Chapter

3

Determinants of Migration in West Bengal

We have so far observed trend and pattern of migration across states of West Bengal. The questions that naturally arise are: what factors explain the in-migration behaviour across the districts in West Bengal? Which factors are crucial for the out-migration decision in West Bengal? This chapter makes an attempt to address these questions with reference to districts of West Bengal.

Migration in the developed countries is connected with the process of development and prosperity of the migrants; whereas migration in the developing countries, as in India, is highly linked with the process of underdevelopment, poverty, social and regional inequalities. Such types of migration take place, not due to the so called attractive pull forces of the destination regions, but basically occur due to acute stress situations and underdevelopment in the migrants' origin regions.

Determinants of inter-districts male in-migration in West Bengal is analysed on the basis of census data (1991 and 2001). Migration of a worker into a district depends on the factors such as infrastructure, government policy and some socio-economic indicators (viz. literacy rate, urbanisation, population density, per capita income etc.) which emanate outside agriculture can also lead to the growth of service sector and industrial activity in a region. This process lead to movement of rural workers to urban areas to take job opportunities.

On the other hand out-migration behaviour in West Bengal at the household level can be analysed on the basis of NSSO (2007-08) Unit Level data and by which we can explain the factors affecting migration decision of a member viz., socio economic indicators, and demographic characteristics of the households.

This chapter comprises three sections. Section 3.1 analyses the determinants of inter-districts in-migration in West Bengal for the Census year 1991 and 2001. Section 3.2 discussed different indicators relating to household characteristics of the migrant households across West Bengal as well as the characteristics of migrants on the basis of NSSO data (2007-08). We also examine the factors which determine the out-migration decision of the member(s) of the household in the section 3.3.

3.1   Determinants of Inter-districts In-migration

From the analysis of the trend and pattern of migration by place of last residence and by the *place of birth* and also the reasons for migration, it is observed that the females move for mainly due to matrimonial (75 per cent or above) and other non-economic reasons which are difficult to explain. So, to analysis the inter-district comparison of migration, female migrations are excluded from our study. Here we can consider only the male in-migration of West Bengal for the analysis.

3.1.1   Theoretical Basis of the Determinants of the Migration

Migration is one of the major livelihood strategies in both rural and urban area and the sustainable livelihood framework depicts the context in which diversification strategies evolve. The demand-pull or distress-push factors complement this framework by offering a set of motives which prompt member of households to migrate. It shows that benefit do not only arise for demand-pull movers who take up better job opportunities but also occur for distress push migrants, whose incentive to engage even in less remunerative job opportunities is to raise aggregate household income or to maintain the standard of living at the household level (Mollers & Buchenrieder, 2005). The expansion of migration in a region and sources of income are strategies that provide households with more alternatives to raise their living standards and reduce the vulnerability of their livelihoods (Start 2001).

Migration is a livelihood strategy since the ultimate aim is to earn income and assets. Within the sustainable livelihood framework, migration is defined as one of the

possible strategy to reduce poverty, vulnerability, maintaining standard of living of a household. Migration is very diverse area; it is highly lucrative at the top end with mainly formal employment and modern capitalized enterprises, but very menial at the bottom and where unskilled and low paid workers are employed (Start 2001). In accordance with this statement, two directions of migration are distinguished in the discussion on migrants move from relatively less developed region with less job opportunities to developed region with relatively higher job opportunities; the demand-pull and distress-pull directions.

A set of factors determine quality of migration i.e., whether the members of a household are capable of accessing better job opportunities or whether they are forced to migrate to take up employment in poorly paid employment activities to complement or replace insufficient household income. The demand pull factors that determine migration in a region include sufficient access to non-farm activities, appropriate infrastructure (e.g., road density, electricity), education and training services, expansion of service sector, existence of developmental programmes and positive attitude towards working in urban area, etc. On the other hand, push factors that determined migration that include low productivity, unemployment and underemployment, lack of opportunities for educational advancement, natural calamities, poor economic condition etc.

We analyse the process which leads to variation in inter-districts migration across the districts of West Bengal. The factors that affect the inter-districts in-migration process are taken into consideration, namely, population density, urbanisation, general literacy rate, percentage of service sectors workers, percentage of construction workers, percentage of unemployment rate, and agricultural productivity.

The level of education appears to facilitate and enable shift of the workforce from agricultural activity to non-agricultural activity. Education not only improves an individual's qualifications for non-agricultural jobs, but also increases his ability to migrate from one place to another for job search. Education becomes important for high quality and

urban type employment opportunities. Thus the effect of education on the migration decision among the migrants is probably more helpful. To capture the impact of education the variable is specified as the percentage of general literacy rate (LTR).

The proximity to or of a large urban population in the district or region also facilitates migration. Some of the workers of the rural area may engage in non-farm activities in the nearby urban area or move towards other distant urban area to take employment opportunities. The city or town with more urbanisation may provide either marketing opportunities or employment opportunities for migrants form rural area or other areas with relatively less urbanized. To capture the impact of urbanisation the variable is specified as the percentage of urban population to total population in a district or region (URBANS).

Population density (PDEN) is also a developed factor. High population density corresponds with developed districts. It is also positively related with male in-migration. The city or town with more population density may provide either marketing opportunities or employment opportunities for migrants form rural area or other areas with relatively less population density.

