

Effects of Socio-Demographic Factors on Female Migrants: Path Model Approach

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Abstract Migration is a process that occurs between two geographical places of population with high ambition and many objectives. Rural to urban migration is responsible for two-third of the increment of urban population annually in Bangladesh. The purpose of this study is to identify the direct and indirect effects of some selected socio-economic and demographic variables on female migrants. For this study, the data is collected using three-stage sampling technique from Meherpur Sadar Thana under Meherpur district, Bangladesh. To fulfill the objectives, path model analysis was to estimate the direct, indirect and joint contribution of socio-economic and demographic variables on females' decision of migration. It is found that age at first marriage, religion and occupation of respondent have significant direct negative effects while educational qualification of respondent have direct positive effects on female migration.

Keywords Migration, Socio-demographic variables, Female migrants, Path model analysis

1. Introduction

Bangladesh is one of the most densely populated countries in the world. The population of Bangladesh has increased from 42 million in 1941 to 139.25 million in 2011 (BBS, 2003; BBS, 2012) and it is expected to stabilize at around 240 to 250 million by the year from 2025 to 2030 (UNFPA, 1994). The population of Bangladesh is mostly poor and majority of them live in rural areas. The percentage of rural and urban population was 91.2% and 8.8% in 1974, 84.82% and 15.18% in 1981, 80.37% and 19.63% in 1991, 76.9% and 23.1% in 2001, and 80.80% and 19.20% in 2011 respectively (BBS, 2003 and 2012). Currently, the annual increment in urban population is 1.6-1.7 million, which is expected to rise to 1.9 million by the next few years of which two thirds of migration will be due to in-migration from rural areas (NIPORT, 2014). For the better understanding, percentages of population of urban and rural area of Bangladesh due to census years are shown in figure 1.

Migration is a system that occurs between two geographical places of people with many objectives as well as high ambition. Bangladesh is one of the poverty stricken and agrarian based countries in this globe. It rapidly goes through challenging situation due to increasing poverty and landless as well as underemployment and unemployment. In such a situation, a large proportion of population tries to find

overseas employment. In recent times, internal migration more precisely rural to urban migration has created the opportunity of employment status substantially and rigorously. Rural-urban migration differentials have significant role in identifying the nature and strength of the socio-economic and demographic impacts of the population concerned. Nonetheless, both of these categories are preponderantly driven by economic reasons. The decision of migration is also influenced by information and communication. Generally, the differentials migration has been studied mainly by age, sex, marital status, education and occupation. Several studies on migration report that determinants of migration vary from continent to continent, country to country and even within a country, it varies depending on the socio-economic, demographic, health and cultural factors. High unemployment rate, low income, high population growth, unequal distribution of land, demand for higher schooling, prior migration patterns and dissatisfaction with housing have been identified as some of the prominent determinants of rural out migration (Bilsborrow *et al.*, 1987; Nabi, 1992, Sekhar, 1993; Yadava, 1988; and Singh *et al.*, 1981). In a study on the socio-economic conditions of female migrants of Bangladesh, Faruk *et al.* (2007) observed that majority of the migrants had migrated in the age range between 20-34 years and most of them were illiterate, earning no money and consequently they had to depend on their husbands.

The accelerating growth rate of rural-urban migration is almost high among the least developed countries of Asia. In general, people migrate to cities, towns, mega cities and capital cities because they are attracted by livelihood

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opportunities. The propensity of migration is generally influenced by a combination of push-pull factors. Due to scarcity of national level migration related data in Bangladesh, adequate attention to migration aspects has not been given till now. Rahman *et al.* (2007) identified that education, monthly income, type of family and land property had significant effects on migration. In Bangladesh, like other developing countries, the rate of urbanization is extremely high, being consistently over 5% since 1974, and even up to 7% in some years (Islam, 1993).

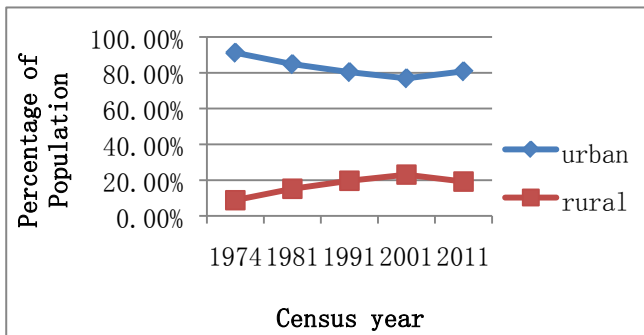


Figure 1. Percentage of population of urban and rural area of Bangladesh due to census years

In low- and middle income- countries like Bangladesh, migration is related to development as well as urbanization and industrialization. Currently, the rate of rural to urban migration is 4.29 per 100 populations (BBS, 2012). Migration contributed about 40% to the urban growth in Bangladesh during 1974-81. The share was probably similar during 1981-91. For some large cities, this share could even be higher, up to 70%, as in the case of Dhaka (UDD-UNCHS-UNDP, 1985). Previously, few studies conducted in Bangladesh for determining the effect of socio-economic and demographic factors on the decision of migration (Islam *et al.*, 2007; Nurulla and Islam, 2008 and 2011; Islam, 2008; Rokib and Islam, 2009 and 2011; Islam and Siddique, 2010a and 2010b; Faruk and Islam, 2010; Islam and Rokib, 2011; Islam *et al.*, 2011; Islam, 2012 and Islam *et al.*, 2013).

