JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Nature and Determinants of internal migration in India: A new insights from panel regression analysis

.

Binita Kumari

Research Scholar, Department of Commerce

Vidyasagar University, West Bengal, India.

&

State Aided College Teacher, Department of Commerce,

Deshbandhu College for Girls, Kolkata, West Bengal, India

Abstract

The phenomenon of migration is inevitable. There exists strong relation between migration and economic development. It is assumed that economic development induces migration and also the process of migration helps in economic development. There are various casual factors that foster migration. Sometimes migrants cross the national boundary to reach the countries across the world, this is known as international migration. On the other hand, when this movement is within the national boundary it is termed as internal migration. The decision to migrate is not always effortless; it is determined by various socio-economic factors. Poverty, GDP, literacy rate, infrastructure like road and urbanization are some of the factors that play a vital role in decision making process for migration. This paper is an attempt to empirically analyze the impact of these factors as determinants for migration.

Keywors: Migration, Socio-economic factors, census of India.

1. Introduction

The concepts of migration is examined for better understanding and appreciation of the implications of the nexus linkages between migration and its determinants, in terms of education, health services, social conflict, communication, and/or transport systems/connectivity. Migration is an unavoidable phenomenon that occurs at national and international level. People migrate with the assumption of acquiring economic opportunities and

better living. However, there are social and economic costs associated with migration (Kumari and khan, 2021). Internal migration refers to the mobility of persons within the nation which allows mobilization of human resources to the locations and sectors where they are most needed and their skill could be efficiently utilized (Bhagat, 2009 ; Sarkar, 2019). It is essential to understand what factor determine the internal migration in India and what types of migration patterns, trends and nature are important in India?

2. Empirical approaches

The majority of migrantion research has shown that push and pull causes both have a significant impact on labour movement as well as internal migration. High wages, better employment prospects, increased industrialization, skill development, better working conditions, opportunities for better education, accessibility to improved infrastructure, availability of basic amenities, and improved quality of life are the pull factors that encourage migrant workers to move to new locations. On the other hand, poverty, unemployment, underemployment, low productivity, low income, corruption, and a low standard of living are the main forces driving migrant workers out of agricultural areas (Kumar and Sidhu, 2005; Bhagat, 2009; Chakraborty and Kuri 2013; Gimba and Kumshe, 2011; Sridhar et al., 2010; Taralekar et al., 2012).

The size of net migration in developed states has been found to be significantly higher than in developing states. Poor and underdeveloped states really exhibit high population movement, which is mostly motivated by a need for a living. The majority of migrant labourers move to states with developed industrial sectors, such West Bengal and Maharashtra. The least developed states, such as Uttar Pradesh and Bihar, account for the majority of emigration (Chakraborty and Kuri, 2013). According to a study by Lusome and Bhagat from 2006, marriage and employment are the main drivers of migration for males and females, respectively. Male migrants who leave for employment when they are young have a tendency to return to their home country as they get older, which reduces the utility of urbanization as a measure of economic or industrial growth (Lusome and Bhagat, 2006).

Internal migration is an important element of population redistribution and equilibrium. Human mobility within the national boundary is receiving considerable attention in recent decades (Sarkar, 2017). Some notable states where rural to urban migration rates are meagre are Assam, Manipur, Meghalaya, Nagaland, Sikkim, Goa, Arunachal Pradesh and Himachal Pradesh. According to the 2011 Census, Maharashtra, Tamil Nadu, Karnataka, Kerala, Gujarat and West Bengal show a high migration rate in urban areas. However, previously, the state of West Bengal received heavy immigrants, but it has declined during the last two census periods. The main reason is that West Bengal is experiencing a downward trend in industrialization and employment opportunities (Census of India, 2011).

Determinants of Internal Migration

An attempt was made by Ghaffari and Singh (2000) to identify the important variables which were responsible for out- migration and in- migration in Iran. The Ordinary Least Square model was applied to analyse the factors accountable for out-migration and in- migration. The study found that the amenities and housing facilities in the destination place were the major pull factors for in- migration and the industrialization attracted the migrants to the study area. The important push factors of out- migration were the percentage of irrigated land and the reduction of employment opportunity in the place of origin.

Ahmet, I. et. al. (2002) examined the relationship between economic development and migration with the help of data collected from District-level Socio-economic Development Index of Turkey (DSDI) from 1995 and the Census 1990. The study focused on the development-emigration relationship in Turkey which revealed mechanism and dynamics that promoted or constrained the migration out of the nation. The main objective of the study was to portray an analytical framework that recognized the degree of development at local level in Turkey. The authors further related these to international migration and examined patterns of the development-migration.

