

An Analysis of International Labour Migration with Gravity Model between India and other Asian Countries

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ABSTRACT

Migration has always been a significant phenomenon across South Asia. The historic ties that link the various populations across the region, accentuated by the modern day dynamics of migration has given rise to multiple forms of population movement ranging from voluntary to involuntary, internal to external, long-term to temporary. This paper examines the flow of international labour migration to Asian countries and this study is based on secondary data. Secondary data has been collected from different sources for selected years 1990, 2000, 2010 and 2103. GDP per capita (US\$), population data taken from the World Bank's World Development Indicators (WDI). The UNCTAD's dataset provides the nominal exchange rates in US\$ of source and destination countries. Distance between capital cities (in km) data collected from the CEPII's database. The data on religion was obtained from the World Religion Map. Official language data of the sample countries were collected from the Central Intelligence Agency's (CIA) the World Fact Book. The study found that over the years, emigration from India to other Asian countries is on the increase and immigration to India is decreasing. Another finding of the study is there is gender discriminatory trend in the labour migration among Asian countries. There are many reasons for this trend and some are; political instability in some of the neighbouring countries, religion

discrimination in receiving countries and migration policies of the receiving countries. Gender discriminatory trend in the immigration to India from Asian countries is much less compared to emigration from India.

Many push and pull factors are playing a significant role in emigration and immigration. This study applies the gravity model as the empirical tool to ascertain the determinants of emigration and immigration decision from and to India. Both emigration and immigration model includes nine variables. In this gravity model for immigration to India, except GDP of the destination country, remaining variables like population of the destination and origin country, exchange rate of origin and destination countries, religion, block and distance are significant. IN the Gravity model for emigration from India to other Asian countries, population of the destination countries, GDP per capita of the destination countries, exchange rate of destination countries, distance between origin and destination countries, religion of the destination countries and block are significant.. These are some of the determinants of the international migration. Remittance is one of the important sources for many Asian countries including India which receives 4 % of GDP per capita from the international remittance. Migration is very useful for resource mobilization to developing and under developed countries. Another advantage of migration is reducing unemployment rate, exchange of skills etc. Migration is one of the powerful tools in the development process.

Key words: *Immigration, emigration, migrant.*

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INTRODUCTION

In recent years, international migration has been receiving major attention of policy makers both at national and international levels. Responding to the rapidly transforming globalizing world, the nature, type, volume and direction of flows of international migrants have also marked significant changes. All these have thrown new challenges to the stakeholders, migrants themselves, the source, destination and transit communities and countries; and the civil society institutions including the trade unions.

It is true that globalization process has both been a cause and an effect of exponential growth in productive capacities and led to a more integrated and interdependent world. It is also equally true that the process has led to uneven growth and distribution. While the globalization process has facilitated movements of capital, goods, services and information in a significant way, movement of labour, a factor over which many developing countries of the South enjoy comparative advantage, continues to remain highly restricted. There has also been a growing appreciation of economic, social and cultural impacts of international migration. While migration has increasingly become a livelihood option for many, there has also been an increased recognition that appropriate policy measures are to be in place to reduce the negative consequences and increase the gains from migration.

Migration has always been a significant phenomenon across South Asia. The historic ties that link the various populations across the region, accentuated by the modern day dynamics of migration has given

rise to multiple forms of population movement ranging from voluntary to involuntary, internal to external, long-term to temporary. The varied nature of migration is also marked by movement within the national boundaries, within the region and across the region to other parts of the world. In today's globalized world, shifting trends and patterns have made migration management in South Asia a complex and difficult endeavor.

South Asia features prominently in the dynamics of migration in Asia. During the past half a century, after the emergence of independent States in South Asia in 1947, about 30 million people have moved from one part to another to either avoid persecution or meet basic needs. Asia's Migrant stock stands at 49.7 million migrants, which is the second highest in the world after Europe. Out of the top 10 countries of emigration three are from South Asia; Afghanistan, Bangladesh (4.1 million each) and Sri Lanka (1.5 million). The migrants from Bangladesh and Sri Lanka are mainly labour migrants while Afghanistan's outflow has in a large measure been due to the war. India and Pakistan are the sixth and tenth top countries hosting the largest number of migrants. It could be said that migration to India is particularly for economic reasons while migration to Pakistan is primarily because of the displacement from Afghanistan. This snapshot analysis highlights the complex dynamics and varied nature of migration in the region.

