Chapter 4 Determinants and Impact of Remittance in West Bengal

In India the Census 2011 estimates the total number of migrants in all duration and all ages, and this is estimated to be about 450 million and the total number of migrants in West Bengal is about 33 million. This apart, the National Sample Survey Organization (NSSO) has in its 2007-08 survey, presented details of migration and of migrants from various perspectives such as that of in-migrants, migrating households, short and long duration out-migration, and households with one or more out-migrating members and return migrants. According to NSS report, there were 324 million internal migrants in India in 2007-08, of whom140 millions were workers. The NSS figures for out-migrants from households present a set of estimates of both internal and international out-migrants. According to these figures, international out-migrants constituted only 3.8 per cent of the total number of out-migrants. Even on the household remittance front, the NSS estimates indicated that international remittances comprised about half of the domestic remittances (Tumbe 2011). International remittance is an important source of foreign capital for developing countries. Moreover, in many developing countries contribution of remittances is more than 20 per cent of their Gross Domestic Product (GDP). Also internal remittances sent by the out- migrant member towards the native or his own household member has an important role played for domestic development of the state. India became the largest recipient of international remittances over the decade. World Bank has estimated (2017) that India received such remittances to the tune of about US $ 62,744 million in 2016 followed by China (US $61,000 million), Mexico (US $28,670 million) and France (US $24,373 million). The remittance has become a focal issue in economic literature for more than two decades particularly because of its role in reducing the incidence of poverty in these

countries. It is also observed that the inflow of remittance has continued to increase together with the rise in migrants' number around the world as well as internally across the states and districts. The direct flow of remittances into the households may be regarded as a considerable source of income apart from providing for non-poor and vulnerable poor households' fulfilling consumption smoothing strategies. After the subsistence needs, migrant's remittances are used for the purpose of investment in education, small-scale enterprise, farming, livestock etc. (Stark 2009). The statistical information related to the 64th round the NSSO (2007-08) suggest that on an average the annual consumption expenditure for rural areas was approximately ₹ 38,000 as compared to ₹ 41,000 for rural households getting remittances in India and annual consumption expenditure for urban areas was approximately ₹ 65,000 as compared to ₹ 80,000 for urban households getting remittances in India. Also, proportion of remittance receiving households in West Bengal has been increasing rapidly and it was approximately 9 per cent of total households.

Infact, there were instances of in-migration in West Bengal particularly during 1960's and 1970's. Within the agricultural sector land-man ratio has been falling continuously creating huge pressure upon agricultural land. Thus despite being a leader in land reforms, the benefit of it leveled off gradually in West Bengal and agriculture could not provide sufficient employment opportunities in rural West Bengal. The decline in industrial activities in the states over the last few decades and income deprivation among the households of landless labourers as well as small and marginal farmers have forced them to migrate to urban areas outside the state and abroad for seeking job. Also, within West Bengal both inter-district and intra-district migrations from rural to urban areas have occurred. The objectives of the present chapter are given below:

- To explain household characteristics in relation to remittances.
- To analyse the determinants of remittance across households in West Bengal.
- To analyse the impact of remittance on households consumption expenditure and

poverty.

In this chapter we have tried to explain impact of migration remittance on consumption expenditure and poverty as well as to find out the determinants of such remittances across households in West Bengal with special reference to relatively less developed districts and household characteristics of remittance received families. Further, the differences in the incidence and depth of poverty between the remittance received households and non-remittance received households across rural and urban areas, social groups, religion, relatively less developed and developed districts and land holding patterns of households in West Bengal have been analysed based on NSSO Unit level data. Side by side this research work has tried to find out factors which have influenced the remittance received at household level in West Bengal. Among these factors like rural or urban sector, household size, average age of the household heads, gender affiliation or characteristics of the head of households, land holding pattern and educational attainment of the household members are found to be statistically significant.

The present chapter is organized as follows: Section 4.1 presents the pattern of inflow of remittances to West Bengal. Section 4.2 analyses the different household characteristics in relation to remittance received. Section 4.3 analyses the determinants of remittance across households in West Bengal. Section 4.4 examines the pattern of use of remittances across households. Section 4.5 discussed impact of remittances on poverty among remittance received households. Estimation of poverty at the household level is analysed in section 4.6.

4.1 Pattern of Inflow of Remittances to West Bengal

Within Indian states position of West Bengal in terms of percentage share of total amount of remittance received by all states was about 5.8 per cent amounting about ₹ 2841 crore giving West Bengal sixth position (6^{th}) among the states in this respect in the year 2007-08. The first position was held by Kerala having a share of 16.9 per cent in total

remittance. So far as international remittance is concerned the percentage share of West Bengal among the states was only about 1.25 per cent amounting about ₹ 208 crore giving it a rank of thirteenth (13^{th}) among the states. The leaders in this regard were Kerala, Punjab and Tamil Nadu. However, the percentage share of West Bengal among the states in terms of internal remittance was about 8.1 percent amounting about ₹ 2633 crore giving it fourth (4^{th}) rank among Indian States. Thus it becomes clear that in case of West Bengal internal remittance remains far above the international remittance.

Table: 4.1 Percentage of Remittance Received by the Districts to Total Remittance of West Bengal

	Districts	International	Internal	Grand Total
Less Developed Districts	Bankura	0.0	2.9	2.6
	Birbhum	0.1	2.8	2.6
	Dakshin Dinajpur	0.1	0.8	0.7
	Jalpaiguri	2.9	1.7	1.8
	Koch Bihar	0.0	2.0	1.8
	Maldah	0.1	2.2	2.0
	Medinipur	1.8	16.7	15.6
	Murshidabad	6.3	6.4	6.4
	Puruliya	0.1	1.3	1.2
	Uttar Dinajpur	0.0	2.2	2.0
	Average	**1.1**	**3.9**	**3.7**
Developed Districts	Bardhaman	6.0	7.8	7.7
	Darjeeling	2.4	3.7	3.6
	Howrah	4.4	6.2	6.1
	Hoogly	3.6	9.0	8.6
	Kolkata	20.5	5.4	6.5
	Nadia	39.7	8.1	10.4
	North 24 PGS	11.3	14.3	14.1
	South 24 PGS	0.8	6.6	6.2
	Average	**11.1**	**7.6**	**7.9**
	Total	**100**	**100**	**100**

Source: Computed from NSSO (2007-08) unit level data.

Table 4.1 shows the percentage of remittance, internal and international, received by the districts to total remittance of West Bengal. Remittance receipts by the households over the last one year before the NSSO survey have been discussed here.

Districts are widely varied in respect of the percentage share of remittance received. As regards the internal migration undivided Midnapur had the highest percentage share of remittance received (16 per cent). The second position was held by North-24 Parganas district with 14 per cent share and followed by, Nadia (10.4 per cent), Bardhhaman (8 per cent) and Mushidabad (7.5 per cent).

Out of total number of households in West Bengal, about 10.1 per cent received remittances in rural area in contrast to about 5 per cent of households in urban area. The average amount of remittance received is about ₹ 14879 by the rural households as compared to ₹ 35304 of households in urban area. Overall average amount of remittance received is roughly about ₹ 17883 in both rural and urban areas. Out of total remittance of West Bengal the share of remittance received by the rural area was higher than that of the urban area in 2007-08. This is due to the fact that relatively larger number of households of rural area received remittance compared to the urban area.

At the district level, households of *backward districts*[1] (or relatively *less developed districts*[1] in West Bengal receive a higher proportion of remittances than the developed districts though the average amount of remittance received is about ₹ 12410 by the households of the backward districts as compared to ₹ 29288 of households in relatively developed districts. Undivided Midnapur is found to be the highest amount of remittance-receiving district. This district also housed highest proportion of remittance receiving households and this figure was about 15.5 per cent followed by Uttar Dinajpur (12.5 per cent), (Table 4.2).

