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Impact of Irrigation on Share Tenancy and Farm Employment in Bangladesh: A Review

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Abstract

The present study intends to investigate the impact of irrigation on share tenancy and farm employment in Bangladesh. The study is based on secondary data. The secondary data were collected from different published and unpublished documents. New irrigation technology is essential for agricultural development of Bangladesh. Adoption and introduction of new irrigation technology have brought about significant change on share tenancy and farm employment. Sharecroppers in Bangladesh have little to achieve from the spread of new irrigation technology. In rural Bangladesh the most common form of tenancy relation is sharecropping. Under sharecropping system the tenant and the landlord share the agricultural output and risk but in some cases share the cost too. Although, output and cost are not always shared equally between the two parties. Available data indicated that large farmers in non irrigated village sharecropped-in no land but in irrigated village they sharecropped-in 1.1% of other's land. But medium farmers in irrigated village sharecropped-in more land (47.7%), where small farmers rented-in more land (67.7%) in non irrigated village (M.N.Islam 2002). However, the small farmers ranted out no land in irrigated village while medium farmers in non irrigated village sharecropped out no land (M.N. Islam 2002). Hamid et.al. (1982) pointed out that there had been no qualitative change in tenurial arrangements as results of the adoption of technology. M.K Hussain (1986) found that smalls farmers being more irrigation conscious have the tendency to sharecropped in more land (on and average went .35 acares) when they irrigated. But they sharecropped out relatively less land (on an average .31 acares) in non

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irrigated land. But large farmers have the tendency to rent out larger proportion of their own land because they can not manage it. In the absence of written contracts tenants have no security. When tenants fail to satisfy the landlords in expanding yield rate or in using adequate modern inputs they face the consequences of eviction. M.N Islam (2002), A. Dasgupta (1998) expressed the similar view. Available data indicated that the short duration of sharecropping relationship exist in rural Bangladesh (M. Hossain 1985, M.N Islam 2002, Land Occupancy Survey of 1978). The introduction and adoption new irrigation technology have influenced the employment facilities in rural Bangladesh. When use of irrigation, HYV of seeds chemical fertilizers in agricultural farm have increase the demand for labour. M.K Hossain (1985) found that per acre labour absorption in irrigated areas was 80.95 man-days, while it was only 51.46 man-days in non irrigated areas. Hamid et. al. (1982), BAU (1975), Bayes and Sayeeduzzaman (1991), A.Dasgupta (1998) got the similar results. Some policy measures are:- (i) need for tenancy reforms is essential in Bangladesh, (ii) special attention should be given to protect the rights of sharecroppers, (iii) a minimum wage should be fixed for standard eight hours working day, subject to revision with the increase in the cost of living, (iv) public works programmes should be taken up to increase employment facilities during the lean periods.

1. Introduction

The economy of Bangladesh is mainly agrarian. Agricultural sector provides employment to half of the labour force. This sector is likely to play a vital role in achieving self-sufficiency in food production and promoting economic development. There is enormous potential for expanding agricultural output. There are, however, some vital constraints to agricultural development in our country. The constraints are scarcity of land, skewed distribution of land ownership and vagaries of nature. The most important constraint to agricultural development is the extreme pressure of population on limited land. Man-land ratio is increasing because of the increase of population. Due to the extreme pressure of population, the average size of agricultural land is declining and the extent of landlessness and unemployment has increased to a great extent. Agricultural Census data of 1960 reported the average size of farm at 3.54 acres, while it stood at 1.68 acres in 1996 (Census of Agriculture 1996). The number of landless households increased at a higher rate than the rate of growth of population. Available data indicates that the natural rate of growth of population was 2.17 percent between 1983-84 and 1996 but the number of landless rural households increased at an annual compound growth rate of 3.85 percent (M. Hossain 1999).