Research gap

After reviewing the literature of Asian labour migration with reference to India, studies are done on the different dimensions of labour migration in Asian countries. Some of the studies are concentrated on Asian labour migration to middle east countries and gulf countries (Fred Arnold et al 1984, rashid Amjad 1990), some on labour migration within Asia, internal labour migration between different Asian countries, skilled

Madhu G R , Uma H R

migration from India to European countries (Divya Satija and Arpitha Mukarje 2013), Indian nurses migration from Kerala to middle east and different countries (Marie Percot,2007), Labor Migration in Asia(Philip L. Martin 1991), Employment, Wages and Working Conditions of Indian migrants workers in UAE (K.C.Zachariah et al.2004), globalization effect in Asian countries international labour migration, etc,. Hardly any study is done exclusively on India's emigration and immigration to other Asian countries.

Therefore this study concentrates on Indian emigration and immigration to Asian and other countries.

Objectives of the study

To analyse the international labour migration trends between India and other Asian countries

METHODOLOGY

The study is based on secondary data, and the secondary data has been collected from World Bank databank, UN population division (economic and social affairs), International Monetary Fund, journals, etc.

Panel data of emigration from India to Asian countries and immigration to India from Asian countries, from the selected year 1990, 2000, 2010 and 2013 has been considered. Data was taken from World Bank's World Development Indicators (WDI) like GDP per capita population. The UNCTAD's dataset provides the nominal exchange rates in US\$ of source and destination countries. Distance between capital cities (in km) was collected from the CEPII's database. The data on religion was obtained from the World Religion Map.

DATA ANALYSIS

TABLE-1

Male and Female Emigration to Asian Countries from India
1990 -2010

Year	Total	Male	% of male emigration	Female	%of female emigration
1990	5471415	32,71,374	59.79	22,00,195	40.21
2000	5836080	35,93,289	61.57	22,42,791	38.43
2010	9376305	63,18,585	67.39	30,57,720	32.61
2013	9886328	67,11,246	67.88	31,75,082	32.12

Source: UN population division, department of economic and social affairs

Above table shows the total, male and female emigration to Asian countries form India in the year of 1990 -2010. Emigration from India to other Asian countries has shown an increasing trend from one year to another. Emigration of male is 32,71,374 in 1990 , and has increased to 63,18,585 in 2010 and to 67,11,246 in 2013. Female emigration is 22,00,195 in 1990, and it has increases to 30,42,791, in 2010 and to 31,75,082 in 2013. Both male and female emigration has increased over year. There is a visible gender discriminatory trend in emigration to other Asian countries from India. Compared to male, female emigration is less. In 1990, female emigration was 40.21% percent, but reduced to 38.43% in 2000. It decreases to 32.12 % in 2013. Emigration of female to other Asian countries is increasing in numbers, but decreasing in percentage compared to male emigration. Some of the reasons for the decrease in female emigration to other countries like Afghanistan, Iran, Gaza, etc. are war, religion, political uncertainties and cultural differences. Restrictive migration polices for women are some of the hurdles decreasing women labour migration to Asian countries.

TABLE-2

Immigration of Male And Female to India from Asian Countries
1990, 2000, 2010 And 2013

Year	Total	Male	% of male emigration	Female	%of female emigration
1990	73,09,485	38,25,697	52.34	34,83,788	47.66
2000	62,62,338	32,32,242	51.61	30,30,096	48.39
2010	53,09,734	27,27,687	51.37	25,82,047	48.63
2013	52,14,474	26,77,231	51.34	25,37,243	48.66

Source: UN population division, department of economic and social affairs.