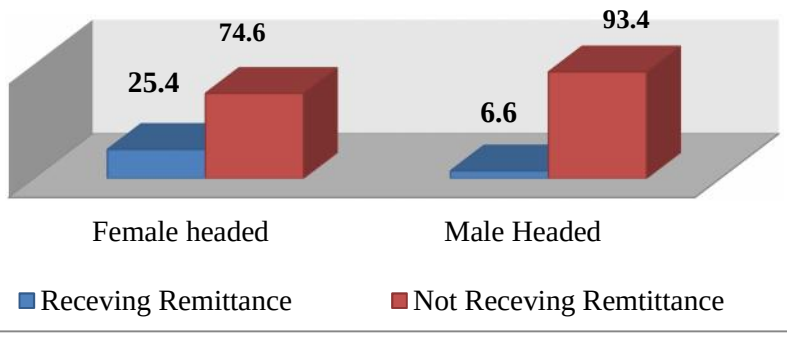
Table 4.2 Percentage of Households Received Remittance across Districts of West Bengal, 2007-08

	District Name	Rural	Urban	Total
Less Developed Districts	Bankura	7.9	2.6	7.5
	Birbhum	5.0	3.5	4.9
	Dakshin Dinajpur	5.6	10.4	5.9
	Jalpaiguri	7.1	6.3	7.0
	Koch Bihar	9.4	6.8	9.2
	Maldah	6.9	3.2	6.7
	Midnapur	16.3	9.1	15.5
	Murshidabad	9.6	7.3	9.3
	Puruliya	8.0	5.4	7.7
	Uttar Dinajpur	12.6	11.9	12.5
Developed Districts	Darjeeling	8.0	9.1	8.4
	Bardhhaman	12.4	3.9	9.5
	Hugli	11.5	6.0	9.9
	Howrah	13.5	3.6	9.6
	Kolkata	0.0	2.4	2.4
	Nadia	12.8	10.2	12.2
	North 24-Parganas	6.2	4.4	5.3
	South 24-Parganas	7.2	6.0	7.0
	Total	**10.1**	**4.9**	**8.7**

Source: Computed from NSSO (2007-08) unit level data.

It is evident from the Figure 4.1 that among the remittance receiving households, the percentage of female-headed households receiving remittance remained higher than male-headed households.

Figure 4.1 Gender Wise Percentage Share of Remittance Received and Not Received Hoseholds in Household Head



4.2 Household Characteristics in Relation to Remittances

In West Bengal, the survey covered around 8770 sample households, of which 3856 households (40.9 per cent) are migrated and 2209 households (25.2 per cent) receive remittances. If we decompose the sample households into two categories of districts i.e., *relatively backward* [#](or *less developed*) and developed districts then the number of sample, migrated and remittance received households become 4020, 1659 (41.3 per cent) and 1012 (25.2 per cent) respectively.

We can also compare different socio-economic and demographic characteristics of remittance receiving and remittance non-receiving households (Table 4.3 and 4.4). Remittance received is significantly different between rural and urban regions, particularly the proportion of remittance received in rural region remains higher than that of urban region. Similarly, relatively less developed districts of West Bengal received more remittance compared to the developed districts. Remittance also varied significantly across social groups as well as between households belonging to different religions. The caste affiliation of a household also indicated that the Scheduled Caste (SC) and Scheduled Tribe (ST) households received lesser amount of remittance than non-SC and non-ST households. Further, when the households are categorised according to their religious affiliations, then it is observed that Muslim households have received more remittance compared to the non-Muslim households. It is also evident that the amount of remittance varies across different land holding classes. Relatively higher land holding classes (Medium and Large holding) have received more remittance than lower land holding classes (Table 4.3).

[#] We segregate the various districts of west Bengal into "developed" and "relatively less developed or backward districts" using the ranking methodology, based on "Indian Rural Development Report, 2013-14". See also in notes section.

Table 4.3 Test of Proportion for the differences of remittance received across different indicators

Indicators		P_1	P_2	$(p_1 - p_2)$	τ
Sector	*Rural*	0.100		0.051	79.969***
	Urban		0.049		
Districts	*Less developed*	0.098		0.021	46.850***
	Developed		0.077		
Social Group	*SC & ST*	0.080		-0.011	-22.448***
	Non SC & ST		0.091		
Religion	*Hindu*	0.085		-0.011	-21.132***
	Other than Hindu		0.095		
	Muslim	0.097		0.013	25.545***
	Non-Muslim		0.084		
	Christian	0.056		-0.031	-9.386***
	Other than Christian		0.087		
	Other Religion	0.056		-0.032	-7.587***
	Except Other Religion		0.087		
Land holding pattern (in hectare)	*Less than .005(Marginal)*	0.076		-0.015	-26.839***
	lager than 0.005		0.091		
	0.005 to 0.01(semi small)	0.0747		-0.019	-38.452***
	Other than semi-small holding		0.094		
	0.02 to 0.4(small)	0.098		0.016	34.312***
	Other than small holding		0.082		
	0.41 to 0.2 (medium)	0.112		0.028	43.096***
	Other than Medium holding		0.084		
	Area above 2 (large)	0.244		0.158	85.540***
	Below large holding		0.086		

Source: Computed from NSSO (2007-08) unit level data.
Note: *** 1 per cent, ** 5 per cent, * 10 per cent level of significance respectively

Table 4.4 clearly reveals that the average age of the head of household is significantly differed (relatively higher average age of household head who receives remittance) between remittance receiving households and remittance non-receiving households. Interestingly, the households that received remittance have a less probability to be headed by a male member and this implies that migrants are mostly males. It is also

evident that the average sizes of the households receiving remittance are likely to be smaller size compared to that for households without remittances.

Table 4.4 Different descriptive statistics of with and without remittance-recipient households

Variables	*With remittances*		*Without remittances*		*Mean Differences* [2]
	Mean	*SD*	*Mean*	*SD*	
Characteristics of household					
Age of household head	49.89	13.71	45.43	13.41	4.468***
Male -headed households	0.67	0.47	0.91	0.29	-0.239***
Female-headed households	0.33	0.47	0.09	0.29	0.239***
Household size	4.02	2	4.33	0.20	-0.311***
No. of children age upto 6 years	0.34	0.47	0.38	0.49	-0.039***
No. of children aged 7-18 years	0.55	0.50	0.58	0.49	-0.029***
No. of member aged 19-59 years	0.96	0.20	0.97	0.17	-0.014***
No. of member aged above 60 years	0.33	0.47	0.24	0.43	0.091***
Illiterate	0.65	0.48	0.65	0.48	0.004***
Primary education	0.76	0.43	0.75	0.43	0.005***
Secondary education	0.48	0.50	0.47	0.50	0.008***
Higher secondary	0.11	0.30	0.10	0.32	0.011***
Graduate	0.10	0.30	0.12	0.33	-0.022***
Diploma	0.01	0.09	0.010	0.10	-0.000***
Region					
Rural	0.10	0.49	0.90	0.51	-0.798***
Urban	0.05	0.49	0.95	0.51	-0.902***
Household expenditure					
Monthly consumption	4108.89	11986.86	3291.02	3791.87	817.86***
Monthly per capita expenditure	1348.8	5932.62	852.42	837.61	496.38***

Source: Computed from the NSSO 64th round (2007-08) unit level data
Note: *** Significance at 1 per cent level

When compared to households which do not receive remittance, it appears that households receiving remittance have female members as family heads and they also have higher propensity to include elderly people as family heads. It, therefore, appears that households that received remittance depend more on the income available from remittance. It is also clear that the educational attainments of the members of remittance receiving households

are significantly higher at all levels of education (say, primary, secondary, higher secondary, and technical degree or diploma or above) than those who belong households which do not receive remittance. The result seems to counterproductive of the findings we already have in subsection 3.3.4 where it has been indicated that the possibility of out-migration is higher for household members having lower educational attainments. It implies that though out-migration from such families might be higher but the income earning capacity of such migrant workers will definitely be lower than the migrants with relatively higher skill and educational attainments. Hence, the flow of remittance is expected to be higher for households with relatively higher educational attainments. Table also suggests that remittance receiving households in rural West Bengal is higher than that of urban areas. This apart, remittance receiving households are found to be much lower compared to that of without remittance households in both rural and urban areas and this regional difference is also found to be statistically significant. This study also shows that remittance receiving households have spent higher amount of consumption expenditure as well as monthly per capita consumption expenditure in comparison with that for households without any remittance receipt, and the difference is statistically significant.

4.3 Determinants of Remittance across Households

While analysing the determinants of remittance received across household in West Bengal, we have considered the independent variables which are grouped into economic factors, demographic features, and education level of the households and regional indicators. A Probit model has been used to estimate the determining factors for remittance received which are binary in nature (theoretical model is discussed in Chapter 1).

4.3.1 The Specification of the Variables in the Model

The variables or factors that determine whether the remittance has been received or not by the households are presented in Table 4.5 with their maximum value, minimum value, mean value, standard deviation (SD) and notation used for the variables.