Highly urbanized sector creates more service work and a job opportunity arises from service activity. So, the districts or regions with high percentage of service sector workers (SERV) there is more in-migration.

Urbanisation and construction work are inter-related with the development process. When construction work increases (CONS) there is more construction worker needed.

The districts with high unemployment rate (UNEP) and low agricultural productivity (AGLP) imply limited opportunity of employment and livelihood. Therefore, it seems the districts with high rate of unemployment and low productivity have witnessed low in-migration.

3.1.2 The Framework of the Model

District level analysis of inter-relationships between migration and socio-economic variables were done on the basis of above theoretical background. In order to get a preliminary understanding the nature of the relationship between the dependent and independent variables discussed earlier, a correlation coefficient matrix of all variables is constructed. From the estimated values of correlation coefficients it is observed that there is the problem of such multicollinearity we have not run the multiple regression equation. Instead of multiple regression equation we have estimated a set of simple regression equation by taking one independent variable at a time. Accordingly we have five regression equations. Here we have computed the pooled regression equation. In pooled regression equation t = 2 (no. of years i.e., 1991 and 2001) and i = 17 (i.e., number of districts). By performing pooled regression analysis between inter-district migration and the district-level socio-economic variables, for West Bengal (17 districts), specially for male in-migration. Most of such data refer to proportion of 10 major categories of workers to total workers in each district (i.e., workers in cultivation, agricultural labour, livestock, manufacturing, household industry, construction, mining, trade-commerce, transport and services). Besides, other variables are also selected: population density, urbanisation, general literacy rate, percentage of service sectors worker, percentage of construction workers etc. In pooled regression analysis, all such variables emerged in the final results, showed significant statistical results in Table 3.1. Volume of inter-district male in-migration (dependent variable) and set of independent variables or predictor variables was considered separately for each independent variable. That is, determining the extent of volume of in-migration we fit the following seven regression models:

$$VIMIG_{it} = \alpha_1 + \beta_1 CONST_{it} + U_{it}$$

$$VIMIG_{it} = \alpha_2 + \beta_2 PDEN_{it} + U_{it}$$

$$VIMIG_{it} = \alpha_3 + \beta_3 URBANS_{it} + U_{it}$$

59

$$VIMIG_{it} = \alpha_4 + \beta_4 LTR_{it} + U_{it}$$

$$VIMIG_{it} = \alpha_5 + \beta_5 SERV_{it} + U_{it}$$

$$VIMIG_{it} = \alpha_6 + \beta_6 AGLP_{it} + U_{it}$$

$$VIMIG_{it} = \alpha_7 + \beta_7 UNEP_{it} + U_{it}$$

3.1.3 Analysis of the Estimated Results of Pooled Regression Equations

Table 3.1 represents the estimated seven regression equations. Table 3.1 is self-explanatory, all major relationships are summarised in the 'Explanation/Remarks' column. Volume of inter-district male in-migration (VIMIG) in West Bengal is found to be positively related with the above mentioned socio-economic variables and all these relationships are statistically significant. Male in-migration is found to be more where service and construction dimension is high in a district. These findings have substantial implications. The increase employment opportunities in the service and construction sectors in a district have encouraged in-migration from other districts. Two development indicators, namely, urbanisation (URBANS) and Literacy rate (LTR) are also positively influenced to the male migration. Population density (PDEN) is also developed factor. High population density corresponds with developed districts. It is also positively related with male in-migration. Along with the pull factors we have also considered two distress-led or push factors namely, unemployment rate (UNEP) and agricultural productivity (AGLP). They are inversely related with the male in- migration and these relationships are also statistically significant. That is the districts with high unemployment rate and low agricultural productivity imply limited opportunity of employment and livelihood. Therefore, the districts with high rate of unemployment and low productivity have witnessed low in-migration. From these results it implies that more in-migration is caused due to economic development of a district and people migrate from backward to developed districts. So, economic development is the key to the solution of migration problems.

Table 3.1   Summary Results of Pooled (1991 and 2001) Regression Equations for the Determinants of Inter-Districts Male In-migration

Dependent Variables	Independent Variables	Adjusted R-square	Beta	t	Sig. t	Constant (Intercept)	Explanation or Remarks
Volume of Inter-District Male In-Migration **(VIMIG)**	Percentage of Construction Workers (CONST)	0.19	24112.5	2.8	0.007	132.7	More construction workers, more volume of in-migration
	Population Density (PDEN)	0.22	53.4	3.1	0.004	14159.9	More density of population, more in-migration
	Urbanisation (URBANS)	0.30	2596.8	3.7	0.000	10169.5	More urbanization, more volume of in-migration
	Literacy Rate (LTR)	0.21	1897.4	2.6	0.002	-41643	More literacy rate, More volume of in-migration
	Percentage of service worker (SERV)	0.33	27214.0	2.9	0.000	158.3	More service workers, more volume of in-migration
	Agricultural Productivity (AGLP)	0.39	-39.2	2.8	0.002	-11589.3	Low agricultural productivity, low in-migration
	Unemployment rate (UNEP)	0.36	-1245.3	3.1	0.013	2965.4	High unemployment rate, low in-migration

Source: Computed from D- Series, 1991 and 2001; Statistical Abstract, WB, 2001, 2007 and 2014

3.2   Distribution of Migrants by Different Indicators

West Bengal being a multi-region, multi-community and multi-culture state, socio-economic and cultural diversity is prominent within the states, which may have influences pattern and determinants of migration. Do the pattern and socio economic structure of household influences out-migration? Now we try to find out the answer on the basis of NSSO unit level data (2007-08).