Above table shows the immigration of labour from Asian countries to India in the year 1990, 2000, 2010 and 2013. Immigration from Asia to India is showing a trend., In 1990 total immigration was 73.09,485 and it declined to 62,62,338 in 2000, again it reduced to 52,14,447 in 2013. Male Immigration to India was 38, 25,697 in 1990, it decreased to 32,32,242 in 2000 and 26,77,231 in 2013. Female immigration to India from other Asian countries has shown a positive trend over the years .It was 34,83,788 in 1990 and decreases to 25,37,243 in 2013. Ratio of male was 52.34 in 1990, and decreased to 51.34 in 2013. And female percentage of immigration to India from other Asian countries was 47.66% in 1990 and slightly increased to 48.66 % in 2013. One of the reasons for decrease in immigration to India is the huge labour force in India. India has the second highest population in the world, thus discouraging Asian immigrants. Other reasons are restrictive migration policy with strict border security preventing illegal migrants, visa polices and unemployment rate. Good employment opportunities in Middle East attract the Asian migrants and most of the Asian countries have larger per capita income than India.

An analysis of Determinants of emigration from India and immigration to India from other Asian countries with gravity model

This study applies the gravity model as the empirical tool to ascertain the determinants of emigration and immigration decision. The gravity model has been well-proved as a robust ex-post methodology to model international trade and investment. Along with numerous applications of the gravity model in empirical studies of international economics, authors including Anderson (1979); Bergstrand (1985, 1989, 1990); Deardorff (1998); Evenett and Keller (2002); Feenstra et al. (2001); and Helpman (1987) provided theoretical justification for the model. However, migration studies relying on the gravity model are fewer than those in the fields of trade and investment. Among others, Emmanuel et al. (2009); Karemera et al. (2000); and Lewer and Berg (2008) applied this model to analyse various facets of international labor migration. Some of these studies presented empirical Estimates of factors influencing international migration while others examined the linkage between migration and development. Using different empirical settings, determinants of international migration has also been studied by Clark et al. (2007), Mayda (2007), and Pedersen (2004). In particular, Karemera et al. (2000) applied a modified gravity model by incorporating political variables to investigate the factors influencing migration flows to North America. This study reported that demographic condition of the source country, civil and political rights of people at home, and income of the destination country were important determinants of migration flows to Canada and the USA. In the context of OECD countries, Lewer and Berg (2008) developed a gravity model of immigration and justified that immigration responds in a similar fashion of gravitational forces and Distance.

Economic theory suggests that migration is determined by a set of

push and pull factors that are related to the source and destination country, respectively. The key push factor is income or wage difference between the sending and receiving country. Borjas (1987) found that migration flows was negatively related to origin-country income per capita. A study by Karemera et al. (2000) showed that source country income was negatively related to US migration but not in the case of migration to Canada. Another essential gravity factor for immigration is the population or size of labor market in the home and host country. Furthermore, international labor flows are restrained by migration cost that can be captured by geographic distance between source and destination country. Thus, the basic gravity model of migration is analogous to the specification of Tinbergen's gravity model of trade (Tinbergen, 1962).

Equation 1 sets the basic gravity model with panel data.

$$1. M_{ijt} = \beta_0 + \beta_1 (S_{ijt}) + \beta_2 (N_i N_j) + \beta_3 \text{dist}_{ij} + \epsilon_{ijt}$$

where, M_{ijt} represents migration from country i to country j at time t ; S_{ijt} indicates GDP per capita of destination country relative to source country; N_i (N_j) stands for population of the source country i (destination country j); dist_{ij} is the distance (in km) between source and destination country; and ϵ_{ijt} is the normally distributed error term. The primary economic consideration for migration decision is income differences between home and host country. According to the labor market theory of immigration, a higher per capita income at home reduces propensity to emigrate while a higher per capita income of recipient country induces immigration. Under this consideration, β_1 should have a positive effect on emigration decision. Population is the measure of labour market size in a country. The larger the size of labour pools in the source country, the higher the rate of emigration. Lewer and Berg (2008) argued that the larger the population in the destination

country, the larger the labour market for immigrants. Hence, β_2 is expected to have a positive sign. Geographic distance between host and home country is inversely related to emigration decision and therefore, β_3 should have a negative sign.