Samal and Mishra (1998) in their study highlighted that migration had been mainly induced by the pull factors. They studied the determinants of migration among informal labours in the informal sectors and informal labours in the formal sectors (Coal Mine) in Orissa. They also focused on distribution of income among them. They found that the industrial conglomerate of Talcher which is a coal mine had strong ability to induce migration. The workers who migrated to the industrial sectors of Talcher had the notion of achieving socio-economic advantage at the destination. The fact that most of the migrants had their job pre-arranged by their family and friend further strengthened the pull factors.

Zachariah et. al. (2001) made an attempt to study the determinants of migration in Kerala. They considered the push factors to understand the association between economic, demographic factors and migration. They found that there was a positive relation between migration and increase in population density which is taken as demographic variable. They also analysed that education and community had a significant role in migration. The rate of migration was higher among the educated and individuals from Muslim and Christian community. They further found that migration was negatively associated with the economic factors and concluded that economic factors had lesser role to play with regard to migration.

Sundari (2005) studied the determinants of female migration in Tamil Nadu with the help of 1991 census. The author found that migration of rural females was determined by some of the factors like migration of rural male, rate of female work participation in rural area and net sown area to net area irrigated at the native place. She further added that migration of urban female depended on literacy of urban female, migration of urban male and urban female work participation. The study indicated that there was a significant association between the male

and female migration, according to 1991 census, around 60% of female migrated due to marriage. It also revealed that there was no significant relationship between migration of rural female and poverty.

Research questions, approach and objectives

In light of this, the fundamental question still stands: how can governmental policies influence migration processes, both independently and in conjunction with other migratory factors in sending and receiving countries? There are two key, connected sub-questions that can be separated out from this main one:

How different flow of migration impact internal migration trends and patterns in India? What socio-economic factors influence internal migration process in India?

Scholarly study has scarcely ever been able to come up with solid solutions to these concerns due to major methodological and theoretical limitations. This debate's lack of resolution indicates a general lack of conceptual, analytical, and empirical clarity in the analysis of migration policy consequences. Due to the limited integration of migration policies research into broader ideas about the causes of migration, the majority of the available evidence is descriptive, unbalanced, and inadequate. This study's main objective is to comprehend the nature of internal migration in India and identify its determinants factor based on the census of India.

3. Data and methods used and descriptions of variables analyzed

The paper is based on data collected from Migration Table D-5 of the census 2001 and 2011 and Primary Census Abstract of both the census year at India and state levels. The Migration data published in Census 2011 by the Office of the Registrar General and Census Commissioner, India provided limited information which has confined the study to migration streams. The different streams of migration are rural-urban, rural-rural, urban-rural and urban-urban. The growth rate of migration is available over the inter-censal period. The existing data and information in Table D-5 does not provide segregated view of the inter-sate and intra-state migration which could have been useful in policy framework (Sarkar, 2017).

Here we have considered both descriptive statistics and regression analysis to address the primary objective. In regression analysis, a panel data set has been constructed where each urban location is a unit of observation, and the data is computed from 1991 to 2011. Information on dependent and independent variables have been collected from secondary sources such as the Census of India and the Ministry of Road Transport and Highways. This study has considered the relationship between internal migration and different determinants factor of migration. The dependent variable considered here is the in-migration rate. The independent demographic variables include other factors such as state-specific dummy, urbanization, urban primacy, per capita GDP, and urban road density.

Empirical model

The panel regression model used here is based on the work of Hofmann and Wan (2013); and Sarkar (2020), introduces the relevant variables to analyse the influence of other factors on the in migration. To establish basic conditional correlations, we start with the Ordinary Least Squares (OLS) panel estimation of the equation:

$$In\ migrationrate_{\ it} = \alpha + \mu_i + \lambda_t + \beta_1\ urbanization_{\ it} + \beta_2 Urabaprimacy_{it} + \beta_3\ PercapitaGDP_{\ it} + \beta_4 roaddensity(u)_{it} + \beta_5 Povertyrate_{it} + \epsilon_{it}$$

Where, $Inmigration_{it}$ is the in-migration rate of the state *i* in year *t* (defined by the number of immigrants throughout the year), μ_i is a state fixed effect, λ_t is a year fixed effect (for state-invariant time trends),$urbanization_{it}$ is the urbanisation rate defined by the share of the total population living in urban areas, $PerCapitaGDP_{it}$is calculated by dividing the area's total income by its total population. $Roaddensity_{it}$(kilometre of roads per 1000 square kilometre of land area) is used as a proxy for infrastructure and $Urban\ Primacy_{it}$is a measure of urban concentration[1]. $Povertyrate_{it}$ .The ratio of individuals (in a certain age group) whose income is less than the poverty line, calculated as half the median household income of the entire population, is known as the poverty rate. The Ordinary Least Square (OLS) is provided in Table 3. A panel data regression is considered because panel data "*give more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency"* (Baltagi, 2001).