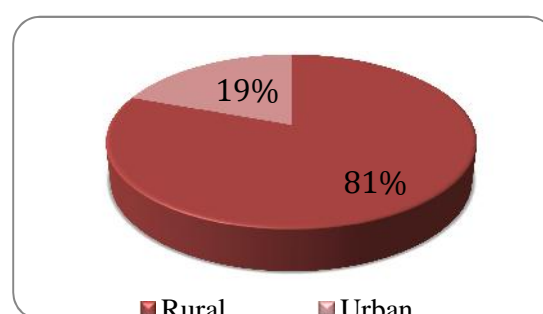- **Sector wise distribution of migration in West Bengal**

When the sectoral distribution (percentage share) of out-migrants in West Bengal are analysed it is observed from the data that the number of out-migrants belong to rural sector comprises the highest percentage (80.64 per cent) and followed by urban sector (19.36 per cent) represented in Table 3.2 and Figure 3.1.

Table 3.2 Distribution of out-migrants by Sector in West Bengal, 2007-08

Sector	No of out-migrants	Percentage share
Rural	7341727	80.64
Urban	1762313	19.36
Total	9104041	100

Source: NSSO, 2007-08

Fig. 3.1 share of out-migrants by Sector in West Bengal, 2007-08

- **Distribution of migrants and *migrant households*[1] by sex affiliation of head of the household head**

When the household is categories in terms of their sex of the household head, about 88.6 per cent of the households are found to be male headed household and about 11.4 per cent of the households are found to be female headed.

Table 3.3   Distribution of *Migrant Households* and Member of Migrants according to Sex Affiliation of Household Head in West Bengal, 2007-08

Household Head	Percentage Share of Households			Percentage share of Migrant HHs to Total HHs			Percentage Share of Migrant Members to Total Population		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Male Headed	65.4	23.2	88.6	18.6	4.9	23.5	7.5	1.8	9.3
Female Headed	8.3	3.1	11.4	4.3	1.2	5.5	1.9	0.5	2.4
Total	**73.7**	**26.3**	**100**	**22.9**	**6.1**	**29.0**	**9.4**	**2.3**	**11.7**

Source: Unit Level Data, NSSO, 2007-08

[1] *The **migrant household** refers to that household of which at least one member was migrated, but the household itself was not migrated.*

The percentage share of migrant households to total households is about 29 per cent (Table 3.3). On the other hand most of the migrant households fall in the category of male headed households (23.5 per cent) and maximum share of migrant households also belong to rural region (18.6 per cent). Again the percentage share of out-migrants to total population of West Bengal is about 11.7 per cent and about only 2.4 per cent migrants is found to be female headed households.

- **Distribution of Migrants in West Bengal at the household level**

Now if we categorise migration behaviour between the relatively less developed districts and developed districts of West Bengal, the average percentage share of out-migrants, about 91 per cent, are found to be migrated from rural area of less developed districts, whereas, the average percentage share of out-migrants, about 72.5 per cent, are found to be migrated from developed districts of rural area (Table 3.4). But the volume of migration from rural area of developed districts is higher than rural area of relatively less developed districts. It is clear from the above fact that out-migration has been largely occurred from rural area of West Bengal and the possible reason behind it is that the rural region cannot generate enough income opportunities from agriculture and allied activities. Among the backward districts, undivided Midnapur district is found to be the highest in terms of out-migrants and this is followed by Maldah and Murshidabad districts.

Table 3.4   Number and Percentage share of Rural and Urban Out-migrants across Districts of West Bengal, 2007-08

	District Name	No of out-migrants		Percentage Share	
		Rural	Urban	Rural	Urban
Less Developed Districts	Bankura	105137	13919	88.3	11.7
	Birbhum	212958	13120	94.2	5.8
	Dakshin Dinajpur	207578	10236	95.3	4.7
	Jalpaiguri	293836	55428	84.1	15.9
	Koch Bihar	236112	8922	96.4	3.6
	Maldah	461896	34868	93.0	7.0
	Midnapur	1295689	130362	90.9	9.1
	Murshidabad	390111	57347	87.2	12.8
	Puruliya	218579	14412	93.8	6.2
	Uttar Dinajpur	229434	20992	91.6	8.4
Total in Less Developed Districts		**3651328**	**359605**	**91.0**	**9.0**
Developed Districts	Bardhhaman	523844	159545	76.7	23.3
	Darjeeling	81618	59599	57.8	42.2
	Howrah	244149	80934	75.1	24.9
	Hoogly	708887	188069	79.0	21.0
	Kolkata	0	319719	0.0	100.0
	Nadia	660183	154180	81.1	18.9
	North 24-Parganas	528463	368790	58.9	41.1
	South 24-Parganas	943256	71873	92.9	7.1
Total in Developed Districts		**3690399**	**1402708**	**72.5**	**27.5**
Grand Total		**7341727**	**1762313**	**80.6**	**19.4**

Source: Unit Level Data, NSSO, 2007-08

Again, Table 3.5 shows the distribution of migrants among the less developed as well as developed districts. Among the less developed districts undivided Midnapur has been found to have larger share of migrants migrating from rural (35.5 per cent) and urban (36.3 per cent) areas and average percentage share of migrants are found to small in case of Bankura district. Among the developed districts the larger percentage share of migrants migrates from the districts such as South 24-Parganas (19.9 per cent), North 24-Parganas (17.6 per cent), Hoogly (17.6 per cent) and Nadia (16 per cent).

