Agricultural Credits in Rice Productivity in Bangladesh - A Stochastic Frontier Approach

By

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A Thesis Submitted to the University of Rajshahi for the
Degree of
Master of Philosophy
in
Economics

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June, 2008

Role of Agricultural Credits in Rice Productivity in Bangladesh - A Stochastic Frontier Approach

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Certificate

I have the pleasure to certify that the thesis entitled, "Role of Agricultural Credits in Rice productivity in Bangladesh – A Stochastic Frontier Approach," is the original work of Md. Nurunnabi Miah. It is the candidate's own achievement and is not a conjoint work. The thesis is prepared under my direct supervision and guidance.

I also certify that I have gone through the draft and final version of this thesis and found it satisfactory for submission to the University of Rajshahi, Bangladesh for the degree of MASTER OF PHILOSOPHY in Economics.

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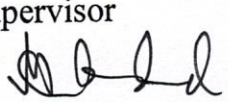

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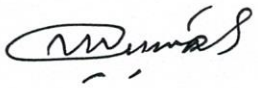
Declaration

I do hereby declare that the thesis entitled, "Role of Agricultural Credits in Rice Productivity in Bangladesh - A Stochastic Frontier Approach" submitted to the Department of Economics, Rajshahi University, Rajshahi, Bangladesh for the degree of Master of Philosophy in Economics, is an exclusively original work of mine. No part of it, in any form, has been submitted to any other university or institute for any degree, diploma or other similar purposes.



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Dedicated

to

My

departed Parents

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Abstract

Agriculture sector in Bangladesh is the largest contributor to income and employment. About 77 percent of the total population and 78 percent of rural labour force are located in rural areas. Agriculture sector provides 63.2 percent of employment opportunities and 72 percent of rural employment. Moreover, 23.31 percent of country's GDP comes from agriculture. The production and employment opportunities either in agriculture or outside of it are circled around rice productivity.

This thesis is a study of role of agricultural credits in rice productivity in Bangladesh by using stochastic frontier approach. The data used in the study are based on a survey of 200 rice cultivators from two villages, Kaur and Barigaon, which respectively represent agriculturally advanced in Bagmara Upazila of Rajshahi district. The villages were selected purposively, while the rice cultivators were selected by adopting stratified random sampling design. The selected cultivators in each villages were classified into seven size categories. The role of credit, the supply of credit, the share of different agencies, the utilization patterns, the interest rates and the existing credit gaps were studied and compared between the villages and among the size categories.

It has been observed that farms adopting superior techniques of cultivation reported substantially higher credit requirements per household and per bigha. The analysis shows that 31 percent cultivators completely and 69 percent cultivators partly depend on credit.

In both Kaur and Barigaon, cultivators belonging to the larger size categories received larger proportion of their loans at 15 percent interest rates from the institutional sources while smaller cultivators paid about 30 percent interest rate for larger parts of their total loans from the NGOs.

A big credit gap exists in Kaur village, and there are small or partial credit gaps in the Barigaon village. Cultivators in Kaur village bridged a portion of the needs by undertaking disinvestment of assets. An overwhelmingly large proportion of disinvestment of assets was caused by the demands of agricultural expenditure.

We examine the role of agricultural credits in rice productivity using the stochastic frontier approach. We investigate factors associated with technical inefficiency. Technical efficiency is computed by estimating the Cobb-Douglas stochastic frontier in which technical inefficiency effects are modeled as a function of age and experience of the rice cultivators, education of the cultivators, agricultural credits and land fragmentation factors we estimate the model in a single stage estimation technique using maximum likelihood method.

The Cobb-Douglas stochastic frontier results show that the rice cultivators of the study area are 97 percent technically efficient on an average. An evaluation of factors associated with technical efficiency reveals that education, credit facilities and land size are inversely related to inefficiency of rice farm. This implies that the education, credit and land size are positively affecting efficiency performance of rice farmers, hence increasing output and revenue. Polices should be taken to increase rural credit facilities and to reduce land fragmentation.

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