The choices of controls in the equation are established in the available literature. The significance of urban concentration is measured by urban primacy (share of the urban population living in the largest city), and it is widely recognised in the literature. We control for it in our regression of urbanisation to allow for the possibility that a higher population concentration in a state's largest city is associated with a higher urbanisation rate overall. It can affect urbanisation either directly (via differential growth in urban versus rural areas) or through an effect on migration process.

Income originating and income accumulating methodologies can be used to conceptualise estimates of state domestic products. The first method corresponds to income arising from factors of production physically located within the geographical boundaries of State/UTs and represents the net worth of products and services produced inside the States/UTs. The second method is concerned with the income received by ordinary residents of State/UTs. It provides a better measure of the welfare of State/UTs because it measures the revenue that becomes available to individuals. However, due to a lack of data on inter-state income flows, estimates of the income accruing concept cannot be compiled at this time.

[1]Population of the largest city as a percentage of the total urban population(Hofmann & Wan, 2013)

The State Statistical Bureau's current estimates refer to Net Domestic Product at Factor Cost originating within the geographical boundaries of the respective States, regardless of whether the factors of production are owned by persons living inside or outside the State and are appropriately referred to as State Domestic Product.

4. Findings and discussion

Descriptive analysis of migration

According to the 2001 Census, Maharashtra attracted the huge number of migrants (7.9 million) by place of birth from other states and other countries, followed by Delhi (5.6 million) and West Bengal (5.5 million). The number of internal migrants in India was 450 million as per the most recent 2011 census. This is an increase of 45% over the 309 million recorded in 2001. Internal migrants as a percentage of population increased from 30% in 2001 to 37% in 2011. The four streams of migration depicted in the census of India are rural-urban, urban-urban, urban-rural and rural-rural (Sarkar, 2020). The volume of migration in rural-urban stream is mostly shared by Haryana, Delhi and Daman & Diu for marriage. States like Uttar Pradesh, Bihar, West Bengal and Odisha marks high migration for work and employment followed by like Jharkhand, Chhattisgarh, Assam, Kerala and Tamil Nadu (Sarkar, 2017). The main driver for urban-urban migration in West Bengal, Bihar, Uttar Pradesh and Kerala is work and employment. Marriage as a reason for migration to urban area is experienced by majority of the states like Madhya Pradesh, Haryana, Jharkhand and Punjab which have significant share of 33.23%, 33.03%, 30.43%, 29.01% respectively. In this stream education as a reason was found in Mizoram, Manipur, Sikkim, Nagaland and Arunachal Pradesh (Sarkar and Kumari, 2022).

It is interesting to note that the dominant factor for urban-rural stream of migration was marriage. Jharkhand followed by West Bengal, Uttarakhand and Madhya Pradesh falls in this category. Work and employment in Assam, Bihar and education in Arunachal Pradesh, Kerala and Sikkim motivated this stream of migration. Large volume of migration in rural-rural stream occurs due to marriage in Delhi, Dadra & Nagar Haveli, Haryana, Uttarakhand and Jharkhand. On the other hand, states like Assam, Bihar, Chhattisgarh, Uttar Pradesh and Odisha represented work and employment as a reason for migration in this stream.

Results of OLS regression analysis

To study the impact of various in-migration determinates, seven variables were initially identified for the regression analysis. However, some of the variables were dropped either because they had the problem of multicollinearity. A pooled regression analysis is conducted by pooling the state-wise data on three data points (1991, 2001 and 2011). Thus, the analysis is based on strongly balanced panel data collected from all states of India. Panel data regression is used because it provides more informative data, more degree of freedom, more efficiency, more variability and less collinearity amid the variables. It allows us to address unabsorbed heterogeneity bias. It is considered to be a fixed effect for regression model 1 and random effect for model 2, based on the results of the Hausman specification test. The model has been tested for multicollinearity. However,

in the final model, there is no such issue to have been found. The multicollinearity problem is not troublesome, as the mean *Variance Inflation Factor (VIF)* values do not exceed 10 for regression.

Table 1 explains the means, standard deviations, minimum, maximum and Coefficient of Variation (CV) values for the variables used for the regression analysis. Most importantly, the CV aims to describe the dispersion of the variables that do not depend on the variable's measurement unit. The higher values of CV for in-migration rate and road density indicate a more excellent dispersion in these variables. On the other hand, urbanisation rate, urban primacy, poverty rate and per capita GDP show a lower dispersion in these variables.