Table 3.5   Distribution (Percentage Share) of migrants of Less Developed and Developed Districts of West Bengal, 2007-08

	Districts	Percentage Share		Total Share
		Rural	Urban	
Less Developed Districts	Bankura	2.9	3.9	3.0
	Birbhum	5.8	3.6	5.6
	Dakshin Dinajpur	5.7	2.8	5.4
	Jalpaiguri	8.0	15.4	8.7
	Koch Bihar	6.5	2.5	6.1
	Maldah	12.7	9.7	12.4
	Midnapur	35.5	36.3	35.6
	Murshidabad	10.7	15.9	11.2
	Puruliya	6.0	4.0	5.8
	Uttar Dinajpur	6.3	5.8	6.2
Total in Less Developed Districts		100.0	100.0	**100.0**
Developed Districts	Bardhhaman	14.2	11.4	13.4
	Darjeeling	2.2	4.2	2.8
	Howrah	6.6	5.8	6.4
	Hoogly	19.2	13.4	17.6
	Kolkata	0.0	22.8	6.3
	Nadia	17.9	11.0	16.0
	North 24-Parganas	14.3	26.3	17.6
	South 24-Parganas	25.6	5.1	19.9
Total in Developed Districts		100.0	100.0	**100.0**

Source: Unit Level Data, NSSO, 2007-08

Table 3.6   Number and Percentage share of Migrant Households and Out-migrants by Sectors in West Bengal, 2007-08

Sector	Number of			Percentage Share	
	Households (HHs)	Migrant Households	Out-Migrants	Migrant HHs	Out-migrants
Rural	13433741	4175642	7341727	31.1	80.6
Urban	4791401	1108812	1762313	23.1	19.4
Total	**18225142**	**5284454**	**9104041**	**29.0**	**100.0**

Source: Unit Level Data, NSSO, 2007-08

The total numbers of households in West Bengal were found to be 18225142 and the numbers of migrant households were 5284454 (29 per cent) in 2007-08. Among the migrant

households, 31.1 per cent households are belonging to rural region and 23.1 per cent households are belonging to urban region (Table 3.6).

When the migrants are categorised in terms of their household sizes (member of household), about 51.4 per cent migrants are observed to belong to household size having members 3-5 and followed by 23.9 per cent migrants who fall into the household size 6-9. On the contrary, if we see the distribution of out-migrant households according to household size, 54.4 per cent migrant households fall in the household size 3-5 and 24 per cent households belong to household size 6-9 (Table 3.7).

Table 3.7 **Percentage Share of Out-migrants and Out-migrant Households by the household size in West Bengal, 2007-08**

Household Size (Members)	Out Migrants (Household size wise)			Out-migrant Households		
	Rural	Urban	Total	Rural	Urban	Total
1--2	15.8	5.3	21.1	13.6	5.1	18.6
3--5	41.6	9.7	51.4	43.3	11.1	54.4
6--9	19.8	4.1	23.9	19.5	4.5	24.0
10 and Above	3.4	0.2	3.6	2.7	0.3	3.0
Total	**80.6**	**19.4**	**100.0**	**79.0**	**21.0**	**100.0**

Source: Unit Level Data, NSSO, 2007-08

Table 3.8 **Distribution (*Percentage share*) Migrant Households by the Social Castes in West Bengal, 2007-08**

Social Group	*Percentage Share* of Households to Total HHs			*Percentage share* of Migrant HHs			*Percentage Share* of Migrant HHs to Total HHs		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
ST	6.0	0.6	6.6	5.4	0.4	5.8	1.6	0.1	1.7
SC	22.7	5.2	27.8	23.4	4.1	27.6	6.8	1.2	8.0
OBC	5.2	1.7	6.9	6.0	1.1	7.1	1.7	0.3	2.1
Other	39.9	18.9	58.7	44.2	15.3	59.5	12.8	4.4	17.3
Total	**73.7**	**26.3**	**100.0**	**79.0**	**21.0**	**100.0**	**22.9**	**6.1**	**29.0**

Source: Unit Level Data, NSSO, 2007-08

When the demographic characteristics of migrant households as well as that of migrants are analysed it is observed that migrant households affiliated to general caste category (other

than STs, SCs and OBCs) comprise the highest percentage share (59.5 per cent) followed by scheduled caste (27.6 per cent), other backward class (7.1 per cent) and scheduled tribe (5.8 per cent) categories (Table 3.8 and 3.9). It is also evident that percentage share of migrants to total population belonging to general caste category comprises the larger percentage share (6.9 per cent), followed by SC (3.2 per cent), OBC (0.9 per cent) and ST (0.7 per cent) categories.