The benchmark gravity equation 1 could be extended to include some historical and cultural factors that either ‘facilitate’ or ‘inhibit’ emigration. In addition to the variables found in previous studies on international migration, the present research incorporates two new factors: bilateral real exchange rates and commonality in religion between source and destination country. Thus, this study applies the specification 2 of the gravity model to ascertain the determinants of emigration from Bangladesh.

$$2. \quad IM_{ijt} = \beta_0 + \beta_1 S_{ijt} + \beta_2 N_{it} N_{jt} + \beta_3 dist_{ij} + \beta_4 Ex_{ijt} + \beta_5 rel_{ijt} + \beta_6 block_{jt} + \beta_{ijt}$$

$$3. \quad EM_{ijt} = \beta_0 + \beta_1 S_{ijt} + \beta_2 N_{it} N_{jt} + \beta_3 dist_{ij} + \beta_4 Ex_{ijt} + \beta_5 rel_{ijt} + \beta_6 block_{jt} + \epsilon_{ijt}$$

Equation 2 and 3 adds four additional variables to equation 1. Ex_{ijt} indicates real exchange Rates between source and destination countries at time t which were calculated following Montenegro and Soloaga (2006). Bilateral exchange rates indicate the value of one unit of the source country’s currency against one unit of a destination country’s currency. A rise (fall) in the bilateral exchange rate indicates depreciation (appreciation) of the source Country’s currency. Depreciation of domestic currency increases emigrants’ monetary outlay due to increase in job contract fee, transportation cost, and other agency fees. As a consequence of higher initial investment requirement, currency depreciation might negatively affect propensity to emigrate. Secondly, depreciation of local currency results in higher streams of income from remittances that can cause higher rate of emigration. Thus, the sign of

β_5 can be either positive or negative. The variable *relgij* is a dummy variable. In this case, the dummy variable takes the value 0 for Muslim, 1 for Christian, 2 for Buddhist, 3 otherwise. Although commonality in religion is a key component of cultural similarity between two countries, no previous study has examined its possible effect on immigration. Since India is predominantly a secular country, the usual prediction is that its people would be motivated to immigrate to other same religion countries which they belong to. In order to explore the role of history on migration. It is expected to β_6 is negative influence on emigration and immigration, block is the dummy variable, countries belongs to SAARC take value 0, otherwise 1 for all other Asian countries.

Data and Empirical Results

For purpose of analysis, we selected the countries on the basis of amount of migration to India and migration from India to the Asian countries , 35 emigration countries consider to analyze the determinants of emigration from India and 22 countries consider for analyze the determinants of immigration to India. Find out the natural log value to all collected datasets. The study first estimated the panel model with time gap by using fixed effect and random effect methodology, but the results of these models are not robust as most variables are insignificant and do not have expected signs. One of the reasons for this is presence of hetroskedasticity and autocorrelation by using feasible generalized least square (FGLS) methodology for this STATA 10 version is used.

Immigration results

The influence of the population in origin country is positive influence with the co efficient value of .548, which implies that if population in the origin country India is increased by 1000, then .54% out of this is the

Table-3
Co efficient Analysis

Variables	Co efficient	Std Error	Z	P> z
Population origin	.5487674	.0894536	6.13	0.000
Population destination	-22.85221	12.41479	-1.84	0.066
GDP origin	.4621071	.115811	3.99	0.000
GDP destination	2.036093	1.481291	1.37	0.169
Exchange rate origin	-.1348819	.0421533	-3.20	0.001
Exchange rate destination	4.835075	2.215248	2.18	0.029
Distance	-.0015111	.000158	-9.56	0.000
Religion	.5350079	.1632113	3.28	0.001
Block	-1.303559	.3405137	-3.83	0.000
cons	291.6985	154.4882	1.89	0.059

No of observations: 88, cross sections: 22, periods: 4

Wald chi square = 1601.88

Probability =0.000

contribution of immigration, In the same way if the destination countries experience an increase in its population by 1000 then it can be interpreted that immigration to India has declined by 22.85. Population at destination is the negative influence with the co efficient value of the -22.85, which implies that if population increase by one thousand in destination countries immigration to India has expected to decrease by -22.85% and these values are significant at 10% level. The larger the size of labor pool in the source country, the higher the rate of emigration. Lower and Berg (2008) argued that the larger the population in the destination country, the larger the labor market for immigrants.

