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Inter Divisional Migration Flow of Bangladesh

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Abstract

This study uses 2001 and 2011 censuses data to measure the population flow by differencing present place of residence and place of birth with the help of CSPro version 6.0. The aim of this study is to focus on the differentials and determinants of internal migration and to identify the factors influencing internal migration. The empirical study shows that most of the migrants preferred to move in Dhaka. Majority of the migration flow was found from Khulna, Rajshahi, and Rangpur. The reverse flow from Dhaka is found to Sylhet division. The prediction of stability time of migration flows for each division is made using higher transition probability matrix. This study would help in achieving Sustainable Development Goals (SDGs) in relation to internal migration, urbanization, and combat climate change and its impact.

Keywords: Migration, Migration flow, Inter division, Transition probability matrix.

AMS Classification: 92D25.

1. Introduction

Migration is a socioeconomic phenomenon affected by many complex mechanisms involving social, psychological, economic, political, institutional, and other determinants. Migration affects the size, structure and growth of population. Migration also affects the size of the labor force, the distribution of labor force by skill, education, industry, occupation, employment status, savings, investment, and productivity. The population changes depend mainly on three factors: fertility, mortality and migration.

In the process, migration leads to social and psychological effects on both origin and destination. It involves movement from one residence to another. A migrant who travels from an origin to a destination is an immigrant or in-migrant with respect to the area of destination, and an emigrant or out-migrant with respect to the place of origin; in each case researcher tend to use the term for internal migration (Kothari, 2002).

The migrants originate largely from the economically depressed areas of the country (Sarwar and Rahman, 2004). They move on their own, in groups or with siblings in search for job opportunities available in the city or to escape from unemployment and curse of poverty. The poverty argument

in Bangladesh is strong, where many poor and land less migrants are forced to migrate to support themselves or their families (Afsar, 2000).

A study of migration is of key importance in social science, particularly in population studies. The importance emerges not only from the movement of people between places but also from its influence on the lives of individuals and urban growth. Broadly migration is a relocation of residence of various durations and various natures (Wintle, 1992). However, generally, rural-urban movement dominates the domain of research and planning as its role in changing the lives of migrant families both at the place of origin and destination. This study utilizes 2001 and 2011 censuses data to focus on the differentials and determinants of internal migration, and hence identifies the factors influencing internal migration. The differentials limit to (1) selectivity of migrants, that is, what kind of persons tending to be disproportionately selected for migration in relation to age, marital status, education, and occupation of the migrants; (2) destination of migrants and (3) factors influencing internal migration.