It is important to study the socio-economic and demographic characteristics of female migrants in Bangladesh. Therefore, the objective of the present study is to estimate the direct, indirect and joint contributions of socio-economic and demographic factors on female migrants. In this study, we have used path model on migration data for identifying direct, indirect and joint contributions of socio-demographic factors on the migration of female.

2. Sources of Data

To fulfill the aforementioned objectives, data were collected from Meherpur district of Bangladesh. The total population of Meherpur district is 655392 with a population density of 872 per square kilometer. In this study, multistage sampling technique was adopted. Meherpur district was

chosen as 1st stage and then, Meherpur Sadar Thana out of three Thana's of Meherpur district was taken as second stage. Thereafter, seven wards, out of nine wards, of Meherpur Sadar Thana (Meherpur Paurashava) were chosen at the third stage. The total population under Meherpur Paurashava is 43133 of which 21349 are females (BBS, 2012). From each of the selected wards, data were collected from 100 females using interview method, which in total a size of 700. Seven data collectors were recruited and trained for data collection. Data collection took places between 5th January to 27th January, 2008.

3. Methodology

Path model analysis was used as the statistical tool. It was developed by Alwin and Hauser (1975), is a standardized multiple regression analysis in which a chain of relationships among the variables, arranged in an orderly manner, is examined through a series of regression equations. It provides more information than the regression analysis in spite of the fact that it, by and large, uses almost same steps in estimating various coefficients. Alwin and Hauser method requires the following steps. For each endogenous variable in the model, obtain the successive reduced from equation. Firstly, regress the endogenous variables only on the exogenous variables. Then regress the endogenous variables on the exogenous variables and the intervening endogenous variables that come in sequence from cause to effect. While the first reduced form of equation of a particular endogenous variable gives the total effects, the last equation provides the direct effects. Successive deduction of path coefficients from first to second equation, from second to third equation and so on, indicates the indirect effects.

Model specification of female migrants

Table 1. The category of variable used in the path model

Exogenous variables	Age of respondent (X1) Income of respondent (X2) Family member (X3) Type of house (X4) Land property (X5)
Endogenous variables	Age at first marriage (X6) Religion (X7) Educational qualification (X8) Occupation of respondent (X9)
Dependent variable	migration of respondent (X10)

In the path model, the direct and indirect effects of variables are studied. It is not a method for discovering causes, but a method applies to a causal relation on the basis of prior knowledge and theoretical consideration. According to the causal ordering of variables, the set of selected variables are denoted into three groups (exogenous, endogenous and dependent) which are presented in Table 1. The given model is a recursive path model in which each

variable is measured to be dependent upon all prior causal variables. Under additional assumption of linearity and additivity, the system of equations for the model can be written as follows

$$X_6 = P_{61}X_1 + P_{62}X_2 + P_{63}X_3 + P_{64}X_4 + P_{65}X_5 + P_{6u}R_u$$

$$X_7 = P_{71}X_1 + P_{72}X_2 + P_{73}X_3 + P_{74}X_4 + P_{75}X_5 + P_{76}X_6 + P_{7v}R_v$$

$$X_8 = P_{81}X_1 + P_{82}X_2 + P_{83}X_3 + P_{84}X_4 + P_{85}X_5 + P_{86}X_6 + P_{87}X_7 + P_{8w}R_w$$

$$X_9 = P_{91}X_1 + P_{92}X_2 + P_{93}X_3 + P_{94}X_4 + P_{95}X_5 + P_{96}X_6 + P_{97}X_7 + P_{98}X_8 + P_{9x}R_x$$

$$X_{10} = P_{101}X_1 + P_{102}X_2 + P_{103}X_3 + P_{104}X_4 + P_{105}X_5 + P_{106}X_6 + P_{107}X_7 + P_{108}X_8 + P_{109}X_9 + P_{10z}R_z$$

Where, P_{ji} 's are path coefficients from X_i to X_j and R_u , R_v , R_w , R_x and R_z are random disturbance terms. These systems of equations are known as structural equations. These selected variables give the estimates of path coefficients and helps to understand the important relationship between various variables considered in the causal model. All the variables are transformed into normal forms by subtracting the respective means and dividing by the respective standard deviation. The regression coefficients thus obtained are the path coefficients.