Table 3.9   **Distribution (*Percentage Share*) of Migrants by the Social Castes in West Bengal, 2007-08**

Social Group	*Percentage Share* of Population			*Percentage share* of Out-migrants			*Percentage Share* of Migrants to Total Population		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
ST	5.9	0.5	6.3	5.3	0.4	5.6	0.6	0.1	0.7
SC	22.9	4.9	27.7	23.6	3.7	27.3	2.7	0.4	3.2
OBC	5.5	1.5	7.0	6.4	1.0	7.4	0.7	0.1	0.9
Other	42.3	16.6	59.0	45.4	14.2	59.6	5.3	1.7	6.9
Total	**76.5**	**23.5**	**100.0**	**80.6**	**19.4**	**100.0**	**9.4**	**2.3**	**11.7**

Source: Unit Level Data, NSSO, 2007-08

Again when the migrant households and migrants are categorised in terms of their operational land holding size, about 17.3 per cent (Table 3.10 and 3.11) of migrant households are found to be have marginal landholdings.

Table 3.10   **Distribution (*Percentage Share*) of Migrant Households by the Size Class of Land Holding in West Bengal, 2007-08**

Land Holding Pattern (*Code*) [Unit = *Hectare*]	*Distribution* (per cent) of Households			*Distribution* (per cent) of Migrant HHs			*Distribution* (per cent) of Migrant HHs to Total HHs		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
1 (Marginal)	13.9	10.1	24.0	12.1	5.1	17.3	3.5	1.5	5.0
2 (semi-small)	23.2	11.2	34.3	20.4	9.7	30.1	5.9	2.8	8.7
3 (small)	25.7	4.6	30.3	29.1	5.7	34.8	8.4	1.7	10.1
4 (medium)	10.4	0.4	10.8	16.3	0.4	16.7	4.7	0.1	4.8
5 (large)	0.5	0.0	0.6	1.1	0.0	1.1	0.3	0.0	0.3
Total	**73.7**	**26.3**	**100**	**79.0**	**21.0**	**100**	**22.9**	**6.1**	**29.0**

Source: Computed from the NSSO 64th round (2007-08) unit level data
Note: 1 = < 0.005 (Marginal); 2 = 0.005 to 0.01(semi small); 3 = 0.02 to 0.4 (small); 4 = 0.41 to 2 (medium); 5 = > 2 (large) [Unit = *Hectare*]

Table 3.11   Percentage Share of Migrant Households and Out-migrants according to their Landholding Pattern

Category	Distribution (per cent) of Migrant HHs			Distribution (per cent) of Out-Migrants		
	Rural	Urban	Total	Rural	Urban	Total
1 (Marginal)	12.1	5.1	17.3	11.3	4.5	15.8
2 (semi-small)	20.4	9.7	30.1	20.0	9.2	29.2
3 (small)	29.1	5.7	34.8	30.4	5.4	35.8
4 (medium)	16.3	0.4	16.7	17.4	0.3	17.7
5 (large)	1.1	0.0	1.1	1.5	0.0	1.5
Total	**79.0**	**21.0**	**100**	**80.6**	**19.4**	**100**

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

Note: 1 = < 0.005 (Marginal); 2 = 0.005 to 0.01(semi small); 3 = 0.02 to 0.4 (small); 4 = 0.41 to 2 (medium);   5 = > 2 (large) [Unit = Hectare]

On the other hand, most of the migrant households fall in the category of small and semi-small landholdings (65 per cent). So, most of the migrant households have uneconomic size class of land holdings which are insufficient to ensure subsistence level of living.

The educational attainments or backgrounds are also supposed to have an important bearing upon the out-migrants (shown in Table 3.12 and Figure 3.2).

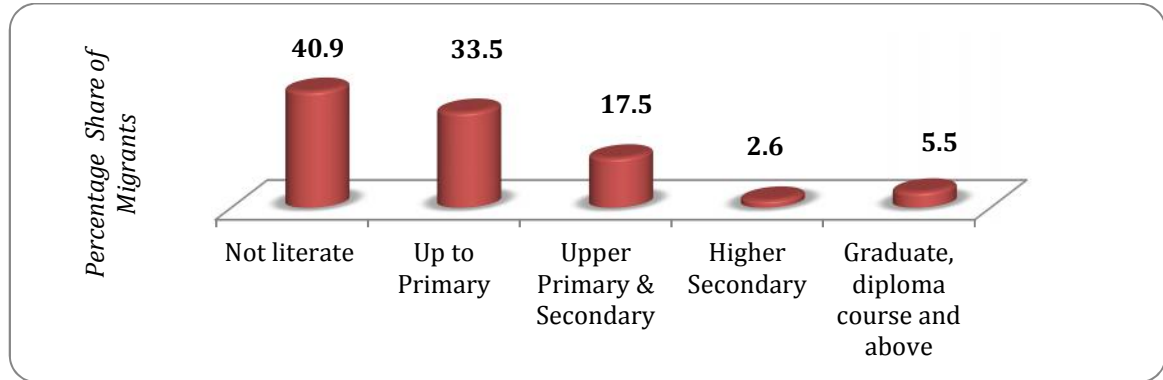**Table 3.12   Distribution of Out-migrants by the Level of Education in West Bengal, 2007-08**

Educational Level	Percentage share		Distribution (per cent) of Out-migrants
	Non Mirant Members	Out-migrant Members	
Not literate	85.1	14.9	40.9
Up to Primary	90.6	9.4	33.5
Upper Primary & Secondary	89.3	10.7	17.5
Higher Secondary	90.9	9.1	2.6
Graduate, diploma and above	86.3	13.7	5.5
Total	**88.4**	**11.6**	**100.0**

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

It has been observed from the NSSO data that most of the out-migrants (75 per cent) had an educational qualification up to primary level. Thus share of migrants belonging to graduate

and above level has been found to be insignificant (5.5 per cent). The share of upper

primary and secondary migrants was also about 17.5 per cent.