2. Inter-divisional migration

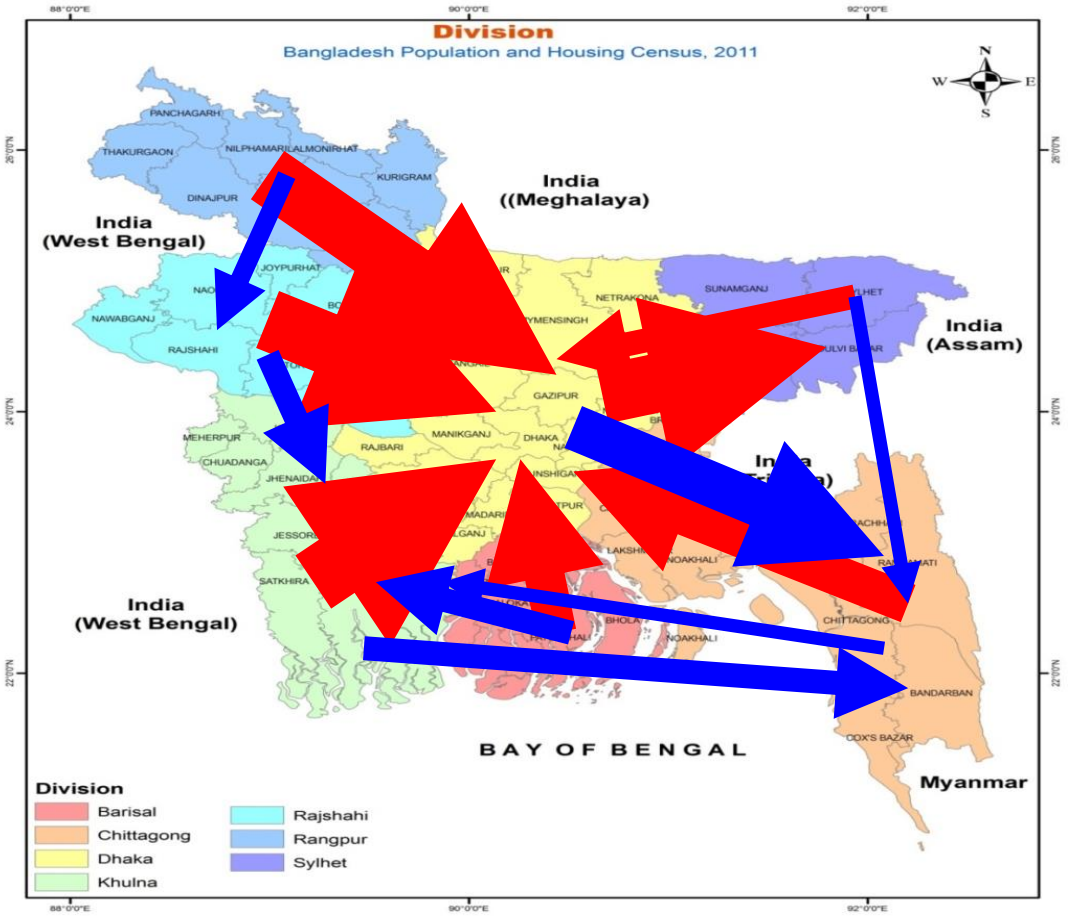
Bivariate distribution of birth place and current residence of lifetime migrants by division is presented in Table 1 and Map 1. First row of the table indicates that 7.62% of the total population of Bangladesh born in Barisal out of which 3.24 percent migrated to other divisions (largest 1.62% in Dhaka and second largest 1.09% in Khulna division). First column represents that 5.85% live in Barisal division of which 1.46% migrated in Barisal from other six divisions (0.67% from Khulna and 0.44% Dhaka division).

Table 1: Bivariate distribution of birth place and current residence of lifetime migrants by division, 2011.

Birth division	**Current (enumeration) division**							**Total**
	Barisal	**Chittagong**	**Dhaka**	**Khulna**	**Rajshahi**	**Rangpur**	**Sylhet**	
Barisal	**4.39**	0.48	1.62	1.09	0.03	0.00	0.02	**7.62**
Chittagong	0.12	**4.25**	1.95	0.55	0.09	0.07	0.27	**7.30**
Dhaka	0.44	2.27	**22.24**	0.82	0.92	1.34	3.20	**31.24**
Khulna	0.67	1.12	5.08	**12.96**	0.93	0.29	0.22	**21.27**
Rajshahi	0.12	0.46	3.59	1.12	**9.40**	0.82	0.26	**15.76**
Rangpur	0.04	0.76	3.13	0.17	0.79	**4.08**	0.20	**9.17**
Sylhet	0.07	0.64	1.07	0.05	0.03	0.04	**5.75**	**7.65**
Total	**5.85**	**9.98**	**38.66**	**16.75**	**12.18**	**6.63**	**9.94**	**100.00**

In Dhaka division out-migration is 9.0% and in-migration is 16.42%. In Chittagong, Dhaka and Sylhet divisions in-migration is more than out-migration which results rapid population growth. On the other hand, the remaining four divisions out-migration is more than in-migration results decrease of population growth. The highlighted figures in the diagonal cells of the table give the percentage of non- migrants for each division.

Divisional internal migration flow is presented in Map 1. Thick arrow indicates enormous number of migration flow and thin arrow indicates minor number of migration flow. For example arrow-1 indicates that enormous migration took place from Khulna to Dhaka and arrows-2 indicates migration flow from Dhaka to Sylhet.