4. Results and Discussions

Table 2 presents the results of zero order correlation coefficients of various socio-economic and demographic variable considered in the present study. Path coefficients are shown in figure 2 and the different types of effects are presented in Table 3. Also Table 4 shows their percentage value. In path analysis, path coefficients of direct, indirect and implied effect of the selected explanatory variables are obtained. From Table 2 it is observed that four variables are statistically significant out of ten variables.

In this model, 5 variables, out of 9 variables, are exogenous variables or have indirect effects on migration and 4 variables are endogenous variables or have direct effects on migration. It is also observed that variables [income (X_2), age at first marriage (X_6), educational qualification (X_8), and occupation (X_9)] are found to have significant direct effect on migration and variables [age of respondent (X_1), family member (X_3), type of house (X_4), and land property (X_5)] are found to have insignificant indirect effect on migration.

Total effects of exogenous variables like age of respondent (X_1), family member (X_3), type of house (X_4), and land property (X_5) revealed negative direction. The remaining of the total effects shows positive direction on migration. Total effects of endogenous variables like age at first marriage (X_6), religion (X_7), and occupation (X_9) denote negative direction. The remaining of the total effects shows

positive direction on migration.

Total effect of age of respondent (X_1) on migration is -0.009, of which about 11.02% is transmitted through its implied effect and indirect effect about 31.17% and 6.08% are age at first marriage and occupation respectively in the same direction, about 4.56% and 47.14% are religion and educational qualification in the opposite direction. Total effect of income (X_2) on migration is 0.980, of which about 10.24% is spread through its implied effect and indirect effect about 3.94% is transmitted through religion in the opposite direction then about 3%, 31.01% and 51.78% acts through age at first marriage, educational qualification and occupation respectively under same direction. Implied effects of exogenous variables like as age of respondent (X_1), income (X_2), and type of house (X_4) indicate positive direction.

Negative direction are observed in the direct effects of endogenous variables like age at first marriage (X_6), religion (X_7), and occupation (X_9). Total effect of family member (X_3) on migration is -0.249, of which about 1.20% is acted through its implied effect and about 8.83% is changed through age at first marriage in the opposite direction then about 18.87% works through religion then about 26.9% is transmitted through educational qualification in the opposite direction and about 44.17% is transformed through occupation in the opposite direction. Total effect of type of house (X_4) on migration is -0.702, of which about 8.59% is carried through its implied effect and indirect effect about 19.82%, 11.14% and 49.82% transmitted through age at first marriage, religion and educational qualification respectively in the opposite direction then about 10.61% acts through occupation in the same direction.

Total effect of land property (X_5) on migration is -0.139, of which about 21.55% is diverted through its implied effect and about 31.73% is transferred through age at first marriage in the opposite direction, then about 31.13% acts through religion, thereafter 7.13% is spread through educational qualification in the opposite direction and about 8.83% is converted through occupation in the opposite direction.

5. Conclusions

A well-known multivariate technique named path model analysis suggest that educational qualification of female migrants have direct significant positive effects and age at first marriage have direct negative effects on migration. Because education may provide better employment opportunities outside home and age at first marriage can be raised through providing education. And the tendency of migration flow can be reduced at the increasing of age at first marriage. Thus, suitable strategy should be adopted to increase age at first marriage for under developed and developing countries for reducing their migration flows.

Table 2. Zero order correlation coefficient among selected socio-economic and demographic variables

Variable	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀
X ₁	1.00	0.063	0.489**	-0.161**	0.120**	0.103**	-0.026	-0.036	-0.013	0.001
X ₂		1.00	-0.039	-0.261**	0.012	0.097*	-0.011	0.481**	0.471**	0.066*
X ₃			1.00	-0.174**	0.094*	0.050	-0.035	-0.036	-0.137**	-0.004
X ₄				1.00	-0.124**	-0.237**	-0.094*	-0.632**	0.059	0.012
X ₅					1.00	-0.017	-0.043	0.043	-0.008	-0.036
X ₆						1.00	-0.001	0.219**	0.031	-0.095*
X ₇							1.00	-0.008	-0.018	-0.009
X ₈								1.00	0.082*	0.072*
X ₉									1.00	-0.075*
X ₁₀										1.00

**Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table 3. Analysis of direct and indirect effects on migration through endogenous and exogenous variable