Figure 3.2 Distribution out-migrants by the level of education

3.3 **Determinants of Migration by Using NSSO Data at the Households Level**

In West Bengal, the survey covered around 8770 sample households, of which

3856 households (40.9 per cent) are migrated. 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 and migrated households in backward districts become

4020 and 1659 (41.3 per cent) respectively. The empirical evidence obtained from the

regression analysis is discussed in this section. The hypothesis (highlighted in the chapter 1)

is analysed through the regression analysis using NSSO Unit Level data of West Bengal at

the household level.

3.3.1 **The Theoretical Basis of the Determinants of Migration**

Migration decision from any household depends on the different components of the

livelihood framework. For instance, households are differing in terms of size (i.e., members

of the household), dependency ratio, caste affiliation, demographic factors, regional factors

and economic factors (viz., landholding size) etc. The members of household often differ in

terms of education, age, sex and consequently and also differ in term of their opportunity

costs with regard to their agricultural labour contribution or any other employment

opportunities within their peripheral location. In some cases, migration may be a coping strategy in response to low income from agriculture or from any other sources. Most often, however, migration is an adaptive strategy to become capable of managing future income or maintain the standard of living at the household level, regardless of whether the migration is temporary or permanent in nature.

The conceptual basis for empirical research regarding the determinants of migration needs to be complemented through the introduction of a behaviour model. It integrates the manifold and complex factors which determine migration decisions by considering attitudes, norms and behavioural control as the fundamental determinants of behaviour. As a general rule, the more favourable the attitude and subjective norm, and greater the perceived control, stronger should be the person's intension to perform the behaviour in migration decision. Given a sufficient degree of actual control over the behaviour, people are expected to carry out their intentions when the opportunity arises. Intention is thus assumed to be the immediate antecedent of behaviour. Behaviour of interest is always defined in terms of its target, action, context and time (Ajzen 2002). Thus the livelihood strategy by migration is determined by its objectives, namely to increase the household income and / or to reach additional personal or household-related benefits. The action then is the livelihood strategy by migration. Empirical household surveys seeking to explain migration behaviour should incorporate the behaviour model as it provides theoretical backbone (Mollers 2005).

3.3.2 The Framework of the Model

The empirical analysis of determinants of migration at the household level is made on the basis of above theoretical background. Migration decision by the member (s) of households depends on socio-economic factors, demographic features, education level of the households, economic factors and location of the region. The Probit model is called for to analysis the migration determining factors which are binary in nature. The Probit model also represents a sigmoid curve. It corresponds to the Cumulative Density Function

(CDF) of a standard normal distribution. Here P_i is considered as standard normal CDF, which is evaluated as a linear function of explanatory variable(s). Thus, the Probit model is specified as (Bhaumik, 2015)

$$P_i = P(Y_i = 1) = F(\Gamma + \mathrm{s}\, X_i)$$

Here $F(\Gamma + \mathrm{s}\, X_i)$ is the CDF of the standard normal distribution so that

$$P_i = F(\Gamma + \mathrm{s}\, X_i) = \int_{-\infty}^{\Gamma + \mathrm{s}\, X_i} f(Z)dz$$

Where, Z is the standard normal variable and $f(Z)$ is the density faction of $Z \sim N(0,1)$

As in Probit model, the log-likelihood function is

$$\ln L = \sum_{i=1}^{n_1} Y_i \ln P_i + \sum_{i=n_1+1}^{n} (1-Y_i)\ln(1-P_i)$$

$$= \sum_{i=1}^{n_1} Y_i \ln F(\Gamma + \mathrm{s}\, X_i) + \sum_{i=n_1+1}^{n} (1-Y_i)\ln[1-F(\Gamma + \mathrm{s}\, X_i)]$$

Maximizing *log L* with respect to α and β solving, we obtain estimates of unknown parameters.

Computation of Marginal effect of Probit Model

For the Probit model, the marginal effect, i.e., the effect of change in X_i on P_i is computed

as $\quad \dfrac{dP_i}{dX_i} = \dfrac{dP_i}{dZ_i}\cdot\dfrac{dZ_i}{dX_i} = f(Z).\hat{\mathrm{s}}_i = \left(\dfrac{1}{\sqrt{2f}} e^{\left(-\frac{Z^2}{2}\right)} \right).\hat{\mathrm{s}}_i \qquad$ where, $\pi = 3.141$

In this model, the value of $\dfrac{dP_i}{dZ_i}$ is evaluated at the mean value of the explanatory variable(s).

3.3.3 Notation and Specification of the Variables in the Model

The variables or factors that determine whether the member(s) of the household migrated or not (MIGR) are presented in Table 3.14 with their maximum value, minimum value, mean value and standard deviation (SD) (and notation used for the variables).

