The Role of Farmers' Education on Income in Bangladesh

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Abstract

It is observed that education has negative impact on agriculture income. For non-farm income, however, it has significantly positive effect. It means that education is relevant with non-farm work in the country. It is cleared from this study that education is necessary for farmers to raise total income. Extension service is also essential for raising farm income.

Keywords: Bangladesh, education, farmer, income.

Introduction

It is well known that nation's educated workers, due to their greater potentiality, can catch up technologies rapidly. This is proven in Japan and other developed countries (Andaleeb 2002). Recognizing this, like other continents during the last thirty years, investment of most developing countries in their education systems were the largest determinants of economic growth (ibid). However, this interpretation is not always appreciated adequately by many lower development countries like Bangladesh. Owing to lack of work based education, the education arena is not so developed in Bangladesh. Although agriculture is the main stream of her economy, education for scientific method of agriculture is still felt necessity in this country. It means that lack of productive education is too acute in her agriculture. It is noted that education of farmers increases income as education is an indispensable element for economical and social progress (Dev et al. 1995). With this regard, the present study is conducted.

Most of the villagers of Bangladesh are illiterate and live on subsistence farming. Without education, it is difficult for them to gear up income generating works. The results will be useful for the development of education in Bangladesh or elsewhere.

Some recent studies of farmers' education are found in Murphy et al. (1997), Yang (1997), Jolliffe (1998) and Taylor et al. (2000). Quasem (1994) and Rahman (1999) partially recognized the impact of farmers' education on income. Various approaches and data were used in the former studies. However, it is not easy to pinpoint the sources of the differences in the previous studies because of their model specifications. The present study recognizes universities, farm research institutes and industrial area in the selection of the study site. The importance of these infrastructures is described in Andaleeb (2002) and Begum (1998). Paying attention to these infrastructures, the current study differs profoundly from others reported in the literature.

Methodology and Data Collection

Methodology

The income of a household is determined by a wide variety of factors both technical and social (Quasem 1994 ; Murphy et al. 1997 ; Rahman 1999). Among the social factors, individual and family characteristics are also important. Their impacts are again effected by infrastructures facilities in the area and local institutions, as assumed in Rahman(1999). In the present exercise all these factors could not be taken into account as relevant data were not available. Explanatory variables were reviewed from the existing literatures. They are the actual size of crop cultivated land in hectare, that is the farm size (FS), number of family earners (FE), family size (FMS), farm operators' farming experience, that is, years of rice cultivation (EXP) and the number of extension services (ET) other than education years of farm operator (ED). The estimated equation of household income is as $INC = f(ED, FS, FE, FMS, EXP, ET)$.

The ordinary least squares (OLS) is used for agriculture income and total income. Due to some zero observations, the Tobit model (Quadratic hill climbing) is used for non-agriculture income.

The Study Site and Data Collection

The research area is Gazipur district, a close neighbor of Dhaka, the capital city of Bangladesh. It is the home to some reputed academic and research facilities such as Bangladesh Open University, Bangladesh National University, Agriculture University, Bangladesh Rice Research Institute and Bangladesh Agricultural Research Institute. There is an industrial area here as well. Despite some similarities, those infrastructures differentiate this district from other districts of the country.

The gross cropped area of rice in this district is 95 percent, compared with 90 percent for Bangladesh (BBS 1999) ; the literacy rate is 57.4 percent, higher than 32.4 percent for the country. The cropping intensity is 168.24 percent, just close to 174 percent for Bangladesh (ibid). Its total population is 1.68 million, while the total population of the country is 130 million. This district is agriculturally well documented. According to the administrative pattern, this district is formed of five thanas. Out of five thanas, two thanas - Sadar and Sreepur - and six villages, three from each of these two thanas, were selected purposely. A total of fifty farms, 16 from 3 villages in Sadar and 34 from 3 villages in Sreepur thana were also purposely selected. The investigation was carried through questionnaires. Farmers were interviewed randomly. The survey was conducted in mid September, 2001.

Income Calculation

Agriculture income is the gross income. Non-agricultural income mainly came from wage and trade. Total income is total agricultural income plus total non-agriculture income. All those are calculated on the basis of one year prior to the survey.