Table 4.5 Notation, Specification and Descriptive Statistics of Variables Used in Regression Analysis at the Household Level used in Probit regression analysis

Notation	Specification of Variables	*Max*	*Min*	*Mean*	*SD*
Dependent Variables					
REM_RECV	Whether the household remittance received or not? Yes = 1 , No = 0	1	0	0.25	0.43
Independent Variables					
SECTOR	Is the Household located in the Rural area or not? Yes = 1, No = 0	1	0	0.63	0.48
LDDIST	Is the Household located in the Less Developed Districts or not? Yes = 1, No = 0	1	0	0.46	0.50
HHSZ	Size of Household	21	1	4.24	2.17
HHAGE	Age of the household head	95	7	47.05	13.66
FHEADHH	Whether the Household head is female or not? Yes = 1, No = 0	1	0	0.15	0.36
CAST	Whether the Household belongs in to SC or ST community or not? Yes = 1, No = 0	1	0	0.32	0.47
AGE < 6Y	Whether the household having child whose age < 6 years? Yes = 1, No = 0	1	0	0.35	0.48
AGE 7-18	Whether the household having child whose age between 7-18 years? Yes = 1, No = 0	1	0	0.55	0.50
AGE > 60	Whether the household having member whose age > 60 years? Yes = 1, No = 0	1	0	0.27	0.44
EDUPRMY	Have any member of the household primary in education? Yes = 1, No = 0	1	0	0.74	0.44
EDUSECND	Have any member of the household secondary level in education? Yes = 1, No = 0	1	0	0.48	0.50
EDUHS	Household member's education up to Higher Secondary or not? Yes = 1, No = 0	1	0	0.13	0.33
EDUDGRDP	If educational level of household members' is graduate or diploma? Yes = 1, No = 0	1	0	0.15	0.36
LANDPC	Land Possession Code (unit of area is *hectare*): 1 = < *0.005*, 2 = *.005 – 0.01*, 3 = *0.02 – 0.40* , 4 = *0.41 – 2.0*, 5 = > *2*	5	1	2.23	0.96

Source: Computed from NSSO (2007-08) unit level data

The *demographic features* are specified by the size of the households (HHSZ), age of the head of the households (HHAGE), age structure of the households, female headed households (FHEADHH) and caste affiliation of the households (CAST). Caste variable (CAST) is defined as a dummy variable taking the value '1' if the head of the household belongs to scheduled castes (SC) or scheduled tribes (ST), and '0' if otherwise. Upper caste

households have better access to physical capital and other fruits of development which help them to migrate, earn more and send remittance. The variable related to the size of the household (HHSZ) indicates the number of members in the households. The variable regarding the age of the head of households (HHAGE) indicates the actual age of the head of the household. The age of the head of the family is expected to increase as they become dependent more on other members who might be the migrant members and sending remittances.

- Here we have categorised the members of the households according to their age brackets comprises four categories viz., AGE < 6Y, AGE 7-18, AGE 19-60 and AGE > 60. Here we have considered three dummy variables to incorporate the age group differentials.

AGE < 6Y, it indicates whether the household is having child aged less than 6 years if the answer is in affirmative then we have assigned a value '1' and '0' otherwise.

AGE 7-18, i.e., whether the household is having child within the age group 7-18 years; the value '1' is given for the existence of this feature, otherwise, its value is '0'.

Again, the variable 'AGE > 60' indicates whether the household is having member aged more than 60 years; the vale is '1' for its existence, otherwise it takes '0'.

- A female headed household (FHEADHH) is defined as a dummy variable taking the value 1 if the head of the household is female and '0' if otherwise. Female headed household means that the head of the family is a female member in the absence of a male earning member.
- The education level is categorized in five groups viz. illiterate (EDUILLIT), primary (EDUPRMY), secondary (EDUSECND), higher secondary (EDUHS) and graduate or diploma or above (EDUGRDP). Therefore, we have considered four dummy variables which are specified as follows:

EDUPRMY is defined as a dummy variable taking the value '1' if the member's education is up to fourth class and '0' if otherwise.

EDUSECND is defined as a dummy variable taking the value '1' if the member is secondary level (i.e., from class V to X^{th}) level of education and '0' if otherwise.

EDUHS is defined as a dummy variable taking the value '1' if the member is higher secondary (XII^{th} class) level of education and '0' if otherwise and

EDUGRDP are defined as dummy variables taking the value '1' if the members is graduate (12+3 standard) or any technical degree or diploma or above level of education, otherwise the value is '0'. The higher education level of the head of the household or other member gives him/her the opportunity to access wage or salaried jobs through migration and enable the migrant to send remittance.

To understand how *regional* variable affects the remittance sent, we have considered two dummy variables namely *sector* (SECTOR) and relatively less developed districts (LDDIST). Here, SECTOR is a dummy variable taking the value '1' if the households are located in rural areas otherwise the value is '0'. Similarly, LDDIST is also a dummy variable taking the value '1' if the household is located in less developed region and '0' if it is not.

Economic factors of the households are represented by the variable land possession code (LANDPC). Here different land holding patterns or sizes are depicted by different codes (dummy), namely, code '1' represents the households having landholding below .005 hectare (marginal land holding), code '2' is assigned for the households possessing land greater than .005 hectare and below .01 hectare (very small holding), code '3' represents land possessed by the households in between .02 to 0.4 hectare (Small holding), code '4' indicates the area of land possession in between .41 to 2 hectares (medium size) and code '5' represents the area of land holding greater than 2 hectares (large size).

4.3.2 Empirical Results of Probit Regression: Determinants of Receipt of Remittances

The coefficient of Probit Regression and its marginal effects (ME) are called for to analyse the determinants of remittance received by the households (Table 4.6). Let us start with *positive and significant effects* of household characteristics, demographic and socio-economic factors of households on remittance receipt. The amount of remittance receipt is significantly explained by HHAGE, FHEADHH, AGE < 6Y, AGE > 60Y, SECTOR, EDUSECND, EDUHS and LANDPC.

One of the important determinants of remittance receipt is the age of the household head (HHAGE), in terms of both significance level and marginal effects. The household heads who are more aged or elderly are more likely to receive remittances. The households whose families comprise a '*female head*' are more likely to receive remittances compared to that in case of male headed households. The results signify that female headed households mainly depend on remittance income, since remittances raise the reservation wage of left behind members of migrant families and encourage them to withdraw from the labour market (Khan and Valatheeswaran, 2016). We know that age of a worker provides a rough proxy for work experience. As such, it gives some indication of the earning potential of the individual. So, these results clearly indicated that increase in the number of children less than six years (AGE < 6Y) and number of adult members above sixty years (AGE > 60Y) in a household has a greater probability of receiving remittances than the family having active adult members whose ages lie between 7 to 60 years. This result supports the purely altruistic motive of the migrants sending remittances towards households and shows that they indeed care about their family. Again, the households belonging to rural region (SECTOR) is found to be more likely to receive remittances than those in urban region. Educational attainments determine the earning capacity or potential of the migrant. So, the level of education among the household members including household head also has a

Table 4.6 Results of Probit regression for determinants of remittance received by the households in West Bengal

Variables	*Coefficient*	*Robust Standard Error*	*z*	*P > z*	
SECTOR	0.2924***	0.0399	7.340	0.000	
LDDIST	-0.0253	0.0334	-0.760	0.448	
HHSZ	-0.0842***	0.0124	-6.820	0.000	
CAST	-0.0744**	0.0342	-2.180	0.029	Wald χ^2 **(14)** =1061.16
HHAGE	0.0179***	0.0016	11.190	0.000	Prob. > χ^2 = 0.000
FHEADHH	1.0500***	0.0413	25.450	0.000	Log pseudo likelihood
LANDPC	0.0937***	0.0181	5.170	0.000	= - 4341.0961
AGE < 6Y	0.1019***	0.0422	2.410	0.016	Pseudo R^2 = 0.1230
AGE 7-18	0.0477	0.0397	1.200	0.230	No of observations = 8770
AGE > 60	0.1214***	0.0450	2.700	0.007	
EDUPRMY	0.0653	0.0410	1.590	0.111	
EDUSECND	0.0775**	0.0333	2.330	0.020	
EDUHS	0.1556***	0.0485	3.210	0.001	
EDUDIPGRD	-0.0054	0.0480	-0.110	0.911	
Constant	-1.9504***	0.0815	-23.920	0.000	
Calculation of Marginal Effects for Estimated Probit Model					
Variables	**ME(*dy/dx*)**	*Delta-method Standard Error*	*z*	*P > z*	
SECTOR	0.0809***	0.0110	7.38	0.000	
LDDIST	-0.0070	0.0092	-0.76	0.448	
HHSZ	-0.0233***	0.0034	-6.91	0.000	
CAST	-0.0206**	0.0095	-2.18	0.029	
HHAGE	0.0050***	0.0004	11.32	0.000	Average Marginal Effects
FHEADHH	0.2905***	0.0102	28.39	0.000	
LANDPC	0.0259***	0.0050	5.2	0.000	Model VCE Robust
AGE < 6Y	0.0282***	0.0116	2.42	0.015	No of observations = 8770
AGE 7-18	0.0132	0.0110	1.2	0.230	
AGE > 60	0.0336***	0.0124	2.7	0.007	
EDUPRMY	0.0181	0.0113	1.59	0.111	
EDUSECND	0.0214**	0.0092	2.33	0.020	
EDUHS	0.0431***	0.0134	3.21	0.001	
EDUDIPGRD	-0.0015	0.0133	-0.11	0.911	