71

Table 3.13   **Notation, Specification and Descriptive Statistics of Variables Used in Regression Analysis at the Household Level in Probit regression analysis**

Notation	Specification of Variables	*Max*	*Min*	*Mean*	*SD*
	Dependent Variables				
MIGR	Whether the member of the households migrated or not? Yes = 1 , No = 0	1	0	0.44	0.50
	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	.046	0.50
HHSZ	Size of Household	21	1	4.24	2.17
HHAGE	Age of the household head	95	7	47.05	13.66
HHAGESQ	Head Age Squared	9025	49	2400.61	1358.38
CAST_ST	Whether the household belong to ST community or not? Yes = 1, No = 0	1	0	0.06	0.23
CAST_SC	Whether the household belong to SC community or not? Yes = 1, No = 0	1	0	0.26	0.44
CAST_OBC	Whether the household belong to OBC community or not? Yes = 1, No = 0	1	0	0.07	0.25
FHEADHH	Whether the Household head is female or not? Yes = 1, No = 0	1	0	0.15	0.36
LANDMAR	Is the household possessed *Less than .005 hectare (Marginal)* of land or not? Yes = 1 , No = 0	1	0	0.26	0.44
LANDSSM	Is the household possessed between .005 to .01 *hectare (Semi-small)* of land or not? Yes = 1 , No = 0	1	0	0.36	0.48
LANDSM	Is the household possessed *between .02 to .40 hectare (small)* of land or not? Yes = 1 , No = 0	1	0	0.28	0.45
LANDML	Is the household possessed *above .41 hectare (medium and large)* of land or not? Yes = 1 , No = 0	1	0	0.10	0.30
HHSZLANDMAR	Household Size * LANDMAR	15	0	0.92	1.84
HHSZLANDSSM	Household Size * LANDSSM	20	0	1.49	2.33
HHSZLANDSM	Household Size * LANDSM	21	0	1.29	2.36
HHSZLANDML	Household Size * LANDML	20	0	0.54	1.83
EDUILLIT	Have any member of the household illiterate? Yes = 1, No = 0	1	0	0.62	0.49
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

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

To analyse the variation of determining factors of migration across migrant's households a set of independent variables are included in the regression equation. The independent variables include socio-economic factors, demographic features, education

level of the households, economic factors and regional dummy indicators. These variables are treated as *control variables* which determine the migration in the household level.

The *demographic features* are specified by the size of the household (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). They are specified as follows:

▪   Social caste comprises four categories viz., General, OBC, SC, and ST. Here we have considered three dummy variables to incorporate the caste differentials.

CAST_ST, it indicates whether the household belong to scheduled tribe (ST) communities or not. Taking the value '1' if the household belongs to scheduled tribe community or '0' if otherwise.

CAST_SC, it indicates whether the household belong to scheduled caste (SC) communities or not. Taking the value '1' if the household belongs to scheduled caste community or '0' if otherwise and

CAST_OBC, it indicates whether the household belongs to other backward communities (OBC) or not. Taking the value '1' if the household belongs to other backward caste (OBC) community or '0' if otherwise. Upper caste households have better access to physical capital and other avenues of development which help them to migrate and earn more.

▪   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. The decision making power of the head increases with the increase of his/her age which may influence on migration. To find out the effect of age of head we have considered two variables, one is age and other is square of the age.

▪ 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.

▪ Education is an important factor of migration and it also determines the earning potential of the migrant person. The education level is categorized in five groups viz. illiterate, primary, secondary, higher secondary and others. Therefore, we have considered four dummy variables which are specified as follows:

EDUILLT is defined as a dummy variable taking the value '1' if all the members illiterate and '0' if otherwise.

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.

Similarly, EDUSECND is defined as a dummy variable taking the value '1' if the member is secondary level (i.e., from class V to 10th) level of education and '0' if otherwise.

EDUHS is defined as a dummy variable taking the value '1' if the member is higher secondary (12th class) level of education and '0' if otherwise.

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 development status of the district (LDDIST). Here, SECTOR is a dummy variable taking the value '1' if the households are located in rural area otherwise the value is '0'. Similarly, LDDIST is also a dummy variable taking the value '1' if the household is located in less developed districts and '0' if it is not.

• *Economic factors* of the households are represented by the size of landholding (*measured* in hectare). The size of landholding is classified in four classes viz. marginal,

74

semi-small, small and medium & large. The dummy variable of the size class of landholding are specified as follows: Here different land holding classes by sizes of land holding are depicted by different dummy variables:

LANDMAR is defined as a dummy variable taking the value '1' if the households having landholding size below .005 *hectare* (*marginal farmer HH*) or '0' if otherwise.

LANDSSM is defined as a dummy variable taking the value '1' if the households having landholding size varies between 0.005–0.01 *hectare* (*semi small farmer HH*) or '0' if otherwise.

LANDSM is defined as a dummy variable taking the value '1' if the households having landholding size varies between 0.02–0.40 *hectare* (*small farmer HH*) or '0' if otherwise and

Here dummy is used for different land holding classes across the households to identify the class which has a higher tendency of migration to be high. But the results may not tell us the true reflection of migration tendency because the size of the household is not considered in this context. However, the interaction dummy coefficients of landholding classes with household size provide a better explanation. For this purpose we use the variables such as HHSZLANDMAR (Household size x LANDMAR), HHSZLANDSSM (Household size x LANDSSM), HHSZLANDSM (Household size x LANDSM).

3.3.4 Empirical Results of Probit Regression: Determinants of Migration across Households

A probit model is used to estimate the determinants of migration at the household level. Before moving to a discussion on the individual parameter estimates, several general observations are worth noting. The Wald Chi-squared statistic (χ^2), testing the null hypothesis that all the regressors are jointly *zero*, is strongly rejected. The *coefficient* of Probit Regression and its *co-efficient of marginal effects* (ME) are called for to analyse the determinants of migration at the household level (Table 3.14 and 3.15).