For female migrants										
Dep. Var.	Sel. Var.	Total Association	Total Effect	Non-Causal Effect*	Indirect Effect Via				Other Variables (Implied effect)	Direct Effect
					X ₆	X ₇	X ₈	X ₉		
	X ₁	0.001	-0.009	-0.010	0.082	-0.012	-0.124	0.016	0.029	--
	X ₂	0.006	0.980	0.974	0.032	-0.042	0.330	0.551	0.109	--
	X ₃	-0.004	-0.249	-0.245	-0.022	-0.047	-0.067	-0.110	-0.003	--
	X ₄	0.012	-0.702	-0.714	-0.226	-0.127	-0.568	0.121	0.098	--
X ₁₀	X ₅	-0.036	-0.139	-0.103	-0.053	-0.052	-0.012	0.014	-0.036	--
	X ₆	-0.095	-0.028	0.067	--	-0.024	0.068	0.036		-0.108
	X ₇	-0.009	-0.069	0.060	--	--	-0.063	-0.004	--	-0.002
	X ₈	0.072	0.001	-0.071	--	--	--	-0.118	--	0.119
	X ₉	-0.075	-0.139	-0.064	--	--	--	--	--	-0.139

Table 4. Percentage of the total absolute effect on migration through endogenous and exogenous variables

For female migrants							
Dependent Variable	Selected Variable	Percentage of Indirect Effect Via				Other Variables (Implied effect)	Direct Effect
		X ₆	X ₇	X ₈	X ₉		
	X ₁	31.17	4.56	47.14	6.08	11.02	--
	X ₂	3.00	3.94	31.01	51.78	10.24	--
	X ₃	8.83	18.87	26.90	44.17	1.20	--
X ₁₀	X ₄	19.82	11.14	49.82	10.61	8.59	--
	X ₅	31.73	31.13	7.13	8.83	21.55	--
	X ₆	--	10.18	28.81	15.25	--	45.76
	X ₇	--	--	91.30	5.79	--	2.89
	X ₈	--	--	--	49.78	--	50.21
	X ₉	--	--	--	--	--	100.0

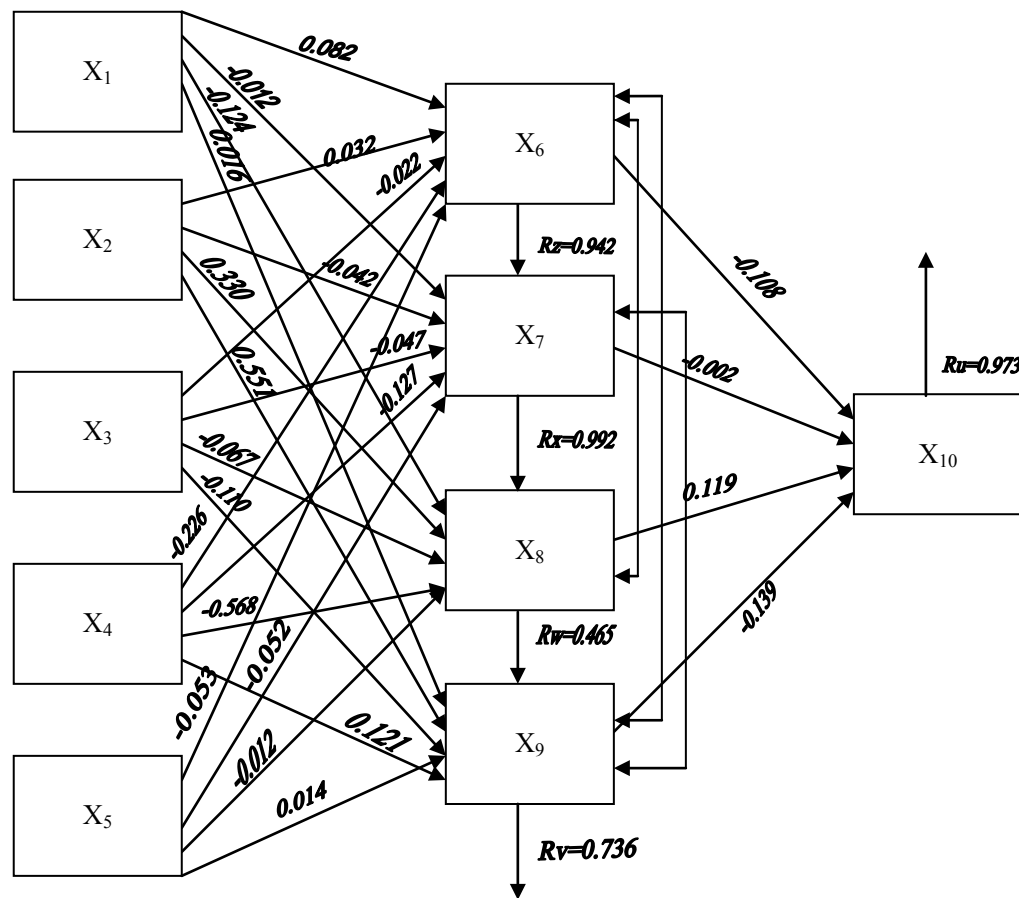


Figure 2. Interrelationship between various socio-economic and demographic variables of the migration

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