In Bangladesh the unemployment rate was 27.95 percent in 1996-97 (GOB, 1998, P,9). As a result, rural poverty among the small and landless labourers has increased. Due to the high pressure of population subdivision and fragmentation of agricultural land has occured. Most of the landholdings are thus very small and fragmented. It creates a barrier to efficient farm management and makes the co-operative irrigation system difficult in rural Bangladesh. In this backdrop, agricultural development is essential for our survival. Agricultural development could only be achieved with the proper adoption of modern inputs like modern irrigation, chemical fertilizers, HYV of seeds and pesticides either individually or in their suitable combination. Modern irrigation is the major factor for increasing agricultural production, and hence it is considered as the leading input in farm production. Thus special emphasis has been given to the development of modern irrigation with a view to achieving substantial growth in agriculture. Modern irrigation technology has contributed to increasing productivity but this technology has made the position of sharecroppers more vulnerable.

Due to lack of resources sharecroppers have not been able to maximize their gain by using modern technology. Modern irrigation technology has brought about significant change in labour use and employment facilities, but corresponding changes in the real wage have not come about. Due to the drop in the real wage, debt traps have worsened their economic condition over the years. It is, therefore, necessary to analyse the impact of irrigation on sharecropping and farm employment.

The main objectives of the study are as follows :

(i) To explain the impact of irrigation on share tenancy.
(ii) To analyse the impact of irrigation on farm employment.

1.1 Methodology

The study is based on secondary data, collected from different published and unpublished documents.

1.2 Importance of the Study

The results of the study may be of great use to policy markers. Extension workers may utilize the results of the study in making decisions regarding irrigation technology, share tenancy and farm employment. The results of the study have also academic importance to teachers and students of economics.

2. Results and Discussions

The impact of irrigation technology on share tenancy and farm employment is discussed in the following.

2.1 Impact of Irrigation Technology on Sharecropping

The most common form of tenancy relation in rural Bangladesh is sharecropping. Under sharecropping arrangement the tenants and the landlords share the output and risk and, and in some cases, the costs, too. But output and costs are not always shared equally between the parties. The 1960 Agricultural Census reported that 18 percent land was operated by tenants but it declined to 17 percent in 1977 (BBS, 1981). The Census of Agriculture and Livestock reported that total sharecropped land, which was only 16.81 percent in 1960 increased to 21.6 percent in 1996 (BBS, 1996). Available data indicates that the area under sharecropping has declined from 91 percent of total tenanted area in 1960 to 74 percent in 1983-84 and again to 62% percent in 1996 (M. Hossain, 2000). In the theoretical literature the impact of tenancy on adoption decision is a matter of considerable debate. Some economists (e.g. Geogesen-Roegan 1969 and Bhaduri 1973) regonised the sharecropping system as a feature of pre-capitalist modes of production. Sharecropping is also considered as a barrier to the adoption of new technology. Cheung (1969) was the pioneer of equal efficiency theory of tenancy. Following Cheung's work, Reid (1976) and Hallagen (1976) discussed the circumstances in which sharecropping can be at least as efficient as fixed rent contract or wage contract. Newberry (1973) stated that under the circumstances of uncertain product and labour markets sharecroppers may be interested in adopting modern technology.

2.2 Land Leasing and Operational Arrangement of Cropped Land by Farm Size Groups

Available data indicates that irrigators in rural Bangladesh sharecropped in more land and sharecropped out less land than the non irrigators. M.K. Hussain (1986, P. 34-35) found that under land leasing arrangement farms when irrigated sharecropped in 3.74 percent of their cropped / operated land and sharecropped out 3.50 percent of their owned land. On the other hand, the non-irrigators sharecropped out 17.35 percent of their owned land and sharecropped in 4.46 percent of their cropped / operated land. He also stated that small farms being more irrigation conscious have the tendency to sharecrop in more land (on an average 0.35 acres) when they irrigated and sharecropped out on an average 0.31

acres of non-irrigated land. He further said, large farms have the tendency to rent out a higher proportion of their owned land because they can not manage it.