Table 3.14   Results of Probit regression for determinants of migration across households in West Bengal

Variable	Coefficient	Robust Standard Error	z	P > z	
SECTOR	0.2592***	0.036	7.170	0.000	
LDDIST	-0.0059	0.031	-0.190	0.850	
HHSZ	-0.0122	0.017	-0.720	0.473	
HHAGE	0.0495***	0.007	6.970	0.000	
HHAGESQ	-0.0002***	0.000	-2.630	0.009	
CASTST	-0.1878***	0.064	-2.940	0.003	
CASTSC	-0.0177	0.034	-0.520	0.605	Wald χ^2 **(19)** = 1248.18
CASTOBC	-0.1091*	0.058	-1.870	0.061	Prob. > χ^2 = 0.000
FHEADHH	0.9303***	0.045	20.700	0.000	Pseudo R^2 = 0.1370
LANDMAR	-0.6167***	0.122	-5.060	0.000	Log pseudo
LANDSSM	-0.1691	0.117	-1.440	0.149	Likelihood = -5191.133
LANDSM	0.0647	0.119	0.550	0.586	n = 8770
HHSZLANDMAR	0.0395**	0.023	1.730	0.044	
HHSZLANDSSM	-0.0360*	0.021	-1.720	0.086	
HHSZLANDSM	-0.0442**	0.021	-2.120	0.034	
EDUILLIT	0.0935***	0.035	2.660	0.008	
EDUPRMY	0.0648**	0.037	1.730	0.043	
EDUSECND	0.0486	0.031	1.550	0.121	
EDUHS	-0.0032	0.046	-0.070	0.945	
_CONS	-2.1399	0.207	-10.330	0.000	

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

Let us start with *positive and significant effects* of household characteristics, demographic and socio-economic factors of households on migration decision. The migration decision is significantly explained by SECTOR, HHAGE, FHEADHH, EDUILLIT, EDUPRMY, and HHSZLANDMR.

The member (s) of households belonging to rural region (SECTOR) is found to be more likely to migrate than those in urban region and this relationship is also significant. Other important determinant of migration is the age of the household head (HHAGE) age squared (HHAGESQ) in terms of both significance level and marginal effects. The probability of migration increases with the increase of age of the head but at a decreasing

rate. Again the households whose families comprise a '*female head*' are more likely to migrate compared to that in case of male headed households. The results signify that female headed households mainly depend on remittance income sent by the migrant member. Apart from this, education level also determines the earning potential of the migrant. Completion of below primary education, which corresponds to a minimal level of literacy and with no education, positively affects the likelihood of migration (with a high level of statistical significance). As the level of education increases, the tendency to migrate comes down as compared to lower level of education. This result reveals that the households having members with lower level of education shows greater possibility of migration and the push factor becomes main driving force of migration.

It is clear from the coefficients that the members of the same household size owning marginal landholdings are more likely to migrate, especially in the case of the marginal farmer households. It could be explained here that migrants are more likely to belong to households with *marginal landholdings* because they have the greatest need for additional income (Hay 1980; Nabi 1984; Singh 1988).

Let us start with *negative and significant effects* of household characteristics, demographic and socio-economic factors of households on migration decision. The migration decision is significantly explained by CASTST, CASTOBC, HHAGESQ, HHSZLANDSSM and HHSZLANDSM.

Usually the household affiliated to any backward community or lower caste indicates low monthly per capita income because of factors such as poor capability in terms of endowments and education. From this view point of caste affiliation, it is seen that members of the Scheduled Tribes (STs), Scheduled Castes (SCs) and Other Backward Castes (OBC) are less likely to migrate as compared to the members of the general castes. We have already stated age of the household head (HHAGE) is positive and highly

significant, and in line of expectation the quadratic term square of the age of household

head (HHAGESQ) is negative and also highly significant.

Table 3.15   Calculation of *Marginal Effects* for Estimated Probit Model across Households in West Bengal

Variable	dy/dx	Delta-method Standard Error	z	P > z	
SECTOR	0.0875***	0.012	7.240	0.000	
LDDIST	-0.0020	0.011	-0.190	0.850	
HHSZ	-0.0041	0.006	-0.720	0.473	
HHAGE	0.0167***	0.002	7.010	0.000	
HHAGESQ	-0.0001***	0.000	-2.630	0.009	Average Marginal
CASTST	-0.0634***	0.022	-2.940	0.003	Effects
CASTSC	-0.0060	0.012	-0.520	0.605	
CASTOBC	-0.0368*	0.020	-1.870	0.061	Model VCE Robust
FHEADHH	0.3140***	0.014	22.670	0.000	
HHSZLANDMAR	0.0133**	0.008	1.730	0.034	No of observations
HHSZLANDSSM	-0.0122*	0.007	-1.720	0.085	= 8770
HHSZLANDSM	-0.0149**	0.007	-2.120	0.034	
EDUILLIT	0.0316***	0.012	2.670	0.008	
EDUPRMY	0.0219**	0.013	1.730	0.043	
EDUSECND	0.0164	0.011	1.550	0.121	
EDUHS	-0.0011	0.016	-0.070	0.945	

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

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