Basic Characteristics of Survey Farms

Table 1 presents the basic characteristics of the surveyed farms. The average age of the farm operators is 43.08 years. The average farm size is 1.36 hectare which is much higher than the national average size. The average family size is 7.22 which is also higher than the national average. The literacy rate is 82 percent, comparable to the national census.

Table 1 General Information

Description	Survey farms	Bangladesh
Average age (years)	43.08	67*
Average farm size (ha)	1.36	0.68
Average family size (persons)	7.22	4.8
Literacy	82 %	32.8 %

* Average life expectancy of the country population.
Source: Field survey 2001, BBS 1999.

It is seen in Fig. 1 that the educated farmers had higher agriculture income compared with the illiterate farmers. The educated farmers' agriculture income was not increase strikingly with the increase of their education level. One of the main causes is probably that the farmers' education was not relevant for agricultural income generating works. On the other hand, with the increase of education level, the college and graduate farmers achieved comparatively higher non-agricultural and total income than the illiterate, primary and high school level farmers (Fig. 2, 3). One reason is that higher education influences the farmers' management ability to find off-farm employment and additional income.

Fig.1 Relationship between Farmers' Education and Agricultural Income

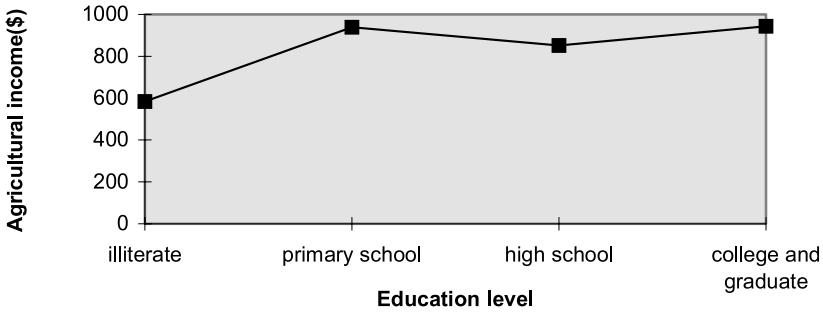
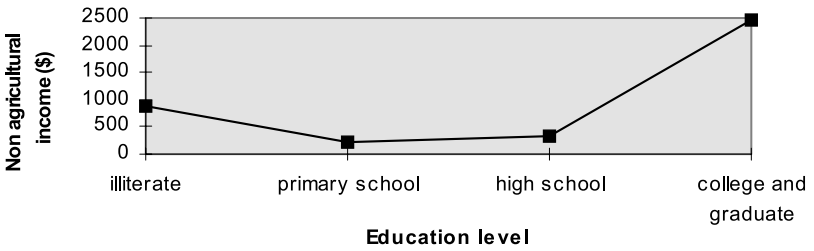
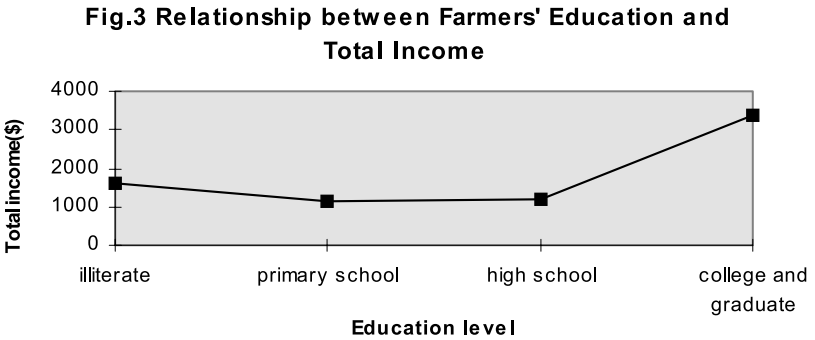


Fig.2 Relationship between Farmers' Education and Non-Agricultural Income





The existing education system of Bangladesh may be cited as an important example to examine the relationship between the farmers' education with incomes. The general education system of the country is completely devoid of any vocational element and vocational education has been completely integrated with technical education. Although there is availability of practical work in college and graduate levels, these are on campus oriented and lacking productive work experience. Moreover, some human resource development factors such as extension service are necessary to develop specific farm knowledge and skills along with education. The farmers of the study area had no regular relationship with it. It is observed (Table 2) that only 36 percent farmers were provided extension service. Policy makers should take note of this.