Note: *** 1 per cent, ** 5 per cent, * 10 per cent level of significance respectively

positive and significant influence on the remittance receipt. As the level of education increases, the tendency to send remittances intensifies. The completion of secondary

education (EDUSECND) and higher secondary education (EDUHS) have a particularly strong effect in this regard. The households whose members are having secondary and higher secondary educations are found to be more likely to receive remittances. This apart, it is found that the probability of receiving remittances is higher among the households with large and medium sized landholdings as compared to households owning marginal, small and very small landholdings. The result is not contradictory with our earlier result regarding the determinants of migration that the probability of migration of large and medium sized landholding households is relatively low. Actually the fact is that the per capita remittance of migrants of large and medium size landholding households is substantially higher than that of the migrants of small and medium landholding household. As a result the aggregate remittances of the former are significantly higher than the later.

We have also analysed the *negative and significant effects* of household characteristics, demographic and socio-economic factors of households on remittance receipt. The likelihood of remittance receipt is also significantly explained by size of households (HHSZ), caste (CAST), and the development status of the districts (LDDIST). Smaller the size of the households higher is the scope of remittance received i.e., the probability of remittance received decreases as the average size of the households increases. This apart, among the social groups, the families belonging to ST and SC communities are less likely to receive remittances than non-SC and non-ST households, or alternatively speaking, non-SC and non-ST households received more remittances than SC and ST households. This implies that they are less likely to migrate due to high cost of migration and low level of educational attainments. The households residing in relatively less developed districts (LDDIST) are found to be less likely to receive remittance than those residing in relatively developed districts but this difference is not statistically significant.

Here we have also delved into the *marginal effects* (ME) to analyse the determinants of remittance receipt at the household level. It is possible to rank different explanatory variables in terms of their respective marginal effect values. On the basis of the values of marginal effect, the female headed households (FHEADHH) seem to be most important factor in determining remittance receipt, followed by sector (SECTOR), higher secondary education (EDUHS), AGE > 60Y and AGE < 6Y. Our result shows that the probability of being remittance received household by the female headed households is 29 per cent with one unit increase in the number of female headed households. Similarly, one unit increase in the number of rural households among the remittance receiving households leads to an increase in the probability of remittance receipt by 8 per cent higher than that in urban region. Again, the probability of receiving remittances increases by 4 percent for household with one unit increase in the household member's educational level up to higher secondary standard. Further, the probability of receiving remittances increases by 3 per cent for a household with a one unit increase in the number of children aged less than six years and the probability of receiving remittances increases by 3 per cent for a household with a one unit increase in the number of adult members aged more than 60 years.

4.3.3 Determinants of remittances received by the households in the relatively backward (less developed) and developed districts

The estimated results of probit regression separately for the backward districts and developed districts of West Bengal are presented here in Table 4.7 and Table 4.8. The relationship between the dependent (whether the households received the remittance or not) and independent variables are quite same as we compare it with the whole of the West Bengal (Table 4.6 and Section 4.3.2). It is exceptional for the independent variable SECTOR, as it significant in case of developed districts and insignificant in case of backward districts.

Table 4.7 Results of Probit regression for determinants of remittance received by the households in the relatively less developed districts in West Bengal

Variable	*Coefficient*	*Robust Standard Error*	*z*	*P > z*	
SECTOR	0.0999	0.0633	1.58	0.1140	
HHSZ	-0.0719***	0.0158	-4.57	0.0000	
CAST	-0.0363	0.0485	-0.75	0.4540	
HHAGE	0.0161***	0.0023	7.02	0.0000	Wald χ^2 **(13)** =408.21
FHEADHH	0.9731***	0.0604	16.11	0.0000	Prob. > χ^2 = 0.000
LANDPC	-0.0051	0.0240	-0.21	0.8330	Log pseudo likelihood
AGE < 6Y	0.1783***	0.0574	3.11	0.0020	= - 2041.4144
AGE 7-18	-0.0037	0.0565	-0.07	0.9470	Pseudo R^2 = 0.1010
AGE > 60	0.1595***	0.0653	2.44	0.0150	No of observations = 4020
EDUPRMY	0.1408**	0.0638	2.21	0.0270	
EDUSECND	0.1766***	0.0488	3.62	0.0000	
EDUHS	0.2287***	0.0772	2.96	0.0030	
EDUDIPGRD	-0.2111***	0.0860	-2.45	0.0140	
Constant	-1.6530***	0.1216	-13.59	0.0000	

Calculation of *Marginal Effects* for Estimated Probit Model in less developed districts

Variable	**ME(*dy/dx*)**	*Delta-method Standard Error*	*z*	*P > z*	
SECTOR	0.0284	0.0180	1.58	0.1140	
HHSZ	-0.0204***	0.0044	-4.61	0.0000	
CAST	-0.0103	0.0138	-0.75	0.4540	
HHAGE	0.0046***	0.0006	7.08	0.0000	
FHEADHH	0.2767***	0.0156	17.75	0.0000	Average Marginal Effects
LANDPC	-0.0014	0.0068	-0.21	0.8330	Model VCE Robust
AGE < 6Y	0.0507**	0.0162	3.12	0.0020	
AGE 7-18	-0.0011	0.0161	-0.07	0.9470	No of observations = 4020
AGE > 60	0.0454***	0.0185	2.45	0.0140	
EDUPRMY	0.0400**	0.0181	2.21	0.0270	
EDUSECND	0.0502***	0.0138	3.64	0.0000	
EDUHS	0.0650***	0.0219	2.97	0.0030	
EDUDIPGRD	-0.0600***	0.0244	-2.46	0.0140	

Note: *** 1 per cent, ** 5 per cent, * 10 per cent level of significance respectively

Table 4.8 Results of Probit regression for determinants of remittance received by the households in the relatively developed districts in West Bengal

Variable	*Coefficient*	*Robust Standard Error*	*z*	*P > z*	
SECTOR	0.3592***	0.0517	6.94	0.000	
HHSZ	-0.0978***	0.0199	-4.92	0.000	
CAST	-0.1102**	0.0488	-2.26	0.024	
HHAGE	0.0196***	0.0023	8.57	0.000	Wald χ^2 **(13)** = 695.16
FHEADHH	1.1094***	0.0572	19.38	0.000	Prob. > χ^2 = 0.000
LANDPC	0.2058***	0.0273	7.53	0.000	Log pseudo likelihood
AGE < 6Y	0.0079	0.0641	0.12	0.901	= - 2256.6017
AGE 7-18	0.0892	0.0568	1.57	0.116	Pseudo R^2 = 0.1584
AGE > 60	0.0819	0.0632	1.3	0.195	No of observations = 4750
EDUPRMY	0.0276	0.0547	0.5	0.615	
EDUSECND	-0.0008	0.0460	-0.02	0.987	
EDUHS	0.1188*	0.0637	1.87	0.062	
EDUDIPGRD	0.0536	0.0598	0.9	0.370	
Constant	-2.1845***	0.1149	-19.01	0.000	

Calculation of *Marginal Effects* for Estimated Probit Model in developed districts