The GDP of origin country is having positive influence with the co efficient value of .46, which implies that if GDP per capita increases by

one \$US million in origin countries immigration to India is expected to increase by .46% level and this value is statistically significant at 1% level . GDP of destination country is positive influence with the co efficient value of 2.03, which implies that if GDP of destination country increases by one \$US millions destination countries immigration to India increase by 2.03% and this is statistically significant at 10% level also.

The exchange rate of origin countries is having negative influence with co efficient value of -.34 , which implies that if the exchange rate of the origin country increase one \$US in origin country immigration to India was expected to decrease by -.34% level and this is statistically significant at 5% level . Exchange rate of destination countries is having positive influence with the effect of 4.8, which implies that one \$ US increase in the exchange rate of destination country immigration to India decreases by 4.8% and it is statistically significant at 5% level.

The influence of the Distance between origin and destination countries is having negative influence with the co efficient value of -.005, which implies that if distance increases by one kilometer between origin to destination country, immigration to India is expected to decrease -.005 % and this value is statistically significant at 1% level. Geographic distance between host and home country is inversely related to emigration decision and therefore, should have a negative sign.

Religion is one of the most influencing factors on immigration. Influence of religion has positive influence with the co efficient value of .53, which implies that if religion of the destination is same with the origin country, religion or migrant's religion is expected to increase immigration to India by 53%. This value is statistically significant at 1% level. The influence of language in origin country also has positive influence with the co efficient value of 1.34, which implies that if language is same in destination country, it increases immigration by 1.34 % and it is statistically significant

at 5% level. Migrants usually prefer countries with the language they know for better communication. The block having negative influence with the coefficient value of -1.3, implies that blocks different from the origin to destination countries are expected to decrease the emigration from India at -1.3% . And this result is statistically significant at 1% level.

Determinants of Emigration

TABLE-4
Determinants of Emigration

Variables	Co efficient	Std Error	Z	P> z
Population origin	-8.560692	19.98107	-0.43	0.668
Population destination	.4306725	.0642873	6.70	0.000
GDP origin	.6074611	2.403996	0.25	0.801
GDP destination	1.131729	.0869262	13.02	0.000
Exchange rate origin	1.651082	3.578599	0.46	0.645
Exchange rate destination	-.2936923	.0389862	-7.53	0.000
Distance	-.0011966	.000116	-10.32	0.000
Religion	.3648542	.1731766	2.11	0.035
Block	-1.80134	.3821211	-4.71	0.000
cons	111.2292	248.7062	0.45	0.655

No of observations: 228, cross sections: 57, periods: 4

Wald chi square = 439.44

Probability= 0.0000

According to neo-classical economic theory, international labour flows exist as a consequence of wage differences between countries. In the case of two countries only, the wage difference between the labour-

importing and the labour-exporting country has a negative effect on net international (labour) migration in the latter country and a positive effect on net international migration in the former country. However, with multiple countries, a country's net migration figure is the net result of the aggregated migration flows between this particular country and all other countries.

The influence of origin country exchange rate has positive effect with the coefficient value of .86, which implies that if one \$US increases in the exchange rate, emigration from India is expected to increase .86%.and it is statistically significant at 10 % level also. The influence of destination country exchange rate is having negative effect with the coefficient value of -.29, which implies that if one \$ US increases in the exchange rate of destination countries it is expected to decrease emigration from India by -.29%.And this results is also statistically significant at 1%.

CONCLUSION

Migration in Asian region is one of the leading issues in Asian region as well as international level. This paper concentrates on international labour migration from India to Asian countries and migration to India from the Asian countries and this study found that immigration to India is decreasing year by year, while at the the same time emigration from India to other Asian countries is increasing. There is a Gender disparity in emigration from India to Asian countries, but very little gender disparity is found in immigration from Asian countries to India. Population, GDP per capita, exchange rate of origin and destination countries and distance, religion, blocks are determinant factors of international labour migration, all these factors are significantly contributing to the international labour migration in India.

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Madhu G R , Uma H R

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