Map 1: Inter-divisional migration flow

Table 2: Bivariate distribution of birth place and current residence by division, 2011 (migration less than 5 years).

Birth division	Current division							Total
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet	
Barisal	3.91	0.30	1.93	0.77	0.04	0.00	0.05	7.01
Chittagong	0.13	3.84	2.39	0.27	0.05	0.06	0.21	6.96
Dhaka	0.43	1.78	25.80	0.90	0.85	0.40	2.93	33.09
Khulna	0.80	1.57	6.00	9.27	1.05	0.29	0.18	19.15
Rajshahi	0.19	0.46	5.37	1.06	8.17	0.63	0.43	16.32
Rangpur	0.03	0.48	5.04	0.31	0.89	3.12	0.38	10.25
Sylhet	0.08	0.49	1.43	0.08	0.04	0.04	5.05	7.22
Total	5.55	8.94	47.96	12.66	11.10	4.55	9.24	100.00

First column represents that 5.55% live in Barisal division of which in migration is 1.64% from other six divisions (0.80% from Khulna and 0.43 percent from Dhaka division). In Dhaka division out-migration is 7.30% and in migration is 22.17%. In Chittagong, Dhaka and Sylhet division in-migration is more than out-migration which results rapid population growth. On the other hand, in the remaining four divisions out-migration is more than in-migration results decrease of population growth. The highlighted figures in the main diagonal cells of the table give the percentage of non-migrants for each division.

Table 3: Distribution of in-migration by division, 2011 (migration less than 5 years)

Birth division	**Current (enumeration) division**						
	Barisal	**Chittagong**	**Dhaka**	**Khulna**	**Rajshahi**	**Rangpur**	**Sylhet**
Barisal	70.37	3.40	4.03	6.07	0.40	0.00	0.58
Chittagong	2.25	43.00	4.98	2.12	0.48	1.38	2.32
Dhaka	7.73	19.90	53.78	7.13	7.66	8.84	31.75
Khulna	14.33	17.60	12.51	73.23	9.43	6.29	1.94
Rajshahi	3.38	5.20	11.20	8.33	73.65	13.95	4.65
Rangpur	0.48	5.40	10.51	2.47	7.98	68.57	4.07
Sylhet	1.45	5.50	2.98	0.64	0.40	0.98	54.70
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Percentage distribution of in-migration by division: Distribution of in-migrants by division is presented in Table 5. First column of the table indicates that 70.37% people of Barisal division is native born and the remaining people migrated from other divisions (14.03% from Khulna and 7.73% from Dhaka). Third column of the table indicates that 53.78% people of Dhaka native born and the remaining people migrated from other divisions (12.51% from Khulna, 11.20% from Rajshahi, 10.51% from Rangpur and 4.98% from Chittagong). In-migration of Chittagong division is maximum and minimum in Rajshahi division and the proportion of non-migrants was more than 50.0% in the remaining divisions.

3. Transition probability matrix: Lifetime migrants

Table 4: Transition probability matrix for lifetime migration

	Barisal	**Chittagong**	**Dhaka**	**Khulna**	**Rajshahi**	**Rangpur**	**Sylhet**
Barisal	0.577	0.062	0.210	0.143	0.003	0.000	0.003
Chittagong	0.017	0.583	0.270	0.075	0.013	0.009	0.037
Dhaka	0.014	0.073	0.710	0.026	0.030	0.043	0.103
Khulna	0.031	0.053	0.240	0.609	0.044	0.013	0.011
Rajshahi	0.007	0.029	0.230	0.071	0.596	0.052	0.016
Rangpur	0.004	0.083	0.340	0.019	0.086	0.445	0.022
Sylhet	0.010	0.084	0.140	0.006	0.003	0.005	0.752

Table 4 is the one step transition probability matrix of migration where migration took place more than five years ago. First row represents the probabilities of migration from Barisal division to other divisions (to Dhaka 0.210, Khulna 0.143 and Chittagong 0.062). First column represents the probabilities of migration to Barisal division from other divisions (from Khulna 0.031, Chittagong

0.017). Probabilities of migration to Dhaka division from all other divisions are much higher compare to any other divisions (from Rangpur 0.340, Chittagong 0.270, Khulna 0.240). Principal diagonal elements are the probabilities of no-migrants of respective divisions.