Variable	**ME(*dy/dx*)**	*Delta-method Standard Error*	*z*	*P > z*	
SECTOR	0.0953***	0.0136	7.02	0.000	
HHSZ	-0.0259***	0.0052	-5.01	0.000	
CAST	-0.0292**	0.0129	-2.26	0.024	
HHAGE	0.0052***	0.0006	8.7	0.000	
FHEADHH	0.2942***	0.0135	21.77	0.000	Average Marginal Effects
LANDPC	0.0546***	0.0071	7.66	0.000	Model VCE Robust
AGE < 6Y	0.0021	0.0170	0.12	0.901	
AGE 7-18	0.0237	0.0150	1.57	0.116	No of observations = 4750
AGE > 60	0.0217	0.0168	1.3	0.195	
EDUPRMY	0.0073	0.0145	0.5	0.615	
EDUSECND	-0.0002	0.0122	-0.02	0.987	
EDUHS	0.0315*	0.0169	1.87	0.062	
EDUDIPGRD	0.0142	0.0158	0.9	0.370	

Note: *** 1 per cent, ** 5 per cent, * 10 per cent level of significance respectively

4.4 Pattern of Use of Remittances across Households

Here we have analysed the use of remittances by the households and generally it is observed that remittances may be used for different purposes. The NSSO normally collects information on different use of remittances for each remittance receiving households for at least three purposes according to the descending order of the used amount (Table 4.9). From the collected information the use of remittances by the households were identified for thirteen purposes (Table 4.9).

Table 4.9 Distribution of Use of Remittances by the Items in West Bengal in 2007-08

Items	*First Use*	*Second Use*	*Third Use*
Food	**75.6**	2.1	2.8
Education	0.9	**21.1**	4.1
Durable goods	0.8	**12.2**	6.6
Healthcare	5.7	**20.7**	**10.8**
Other HH consumer expenditure	6.2	**21.5**	**17.7**
House & improve housing	4.5	3.2	4.6
Debt repayment	1.5	2.2	2.9
Marriage and other ceremony	1.6	0.7	0.0
Working capital	0.2	0.2	0.1
New entrepreneurial	0.0	0.0	0.0
Saving and Investment	1.4	1.1	2.5
Others	1.4	0.6	1.1
Not Available for Uses	0.0	**14.4**	**46.7**
	100	100	100

Source: Computed from the NSSO 64th round (2007-08) unit level data

When the pattern of use of remittances in West Bengal is considered for analysis, in line with the present literature, it has been found that the households have mainly (first use) spent remittances on expenditure on food and it was at the extent of 75.6 per cent. Next, households were also found to have used remittances mainly on other household consumption expenditure (21.5 per cent), healthcare (20.7 per cent), and education (21.1 per cent) and for purchasing durable goods (12.2 per cent). Out of these, female headed households spent larger share of their remittances on other household consumption

expenditure and education for their children. The next important purpose of use of remittances is noted as 'not available for uses' (46.7 per cent) i.e., out of total remittance received about 47 per cent households have not much money left with after spent for first and second purposes. Also 17.7 per cent households spent other household consumption expenditure for third purpose. This type of finding differs from other states like Kerala where a greater proportion is used for purchasing land and building (Zachariah and Rajan 2011). In the state of Odisha, large portions of remittances were used for marriage, ceremonial expenses and for improving housing conditions. In Tamil Nadu there was a greater use of remittances for debt repayment and education (Valatheeswaran 2016). In most of the North-Eastern states greater use of remittances were mostly on education, while in Goa and most of the Union Territories they were primarily spent on saving and investment purposes (Tumbe 2011).

The pattern of utilization of remittances among the remittance receiving households varies with the socio-economic status of the households. The richer households primarily spent remittance income on food items (57 per cent) and healthcare purposes (12 per cent) and a small portion is spent on various forms of enterprises, while poorer households are expected to give priority to meet their basic daily needs. By using quintiles method, it was observed that in case of poorer households, after meeting the basic needs from remittance income they have nothing to use for other purposes. Only small numbers of households spend on healthcare and other household consumption expenditure. Middle income households also used remittance income for purchasing food items. Remittance can help finance the healthcare and other household expenditure of high income households to a large extent than their low income counterparts (Table 4.10).

Remittance utilization pattern across social groups indicate a higher reported use of remittances towards basic consumption needs by the Scheduled Tribe (ST), Scheduled Caste (SC) group, whereas, other backward classes (OBC) and General groups had a small

diversified spending pattern of their remittances on healthcare, durable household goods and education along with food consumption expenditure.

Table 4.10 Distribution of use of Remittances by the Items for the poor (lower quintile class) vis-à-vis rich (upper quintile class) Income Groups in West Bengal, 2007-08

Items	Poor (Lower Quintile Class)			Rich (Upper Quintile Class)		
	First Use	Second Use	Third Use	First Use	Second Use	Third Use
Food	**87.4**	2.8	2.1	**56.7**	1.5	2.8
Education	0.8	12.4	1.8	2.0	28.1	2.0
Durable goods	0.0	9.6	4.7	0.6	12.2	8.9
Healthcare	2.2	25.3	11.5	**11.9**	16.0	12.2
Other hh consumer expenditure	**3.6**	28.5	18.7	**8.1**	13.9	13.2
House & improve housing	**3.1**	1.2	2.7	5.9	2.4	6.2
Debt repayment	0.6	1.8	3.7	2.0	2.1	1.2
Marriage and other ceremony	1.2	0.0	0.0	5.1	0.4	0.0
Working capital	0.0	0.2	0.0	0.0	0.13	0.2
New entrepreneurial	0.0	0.0	0.0	0.1	0.0	0.0
Saving and Investment	0.2	0.6	3.1	3.9	1.8	1.7
Others	0.9	0.9	1.3	3.7	0.0	0.3
Not Used	0.0	16.8	**50.5**	0.0	21.5	**51.2**
Total	100	100	100	100	100.0	100.0

Source: Computed from the NSSO 64th round (2007-08) unit level data

Again the use of remittances across region shows that the households belonging to rural area as well as less developed districts spent larger proportion of remittance income towards meeting basic consumption needs and other household consumption expenditure. On the contrary, households residing in urban area primarily spent remittance income on food items and healthcare expenditure. To sum up, remittances have contributed to fulfill the income gap of the remittance receiving households and can remove poverty to a certain extent. The use of remittance received at the household level led to investment in human and physical capital, which in turn, had a long-term impact on economic development in the state.

4.4.1 Comparison of Pattern of Consumption Expenditure of Remittance Receiving Households with Non-Receiving Households

Now, we can represent the household consumption expenditure patterns of remittance receiving households vis-à-vis the same for without remittance receiving households. The average monthly budget share of household expenditure on priority based five categories for remittance receiving households and without remittance receiving households have been discussed here (Table 4.11).

Table 4.11 Average Monthly Budget Share of Different Household Expenditure with Remittance Received Household vis-à-vis Without Remittance Received Households

ITEM	RRH		Non RRH		*Mean Diff*	*t-value*
	Mean	*SD*	*Mean*	*SD*		
Food Expenditure	2095.0	6215.4	1761.1	2003.8	333.9***	67.38
Other household Consumption	1044.1	4322.4	859.1	2967.2	185.0***	52.79
Medical Expenditure	374.6	1552.3	222.5	698.1	152.1***	122.30
Educational Expenditure	170.3	461.0	171.4	421.6	-1.1	0.96
Consumption on Durable Goods	424.9	1766.7	276.9	451.9	148.0***	105.26
Total	4108.9	12671.5	3291.0	5020.9	817.9	80.75

Source: Computed from the NSSO 64th round (2007-08) unit level data

At the aggregate level, the average monthly expenditure of remittance receiving households is found to be about ₹ 4109 and this is expectedly higher than that for the non-remittance receiving household (about ₹ 3291). This difference in average monthly expenditure between two groups of households is highly significant and it indicates that remittance has played a significant role in generating a difference in the expenditure pattern of remittance received households. Average consumption expenditure on food items and expenditure on durable goods are also significantly differing between remittance receiving households and remittance non-receiving households.

Further, at the disaggregated level, the most of the households have utilized larger share of their household budget for consumption purposes but the non-remittance receiving

households allocated a higher budget share for consumption (food expenditure) which is about 53.5 per cent as compared to remittance recipient households (51 per cent) and the differences of allocated budget share between the two groups of households is significant. This pattern actually proves the Engel function relationship to household budget allocation (i.e., as household income rises, lesser portion of budget is allocated to food items). Thus, households with remittance income are expected to spend lower share of family budget on food items. In absolute term, it is observed that remittance receiving households spends more on food items and consumption goods compared to that of non-remittance receiving households and the difference is positive and statistically significant. Investment expenditure is also very much limited and primarily devoted to expenditure on healthcare (Table 4.12). This result may also suggest that migration and remittances act as coping strategies to mitigate health risks.