Table 2 Education Level and Extension Contact

Education level	Extension Contacted	No Extension Contact	Total
Illiterate	1 (11.11%)	8 (88.89%)	9 (100%)
Primary	7 (38.89%)	11 (61.11%)	18 (100%)
High school	7 (43.75%)	9 (56.25%)	16 (100%)
College and over	3 (42.86%)	4 (57.14%)	7 (100%)
Total	18 (36 %)	32 (64 %)	50 (100%)

Source : Field survey 2001. Brakets denote percent.

Results and Discussions

The results of the regression analysis are presented in Table 3. As the sample size is small, this limitation implies that the impacts of education and other explanatory variables should be viewed as exploratory and indicative. The adjusted R^2 values indicate an excellent fit for the regression equations. The F-values are significant at 1 percent level of probability, implying that the specification of the models were reasonably accurate.

Education has negative but insignificant effect on agriculture income, probably meaning that education is not relevant for farm income. Education has significantly positive impact on non-agricultural income and total income. The farm size has significantly positive effects on agricultural and total income. Usually large farmers could produce more rice. They could also store this crop for a certain period and sell it later at a higher price (Begum 1998). Thus it can increase agricultural income as well as total income.

Table 3 Regression Estimates with Survey Data

Variables	Agricultural Income	Non-Agricultural Income	Total Income
Intercept	92.151	−1675.235***	−1120.446***
	183.025	*516.351*	*407.863*
ED	−6.807	125.148**	82.602***
	14.714	*40.750*	*32.709*
FS	405.433***	−77.676	384.674***
	59.481	*163.873*	*132.551*
FE	−188.256***	698.432***	514.032***
	66.580	*179.523*	*148.371*
FMS	31.297*	128.363***	116.489***
	19.125	*52.609*	*42.620*
EXP	11.151**	−30.077**	−13.102
	5.132	*14.611*	*11.438*
ET	175.731***	−166.381	63.047
	49.252	*139.929*	*109.756*
AR^2	0.70***		0.73***
Log likelihood		−337.515	
F-statistics	20.114		23.940

***, ** and * indicate level of significance at 1%, 5% and 10% respectively.
Italics indicate standard error.
Source: Field survey 2001.

The effect of farm size for non-agricultural income is negative and insignificant. One of the main causes is perhaps, that the size of the farm may not be an important factor for explaining the non-agricultural income.

The number of family earners has significantly negative effects on agricultural income. But the impact of family earners on non-agricultural and total income is significantly positive. It is plausible, since agricultural work on rural farms tends to be low paying (Daily Star 2002). Therefore, the more the family earners would be, the higher the off-farm work involvement would be. It may help to earn more money, thereby boost the total income as also seen in Murphy et al. (1997).

The size of family had significantly positive effects on agricultural income, non-agricultural income and total income. Probably larger families could provide more family labor to agricultural and non-agricultural works to raise total income.

Farm operators' farming experience has a significantly positive contribution to farm income but it has no significant contribution to off-farm income. The impact of the experience variable on total income is weak as its coefficient is insignificant. Extension service is important for agricultural income, although it has weak effect on non-agricultural income and total income.

Conclusion

Diversified results are found in this study. It is observed that education has a negative effect on agricultural income. For non-farm income, however, education had positive and significant effects. It means that education is relevant with non-farm work in the country. Finally it is cleared from this study that

education is necessary for farmers to raise total income. Extension service is also essential with education for the acceleration of farm income. Domestic and international donors and experts should keep their attention for agriculture oriented education, consolidating with non-farm work related education in Bangladesh. Considering the result of this study, policy planners should take necessary steps.

摘要

バングラデシュでは、学校教育が生徒の進路として農外就業を前提に行われている。このため、農家調査データを用いた計量分析を行った結果、農民の教育水準と農業所得との間には負の相関関係が認められたものの、教育水準が高い農民ほどより高い農外所得を得ていることが明らかになった。さらに、農業技術普及を受けた農民ほど農業所得が高い傾向が見られた。こうした分析結果を総じて判断すると、農民教育が彼らの所得向上に一定の貢献をしていると考察できる。

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