Table 5: Transition probability matrix of migration: less than 5 years

	Barisal	**Chittagong**	**Dhaka**	**Khulna**	**Rajshahi**	**Rangpur**	**Sylhet**
Barisal	0.5574	0.0430	0.2800	0.1100	0.0064	0.0000	0.0077
Chittagong	0.0180	0.5530	0.3400	0.0390	0.0077	0.0090	0.0308
Dhaka	0.0130	0.0540	0.7800	0.0270	0.0257	0.0122	0.0886
Khulna	0.0415	0.0820	0.3100	0.4840	0.0546	0.0149	0.0093
Rajshahi	0.0115	0.0280	0.3300	0.0650	0.5008	0.0389	0.0263
Rangpur	0.0026	0.0470	0.4900	0.0310	0.0864	0.3045	0.0366
Sylhet	0.0111	0.0680	0.2000	0.0110	0.0062	0.0062	0.6993

Table 5 is 1-step transition probability matrix where migration took place within last five years. First row represents the probabilities of migration from Barisal division to other divisions (to Dhaka 0.28, Khulna 0.11 and Chittagong 0.043). First column represents the probabilities of migration to Barisal division from other divisions (from Khulna 0.0415, Chittagong 0.018). Probabilities of migration to Dhaka division from all other divisions are much higher compare to any other divisions (from Rangpur 0.49, Chittagong 0.34, Rajshahi 0.33). Principal diagonal elements are the probabilities of no-migrants of respective divisions.

Table 6: 15-step transition probability matrix of migration: less than 5 years

	Barisal	**Chittagong**	**Dhaka**	**Khulna**	**Rajshahi**	**Rangpur**	**Sylhet**
Barisal	0.0320	0.1100	0.5600	0.0550	0.0420	0.0160	0.1800
Chittagong	0.0320	0.1100	0.5600	0.0550	0.0420	0.0160	0.1800
Dhaka	0.0320	0.1100	0.5600	0.0550	0.0420	0.0160	0.1800
Khulna	0.0320	0.1100	0.5600	0.0550	0.0420	0.0160	0.1800
Rajshahi	0.0320	0.1100	0.5600	0.0550	0.0420	0.0160	0.1800
Rangpur	0.0320	0.1100	0.5600	0.0550	0.0420	0.0160	0.1800
Sylhet	0.0320	0.1100	0.5600	0.0550	0.0420	0.0160	0.1800

If we multiply the transition matrix by itself and continue the multiplication, we will get 2-step, 3-step, …, n-step transition matrices. 1-step to 15-step transition matrices are given in Appendix. The matrix, whose rows become identical, is called as the equilibrium matrix. It indicates that the probabilities of migration to a particular division from all other divisions are same and these probabilities will remain constant for next occurrence of migration. The 15-step transition matrix is

given in Table 6. From this table it is evident that after 75 (15×5) years, probabilities of migration to Dhaka from any other division will reach 0.56 which is more than the total probabilities of all other division.

4. Conclusion

The paper provides a basic scenario of inter division population moving pattern and distribution of Bangladesh. Most of the migrants live in Dhaka division, 52.8% in 2001 and 38.7% in 2011. After Dhaka, number of migrants is higher in Khulna, Rajshahi and Chittagong divisions respectively. Proportion of migration decreases from 2001 to 2011 in Dhaka and Chittagong divisions while it increases in other divisions. Migration flow is the minimum in Barisal division. The higher transition probability matrix shows that the stability occurs in 15-step which means that after 75 (15×5) years, probabilities of migration to Dhaka from any other division will reach 0.56 which is more than the total probabilities of all other divisions.

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