Table 4.12 Average Monthly Budget Share of Different Household Expenditure with Remittance Received Household vis-à-vis Remittance Non-received Households in West Bengal, 2007-08

ITEM	RRH		Non RRH		Mean Difference
	Mean	*SD*	*Mean*	*SD*	
Food Expenditure	0.510	0.592	0.535	0.606	-0.025***
Other household Consumption	0.254	0.240	0.261	0.248	-0.007***
Medical Expenditure	0.091	0.125	0.068	0.098	0.024***
Educational Expenditure	0.041	0.072	0.052	0.071	-0.011
Consumption on Durable Goods	0.103	0.099	0.084	0.093	0.019***

Source: Computed from the NSSO 64th round (2007-08) unit level data
Note: *** Significance at 1 per cent level

4.5 Impact of Remittances on Poverty

Remittance has played a significant impact on incidence of poverty and poverty-gap. Here we have estimated the incidence of poverty (Head Count Ratio or HCR) and Poverty-Gap (PGP) in presence and absence of remittances of migrant households in West Bengal in 2007-08. Remittance has played a significant impact on the reduction of

poverty in both rural and urban regions. In the rural region remittances have reduced HCR to the extent of 4 percentage points. In case of urban region it is about 1.7 percentage points (Table 4.13).

Table 4.13 Impact of remittance on influence of poverty and poverty gap in urban area vis-à-vis rural area in West Bengal, 2007-08

Impact	HCR			Poverty Gap (PGP)		
	With remittance	Without remittance	*Percentage Change*	With remittance	Without remittance	*Percentage Change*
Urban	20.5	22.2	1.7	4.4	6.7	2.3
Rural	46.2	50.2	4.0	10.2	14.4	4.2
Total	39.5	42.8	**3.4**	8.7	12.4	**3.7**

Source: Computed from the NSSO 64th round (2007-08) unit level data

The use of remittances by poor households has acted as a strong poverty alleviation force, and poverty (HCR) has been reduced on an average 3.4 percentage points in whole of West Bengal in the year 2007-08. Not only HCR but the poverty-gap (PGP) has also reduced by the use of remittances. Using remittances in the rural region there has been a significant reduction of poverty-gap and it has reduced by about 2.3 percentage points. In case of urban region also poverty-gap has been reduced to the extent of 4.2 percentage points and thus in whole of West Bengal it has been reduced by 3.7 percentage points.

We have looked into the impact of remittance on poverty at household level in *relatively less developed districts* compared to that of the developed districts of West Bengal. It is observed that though in the relatively less developed districts HCR and poverty-gap are much higher than those for the developed districts but remittance played a significant role in the reduction of HCR as well as poverty-gap in both less developed and relatively developed districts. Incidence of poverty could be decreased by the use of remittances and this has been much better in the developed districts (4 *percentage points*) and the reduction of poverty-gap has also been higher in relatively developed districts (4.2 *percentage points*) compared to that of the relatively less developed districts (Table 4.14).

Table 4.14 Impact of remittance on the incidence of poverty and poverty gap in developed districts vis-à-vis less developed districts in West Bengal, 2007-08

District	HCR			Poverty Gap (PGP)		
	With remittance	Without remittance	*Percentage Change*	With remittance	Without remittance	*Percentage Change*
Less Developed	20.5	22.2	1.7	4.4	6.7	2.3
Developed	46.2	50.2	4.0	10.2	14.4	4.2
Total	39.5	42.8	**3.4**	8.7	12.4	**3.7**

Source: Computed from the NSSO 64th round (2007-08) unit level data

Now if we want to see the impact of remittance on poverty among the remittance receiving households in West Bengal across different social groups of households it is noticeable that the HCR as well as the poverty gap have reduced to a relatively lesser extent for SC and ST classes compared to OBC and others (Table 4.15).

Table 4.15 Impact of remittance on the incidence of poverty and poverty gap for Social classes in West Bengal, 2007-08

Social Class	HCR			Poverty Gap (PGP)		
	With remittance	Without remittance	*Percentage Change*	With remittance	Without remittance	*Percentage Change*
ST	55.2	57.2	2.1	14.0	16.2	2.2
SC	45.0	48.4	3.3	9.8	13.1	3.3
OBC	33.6	36.5	2.9	6.0	8.5	2.5
Others	35.8	39.4	3.6	7.9	12.1	4.2
Total	39.5	42.8	**3.4**	8.7	12.4	**3.7**

Source: Computed from the NSSO 64th round (2007-08) unit level data

Thus, remittances have played a relatively better role in reducing the extent of poverty on other social groups (except SC, ST& OBC) and this has been found to be about 3.6 percentage points.

Again if we see the impact of remittance on poverty (HCR) across the different landholding classes, there has been more or less uniform improvement by about 3 percentage points within the marginal, semi-small and small landholding classes.

Table 4.16 Impact of remittance on the incidence of poverty and poverty gap for different land holding classes in West Bengal, 2007-08

Land Holding Pattern (*in hectare*)	HCR			Poverty Gap (PGP)		
	With remittance	Without remittance	*Percentage Change*	With remittance	Without remittance	*Percentage Change*
<0.005 (*Marginal)*	36.8	40.0	3.1	8.8	12.0	3.2
0.005 to 0.01 (*semi-small*)	40.5	43.6	3.1	8.8	12.4	3.6
0.02 to 0.4 (*small*)	45.3	48.6	3.3	9.8	14.0	4.2
0.41 to 2 (*medium*)	26.8	31.5	4.7	5.2	9.0	3.8
> 2 (*large*)	18.1	22.9	4.7	4.4	9.1	4.7
Total	39.5	42.8	**3.4**	8.7	12.4	**3.7**

Source: Computed from the NSSO 64th round (2007-08) unit level data

Significant reduction in poverty (HCR) is observed within the medium and large scale land holding classes and this figure has been about 4.7 percentage point; and in case of change of poverty-gap (PGP) these figures have been about 3.8 percentage and 4.7 percentage points respectively (Table 4.16).

It is also interesting to note that the impact of remittances on the incidence of poverty and the poverty gap across the female headed households has shown significant improvement compared to that for male headed households. Improvement in

Table 4.17 Impact of remittance on the incidence of poverty and poverty gap for the male vis-à-vis female headed household in West Bengal, 2007-08

Household Head	HCR			Poverty Gap (PGP)		
	With remittance	Without remittance	*Percentage Change*	With remittance	Without remittance	*Percentage Change*
Male	39.6	41.7	2.1	8.7	10.6	1.9
Female	38.4	51.4	13.0	8.8	26.2	17.4
Total	39.5	42.8	**3.4**	8.7	12.4	**3.7**

Source: Computed from the NSSO 64th round (2007-08) unit level data

poverty reduction (HCR) among the remittance receiving female headed households has been about 13 percentage points and the change of poverty gap has also been about 17.4

percentage points for these households (Table 4.17). It implies that the female headed households are more poverty ridden to the male headed households.

4.6 Analysis of the Status of Poverty in Relation to Remittances and Other characteristics of Household

At the household level, individual member decides on where to migrate and their ability to earn income determines the remittances received by the household. In addition, this flow of remittance may improve the per capita consumption expenditure of the household and hence can help the household to switch over from BPL to APL status. Therefore, we try to analyse the factors which would decide incidence of poverty a well as the poverty gap at the household level.

4.6.1 The Specification of the Variables in the Model

The variables or factors that determine the status of poverty in the household are presented in the Table 4.18. The maximum value, minimum value; mean value, standard deviation (SD) and notation used for these variables are listed in the Table.

To analyse the variation of incidence of poverty (POVT) and poverty gap (POVTG) across migrant's households a set of independent variables are included in the regression equations along with remittance received by the household. The independent variables include demographic features, education level, and economic factors of the households as well as regional indicators. These variables are treated as control variables which affect the status of poverty of households.

The *demographic features* are specified by size of the household (HHSZ), age of the head of households (HGHH), female headed households (FHEADHH) and caste of the households (CAST).