Available data indicates that large farmers in non-irrigated village sharecropped - in no land. But in irrigated village the large farmers sharecropped in 1.1 percent of other's land. Medium farmers sharecropped in more land (47.70%) in irrigated village, while, small farmers sharecropped in more land (64.71 percent) in non-irrigated village (M.N. Islam 2002). On the other hand, small farmers sharecropped out no land in irrigated village, and medium farmers in non-irrigated village sharecropped out no land (M.N. Islam 2002). Hamid et. al (1982) pointed out that there had been no qualitative change in tenurial arrangements as a result of the adoption of technology. M. Hossain (1986) stated that share tenancy in Bangladesh is exploitative in nature.

2.3 Security of Tenure

There are no written lease contracts between the tenants and the landlords. In the absence of written contracts tenants of rural areas have no security. As a result the landlords can easily evict any tenant when they so desire. When tenants fail to satisfy the landlords in expanding yield rate or in using adequate modern inputs they face the consequences of eviction. M.N. Islam (2002) stated that eviction of sharecroppers for the purpose of resumption of land for self cultivation is common in the irrigated villages while it is rare in a non-irrigated village. Dusgupta (1998, P. 145) pointed out that eviction of tenants has become a common matter especially after the introduction of canal water irrigation. He also stated that a sharecropper who invests more on modern agricultural inputs gets a chance of securing a lease for the second time.

Available data indicates that the duration of sharecropping relationship is rather short. M. Hossain (1986) found that about 52 percent of the sharecropping relationship lasted less than three years. M. N. Islam (2002) found that about 70.58 percent of the lease units have been leased for one to three years (short term lease) in irrigated village, while 25 percent of the lease units have been leased for one to three years in non-irrigated village. About 11.76 percent of the lease units have been leased for five years or more (long term lease) in irrigated village. But it is only 33 percent in non-irrigated village. He further stated that sharecroppers in non-irrigated village were found to have better security than those of irrigated village. The observation of Land Occupancy Survey of 1978 on the duration of sharecropping relationship, as reported by the sharecroppers, is presented below: 26 percent of the sharecroppers had a lease contract that had lasted for less than

one year, while 20 percent of the lease contracts lasted for one to two years, and 8 percent of the lease contracts lasted for three to four years.

2.4 Input and Output Sharing

In sharecropping arrangement, full labour was provided by the sharecroppers. But the costs of irrigation, seeds, chemical fertilizers, power tilling etc were shared by the landlords. Bayes and Sayeeduzzaman (1991, P.68) found that sharecroppers bear all the input costs and surrender half of the output to the landlords. M.N. Islam (2002) observed that output shared between the sharecroppers and the

Table 1 : Use of Labour in the Cultivation of Crop

Crop	Hired Labour (days/ha)	Family Labour (days/ha)	Total Labour (days/ha)	Hired Labour as percent of total	Total Labour per ton of output (days/ha)
Dry season					
L. aus	61	90	151	40.40	99
B. aus and amon	75	80	155	48.39	53
MV Aus	104	88	192	54.19	44
MV Boro	107	93	200	53.63	36
Wet season					
T. Amon	67	70	137	49.15	45
MV Amon	86	76	162	53.33	35
All season					
Local	61	82	143	42.66	
MV	92	74	173	53.20	
Difference of MV over local (percent)	51	– 11	25		

Source : BIDS Field Survey 1991, In : Bayes and Sayeeduzzaman 1991.p.108

landlords is a standard 50: 50 basis. He also found that in irrigated village the normal practice is to share the costs of irrigation, seeds, chemical fertilizers equally between the sharecroppers and the landlords, while in non-irrigated village the practice is to equally share the costs of only seeds and fertilizers, not irrigation, by the parties. In both the villages human labour, animal labour and manures are supplied by the sharecroppers. A good number of village studies found that the landowners were sharing the costs of non-labour inputs in the sharecropped land where modern varieties of rice and wheat are produced (Zaman 1973; M. Hossain 1979; BUP 1982). Dasgupta (1998, P. 144) notes that the

sharecroppers surrender 50 percent output and bear all costs of production except land revenue and irrigation costs. Costs of modern inputs, human labour, animal labour etc are borne entirely by the sharecroppers.