Caste variable (CAST) is defined as a dummy variable taking the value '1' if the head of the household belongs to scheduled caste (SC) or scheduled tribe (ST), and '0' if

otherwise. Upper caste households have better access to physical capital and dynamics of development which help them to overcome poverty.

Table 4.18 Notation, Specification and Descriptive Statistics of Variables Used in Regression Analysis at the Household Level

Notation	*Specification of Variables*	*Max*	*Min*	*Mean*	*SD*
	Dependent Variables				
POVT	Whether the household is poor or not? Yes = 1 , No = 0	1	0	0.36	0.48
POVTG	Poverty Gap of the household	0.89	0	0.08	0.14
	Independent Variables				
MPCRR	Monthly Per Capita Remittance Received	33533	0	148.46	648.40
SECTOR	Is the Household located in the Rural area or not? Yes = 1, No = 0	1	0	0.63	0.48
LDDIST	Is the Household located in the Less Developed Districts or not? Yes = 1, No = 0	1	0	0.46	0.50
HHSZ	Size of Household	21	1	4.24	2.17
HHAGE	Age of the household head	95	7	47.05	13.66
CAST	Whether the Household belongs in to SC or ST community or not? Yes = 1, No = 0	1	0	0.32	0.47
FHEADHH	Whether the Household head is female or not? Yes = 1, No = 0	1	0	0.15	0.36
LANDPC	Land Possession Code (unit of area is *hectare*): 1 = < 0.005, 2 = .005 – 0.01, 3 = 0.02 – 0.40 , 4 = 0.41 – 2.0, 5 = > 2	5	1	2.23	0.96
EDUHS	Household member's education up to Higher Secondary or not? Yes = 1, No = 0.	1	0	0.13	0.33
EDUGRDP	Household member's education upto Graduate/Diploma or not? Yes = 1, No = 0	1	0	0.15	0.36

Source: Computed from NSSO (2007-08) unit level data

Size of the household (HHSZ) variable indicates the number of member in the households. As the number of members in the households decreases the households have a better possibility to overcome from poverty.

The age of the head of the family (HHAGE) is associated with the decision making power and relatively higher age of the head is more capable to maintain better standard of living with the use of human and physical capital of the household.

A female headed household (FHEADHH) is defined as a dummy variable taking the value '1' if the head of the household is female and '0' if otherwise. Female headed household means the head of the family is female member in the absence of male earning member. Male out-migrant family whose head of the family is female and their family are not able to maintain their household consumption expenditure so that to maintain the family male member has to be out-migrated.

For the *education level* of the members of the household here we have considered two dummy variables namely EDUHS and EDUGRDP. EDUHS is defined as a dummy variable taking the value '1' if member's education up to Higher Secondary and '0' if otherwise. Similarly, EDUGRDP is defined as a dummy variable taking the value '1' if member's education up to Graduate or Diploma and '0' if otherwise. The level of education of the household members is computed as the total years of schooling completed by members of the household. The higher education level of the head of the household or other member gives the opportunity to access wage or salaried jobs that help the households to overcome the poverty.

To understand the how *regional* variable affects on the poverty here we have considered two dummy variables, viz. *sector* (SECTOR) and development status of the districts (LDDIST).

Here, SECTOR is a dummy variable taking the value '1' if the households are located in rural area; otherwise the value is '0'.

The LDDIST is also a dummy variable taking the value '1' if the household is located in less developed region (or in backward districts or region) and '0' if it is not. The relatively less developed districts is more backward than developed districts, therefore, the

incidence and depth of poverty are higher in relatively less developed districts than that of the developed districts in West Bengal.

Economic factors of the households are represented by the household's possessed land (LANDPC) and Monthly Per Capita Remittance Received (MPCRR). In NSSO Unit level data different land holding pattern or size are given by different codes, namely, '1' represent if the households possessed land below .005 hectare (marginal land holding), '2' if the household possessed land greater than .005 hectare and below .01 hectare (very small holding), '3' represents land possessed by the households in between .02 to 0.4 hectare (Small holding), '4' indicates the area of land possession in between .41 to 2 hectare (medium size) and '5' represents the area of land holding greater than 2 hectare (large size). That is higher value of the code implies larger possessed of land by the household. If the households possessed higher size of land then they have better performance to overcome the poverty than smaller size of land holding households. Also we know that as the monthly per capita remittance received (MPCRR) increases by the households the family become more financially strong and MPCRR plays a very important role to overcome the poverty as well as it reduces the depth of poverty in these households.

4.6.2 The *Empirical Results*: Estimation of Heckman Selection (Two-Step)

The empirical analysis of the relationship between the status of poverty of the migrant's households and other households characteristics like cast, educational level, size of households, female headed household along with regional variable, land holding pattern of the households along with remittance. The status poverty is estimated by the Heckman Selection (two-step) model as specified in the methodology section in *Chapter* 1. Heckman two-step model helps us to determine the incidence of poverty and the depth of poverty simultaneously along in the presence remittances. The two-step model is also useful to test selectivity bias (if any). The sample selection bias might arise in practice for two reasons:

First, there may be self-selection by the individuals or data units being investigated. *Second*, sample selection decisions by analysts or data processors operate in much the same fashion as self-selection.

There is *no selectivity bias* if the coefficient of ***Inverse Mills Ratio* (λ)** is statistically not significant. The software package ***STATA*** offers the possibility to use the Heckman two-step procedure. The empirical results of Heckman selection model–two-step estimates (regression model with sample selection) are presented in the Table 4.19.

The lower panel represents the results of Probit estimation of incidence of poverty (POVT) and the upper panel presents the estimation of poverty gap (POVTG). The ***Inverse Mills Ratio* (^{a})** is statistically not significant, that is there is no selectivity bias. To avoid the problem of identification one independent variables namely EDUHS is not included in the upper panel, that is, in estimation of poverty gap.

The estimated results indicate that *remittances with other factors have* played a significant role in reducing poverty as well as poverty gap at the household level. The characteristics of the households with some other variables are important determinants of poverty. We have found statistically significant coefficients of HHSZ, HHAGE, FHEADHH, CAST, SECTOR, LDDIST, EDUHS, EDUGRDP, MPCRR and LANDPC for incidence of poverty and HHSZ, FHEADHH, CAST, LDDIST, EDUGRDP, MPCRR and LANDPC for poverty gap. All these variables like, HHAGE, EDUHS, EDUGRDP, MPCRR and LANDPC have the expected *negative coefficients* with the incidence of poverty (POVT) and CAST, HHSZ, FHEADHH, SECTOR, LDDIST, EDUHS and EDUGRDP are *positively* related with POVRT. Similarly, HHAGE, MPCRR and LANDPC have *negative coefficient* with the POVRTG and CAST, HHSZ, FHEADHH, LDDIST and EDUGRDP are positively related with poverty-gap (POVTG) or depth of poverty.

Table 4.19 Result of Heckman selection model - two-step estimates for poverty-gap and poor or not poor in West Bengal, 2007-08

Dependent Variable	*Independent Variable*	*Observed Coefficient*	*Bootstrap Std. Error*	*z*	*P > z*	
Poverty Gap (y_i) (POVTG)	MPCRR	-0.0001**	0.0000	-2.05	0.040	
	SECTOR	-0.0034	0.0080	-0.42	0.671	
	LDDIST	0.0582***	0.0076	7.62	0.000	
	HHSZ	0.0173***	0.0025	7.00	0.000	
	CAST	0.0096*	0.0056	1.70	0.089	
	HHAGE	-0.0006***	0.0003	-2.34	0.019	
	FHEADHH	0.0242***	0.0089	2.71	0.007	Wald χ^2 **(9)** =199.77
	LANDPC	-0.0235***	0.0035	-6.71	0.000	Prob. > χ^2 = 0.000
	EDUGRDP	-0.0273	0.0227	-1.20	0.230	
	Constant	0.1864***	0.0219	8.49	0.000	No of observations = 8770
Poverty (d_i) (POVRT) Poor = 1 or Not Poor = 0	MPCRR	-0.0010***	0.0002	-5.46	0.000	Censored observations = 5594
	SECTOR	0.2851***	0.0351	8.13	0.000	
	LDDIST	0.5475***	0.0332	16.48	0.000	Un-censored observations = 3176
	HHSZ	0.2545***	0.0100	25.40	0.000	
	CAST	0.1894***	0.0337	5.62	0.000	No bias in the model
	HHAGE	-0.0100***	0.0013	-7.90	0.000	
	FHEADHH	0.3213***	0.0492	6.53	0.000	
	LANDPC	-0.1814***	0.0196	-9.27	0.000	
	EDUHS	-0.9414***	0.0623	-15.11	0.000	
	EDUGRDP	-0.9429***	0.0668	-14.12	0.000	
	Constant	-0.9272***	0.0658	-14.09	0.000	
	Mills lambda**(λ)**	-0.0167	0.0170	-0.98	**0.326**	
	Rho **(ρ)**	-0.1188				
	Sigma (***δ***)	0.1407				