The spread of new technology in Bangladesh has made the position of the tenants more vulnerable. Dusgupta (1998) expressed the view that the burden of debt, lack of tenurial security, increasing costs of agricultural inputs had worked as barrier to the spread of modern technology among the sharecroppers.

2.2 Impact of Irrigation of Farm Employment

The introduction of new technology has influenced the employment facilities in rural Bangladesh. Use of irrigation water, HYV seeds and fertilizers in land have increased the demand for labour. Dasgupta (1998) stated that in non-irrigated areas demand for labourers for the traditional crops is far less than those of HYV crops in irrigated areas.

Hamid, et al. (1982) found that per acre labour requirement is 117 man-days in irrigated areas whereas it is 75 man-days in non-irrigated areas. Due to irrigation the increase in employment is over 54 percent. BAU (1975) got more or less similar results.

M. K. Hussain (1985, P.XVII) found that per acre labour absorption in irrigated areas is 80.95 man-days, while it is only 51.46 man-days in non-irrigated areas. Hamid (1977) found that the rate of labour absorption per acre in the irrigated area is much higher than in the non-irrigated area.

Mosharraf Hossain et al. (1984) found that labour absorption per acre proved to be higher with the irrigation device rather than without the device. In their study areas labour-use with the device was higher by 26 percent than that without the device. Introduction of modern technology brought about significant change in employment facilities. Table – 1 shows the use of labour in the cultivation of crop.

It can be seen from Table – 1 that modern varieties absorbed more labour per unit of land than did the traditional varieties. The increase is about 27 percent in aus season and 18 percent in amon season. For modern varieties, labour used per hectare of cultivation is about 25 percent higher than that for local varieties in all the seasons together. Moreover, modern varieties absorbed 51 percent more hired labour than traditional varieties did. It is also evident from Table – 1 that of the total labour used, the share of hired labour required in the production of modern varieties is 53 percent as against only 43 percent utilized for the production of traditional varieties. The spread of modern irrigation technology tended to

contribute more employment opportunities by facilitating the adoption of modern varieties (Bayes and Sayeeduzzaman, 1991). Intensive intercultural operation like weeding, irrigating, transplanting etc. demand more labour. It is also evident from the Table that as compared to traditional varieties modern varieties required additional labour by 36 man-days, of which 44 percent is required for sowing and transplanting, 39 percent used for weeding and other cultural practices, and 14 percent used for harvesting (Bayes and Sayeeduzzaman 1991, P. 58). Therefore, we may conclude that irrigation has increased farm employment in Bangladesh.

3. Conclusions and Suggestions for Policy

Government should encourage modern varieties of paddy rather than local varieties in irrigated areas of the country.

The need for tenancy reforms is essential in Bangladesh. Special attention should be given to protect the rights of sharecroppers.

Administrative and legal measures should be taken to protect the sharecroppers from eviction.

Modern technology is essential for the agricultural development of Bangladesh. Introduction of irrigation technology has brought about significant change on share tenancy and farm employment. Sharecroppers in rural Bangladesh have little to achieve from the spread of irrigation technology. When tenants fail to satisfy the landlords in expanding yield rate or in using adequate modern inputs they face the consequences of eviction. Eviction of tenants for the purpose of resumption of land for self cultivation is common in irrigated land. In many cases, sharecroppers bear all the non-labour input costs and surrender 50 percent of the output to the landlords. Irrigation technology has remarkable impact on farm employment. Irrigation not only requires more labour but the proportion of labour absorption is also higher for the hired labour than family labour. The spread of modern mechanized irrigation technology tended to contribute to more employment facilities by facilitating the adoption of modern varieties. Intensive intercultural practices also demand more labour. Government should encourage modern varieties of paddy rather than traditional varieties of paddy in irrigated land. Measures should be taken to expand irrigated agriculture. Tenancy reforms is essential in Bangladesh. Administrative and legal measures should be taken to protect the sharecroppers from eviction.

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