Source: Computed from NSSO (2007-08) unit level data.
Note: *** 1 per cent, ** 5 per cent, * 10 per cent level of significance respectively

The result suggests that as the monthly per capita remittance received (MPCRR) decreases the probability of poverty (POVRT) as well as depth of poverty (POVTG) of the household decreases. Again if the amount of size of land holding among the households

increases there have been more likely to decrease the incidence of poverty as well as depth of poverty. This means income from agriculture and with additional income from remittances has played a significant role for betterment of standard of living and the reduction of the incidence of poverty. We know that earning potential of the migrant can be determine by education. So, as the level of education increases (graduation and above or technical degree or diploma holders - EDUGRDP) they are capable to send larger amount of remittance towards the households and this decreases the probability of the incidence of poverty and depth of poverty among these households.

The result also indicates that the household's characteristics like CAST and regional location (LDDIST) are significantly associated with POVT and POVTG. That is, the probability of incidence of poverty is high for those households who are belonging to SC and ST communities and located in relatively less developed districts. Again for the households located in relatively less developed districts and belonging to SC and ST category the probability of poverty gap also increases. It is also evident that those households are located in rural area they are more likely to be poor. The size of households (HHSZ) is positively related with incidence and depth of poverty i.e., the households with larger members are more likely to be poor. As the age of the household head (HHAGE) increases the households are more likely to be poor and the depth of poverty is also high. Lastly, it is evident that the households whose head of the family is female she is more likely to be poor and poverty gap is also likely to be high in these female headed households.

Now we consider the estimation of poverty in case of *relatively backward district of West Bengal* there is no selectivity bias in the model. Here the coefficient of ***Inverse Mills Ratio*** **(λ)** is statistically not significant. The empirical estimation results of Heckman selection model – two-step estimates (regression model with sample selection) are presented in the Table 4.20 below. The estimated results indicate that *remittances with other factors*

have played a significant role in reducing poverty in the household level in the *relatively backward districts* also. The similar result holds for *relatively developed districts* and the empirical result is shown in the Table 4.21 below.

Table 4.20 Result of Heckman selection model - two-step estimates for poverty-gap and poor or not poor (regression model with sample selection) in relatively *less developed districts* in West Bengal

Dependent Variable	*Independent Variable*	*Observed Coefficient*	*Bootstrap Std. Error*	*z*	*P > z*	
Poverty Gap (y_i) (POVTG)	MPCPRR	-0.00004	0.00004	-0.99	0.321	
	SECTOR	-0.00589	0.01108	-0.53	0.595	
	HHSZ	0.01624***	0.00316	5.13	0.000	
	CAST	0.01568**	0.00761	2.06	0.039	
	HHAGE	-0.00047	0.00036	-1.31	0.189	
	FHEADHH	0.02418**	0.01115	2.17	0.030	
	LANDPC	-0.02447***	0.00413	-5.92	0.000	Wald χ^2 **(8)** =73.29
	EDUDIPGRD	-0.01735	0.02934	-0.59	0.554	Prob. > χ^2 = 0.000
	Constant	0.26749	0.02658	10.06	0.000	No of observations = 4020
Poverty (d_i) (POVRT) Poor = 1 or Not Poor = 0	MPCPRR	-0.00169***	0.00017	-9.74	0.000	Censored observations = 1996
	SECTOR	0.15524**	0.07561	2.05	0.040	
	HHSZ	0.23208***	0.01640	14.15	0.000	Un-censored observations = 2024
	CAST	0.16238***	0.04867	3.34	0.001	
	HHAGE	-0.00932***	0.00200	-4.66	0.000	
	FHEADHH	0.37276***	0.07046	5.29	0.000	
	LANDPC	-0.19216***	0.02608	-7.37	0.000	
	EDUHS	-0.98819***	0.08965	-11.02	0.000	
	EDUDIPGRD	-0.91369***	0.09143	-9.99	0.000	
	Constant	-0.13596	0.11624	-1.17	0.242	
	Mills lambda **(λ)**	-0.05167	0.02847	-1.81	**0.170**	
	Rho **(ρ)**	-0.35028				
	Sigma (δ)	0.14751				

Source: Computed from NSSO (2007-08) unit level data.

Note: *** 1 per cent, ** 5 per cent, * 10 per cent level of significance respectively.

Table 4.21 Result of Heckman selection model - two-step estimates for poverty-gap and poor or not poor (regression model with sample selection) in relatively *developed districts* in West Bengal

Dependent Variable	*Independent Variable*	*Observed Coefficient*	*Bootstrap Std. Error*	*z*	*P > z*	
Poverty Gap (y_i) (POVTG)	MPCPRR	-0.00004	0.00003	-1.61	0.107	
	SECTOR	-0.00901	0.01182	-0.76	0.446	
	HHSZ	0.01206**	0.00548	2.2	0.028	
	CAST	-0.00554	0.01014	-0.55	0.585	Wald χ^2 **(8)** =29.90
	HHAGE	-0.00048	0.00034	-1.41	0.159	
	FHEADHH	0.01461	0.01608	0.91	0.363	Prob. > χ^2 = 0.0002
	LANDPC	-0.01345**	0.00578	-2.33	0.020	
	EDUDIPGRD	0.00189	0.03946	0.05	0.962	No of
	Constant	0.19840	0.05075	3.91	0.000	observations = 4750
Poverty (d_i) (POVRT) Poor = 1 or Not Poor = 0	MPCPRR	-0.00057***	0.00021	-2.77	0.006	
	SECTOR	0.34348***	0.04835	7.1	0.000	Censored
	HHSZ	0.27877***	0.01750	15.93	0.000	observations = 3598
	CAST	0.21366***	0.04654	4.59	0.000	
	HHAGE	-0.01016***	0.00178	-5.7	0.000	Un-censored
	FHEADHH	0.26486***	0.07089	3.74	0.000	observations = 1152
	LANDPC	-0.16403***	0.03050	-5.38	0.000	
	EDUHS	-0.92100***	0.10996	-8.38	0.000	
	EDUDIPGRD	-1.01927***	0.10740	-9.49	0.000	
	Constant	-1.12070	0.09906	-11.31	0.000	
	Mills lambda**(λ)**	-0.01797	0.03081	-0.58	**0.560**	
	Rho **(ρ)**	-0.13300				
	Sigma (***δ***)	0.13510				

Source: Computed from NSSO (2007-08) unit level data.
Note: *** 1 per cent, ** 5 per cent, * 10 per cent level of significance respectively.

Notes:

1. We segregate the various districts of west Bengal into "relatively backward districts" and "developed" using the ranking methodology, based on "Indian Rural Development Report, 2013-14". Less Developed Districts includes Jalpaiguri, Koch Bihar, Uttar Dinajpur, Dakshin Dinajpur, Maldah, Murshidabad, Birbhum, Bankura, Puruliya, Midnapur, South-24 Parganas and Developed districts includes Kolkata, Darjeeling, Bardhaman, Nadia, North 24-Parganas, Hugli, Kolkata, Howrah.

2. Methodology of *Mean Difference Test* (Reference Table No. 4.4):

   Let the variable Age of the Household Head (x)

$$x_1 = Head\ ages\ of\ remittance\ receiving\ household$$

$$x_2 = He\ \ 'ages\ of\ remittance\ non-receiving\ household$$

$$\bar{x}_1 = Weighted\ mean\ of\ x_1$$

$$\bar{x}_2 = Weighted\ mean\ of\ x_2$$

$$s_1 = weighted\ standard\ deviation\ of\ x_1$$

$$s_2 = weighted\ standard\ deviation\ of\ x_2$$

$$Me\quad Difference = \bar{x}_1 - \bar{x}_2$$

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s^2{}_2}{n_2}}}$$

$$Where,\ n_1 = weighted\ frequency\ of\ remittance\ receiving\ households$$

$$and\ \ n_2 = weighted\ frequency\ of\ remittance\ non-receiving\ households$$