Table 1. Descriptive statistics of the variables

Variables	Observation	Mean	Std. Dev.	Min	Max	Coefficient of Variation (CV)
In-migration rate	102	10.7	13.8	.62	61.5	128.9
Urbanization rate	104	33.4	21.8	7.4	97.5	65.27
Urban Primacy	101	36.4	24.5	6.5	99.8	67.30
Per Capita Income	91	30030.2	20523.4	3768.1	110306	68.34
Urban road density	93	3994.2	5759.2	16.2	29915.3	144.2
Poverty rate	102	26.2	13.66	1	57.2	52.14

Source: Authors' estimation.

In Table 2, the correlation matrix between the dependent and independent variables is shown. With regard to urbanisation, the in-migration rate exhibits the anticipated positive relationship. In a similar way, in-migration and urban primacy show a positive and statistically significant correlation. An expected strong positive association and statistically significant relation between per capita income and migration rate are evident. Road density is determined to be an explanatory variable that positively correlates with migration, while poverty rate is an explanatory variable that negatively correlates with all of the other variables and is statistically significant.

Table 2. Correlation coefficient of regression variables

	In-migration rate	Urbanisation	Urban Primacy	Per Capita Income	Urban road density	Poverty rate
In-migration rate	1.000					
Urbanisation	0.6775* 0.0000	1.000				
Urban Primacy	0.6194* 0.0000	0.5119* 0.0000	1.000			
Per Capita Income	0.6429* 0.0000	0.6516* 0.0000	0.3824* 0.0002	1.000		
Urban road density	0.5517* 0.0000	0.5304* 0.0000	0.5190* 0.0000	0.3450* 0.0011	1.000	
Poverty rate	-0.3066* 0.0017	-0.4937* 0.0000	-0.2886* 0.0034	-0.6815* 0.0000	-0.1743 0.0948	1.000

Source: Author's Estimation

Note: *The correlation coefficients are based on 90 observations. * Indicates statistically significant at 5% level.*

The regression analysis result is presented in Table 3. Initially, we present a simple panel data model (i.e., without using instruments). The first equation (model 1 and 2), where only four explanatory variables have been included, explains nearly 72% of the variation in the rate of in migration among states. The coefficients for urbanization, urban primacy, road density and per capita GDP are significant at either a 1 or 5% level of significance. The infrastructure variable, such as urban road density, which gives significant coefficients in all equations, shows an invariant positive sign, indicating that the rate of in-migration increases with an increase in road density. The independent variable urbanization and per capita GDP are positive and significantly related to in migration. Regression results show that urbanization and per capita GDP show positive and significant relation with rate of in migration in India.

Table 3. Basic estimates of OLS regression

Dependent variable: in-migration rate		
	Model 1	**Model 2**
	Coef. Std error	
Urbanization rate	0.11567**	.19153***
	(.05203)	(.04903)
Urban primacy	.13856***	.17822***
	(.03528)	(.03413)
Per capita GDP	.00028***	.00024***
	(.00005)	(.00006)
Road density (u)	.00041***	.17980**
	(.00015)	(.07353)
Poverty rate	-10.14596***	-15.58917***
	(1.45054)	(3.31952)
Constant		
Observation	85	90
R^2 (within)	0.76	0.71
R^2 (full)	0.71	0.70
Hausman test	0.936	0.931
Model effect	Fixed effect (value is Prob>chi2 = 0.0075)	Random effect (value is Prob>chi2 = 0.0548)
Mean VIF	1.89	2.02

Source: Author's Estimation.
*Standard errors in parentheses, Level of Significant: *** p<0.01, **p<0.05, *p<0.1,*
Note: If this is < 0.05 (i.e. significant) use fixed effects.

In the relationship between in-migration rate and urban primacy, the regression analysis finds a positive and statistically significant connection for both model 1 and 2. It implies that in-migration rate is more likely to increase with the increase in primacy, which means that in-migration also occurs in other cities and towns apart from the state's largest populated city (Sarkar and Lakshmana, 2022). The model 2 also consider the poverty rate, it is found that a positive and significant relation with in-migration rate.

5. Conclusion and Policy Suggestion

According to the findings it has observed that in the steams of migration urban-to-urban migration exceeded the percentage of intercensal rural-to-urban migration during the period from 2001 to 2011. The study brought concerns about the mobility towards urban centers and availability of employment opportunities to the migrants. It was also seen that job opportunities and marriage remained the primary drivers for male and female migration respectively. The variables taken in this study to check the association with migration are positive and statistically significant. The four variables i.e. rate of urbanization, urban primacy; per capita GDP and road density are the determinants of migration in India as per the analysis of this study.

Most of the states in India are facing the issues of lack of employment opportunities. In state like West Bengal which received huge in-migrants earlier, now the scenario has changed due to lack of industrial development and lack of employment opportunities. To tackle these issues human development and urbanization policies should be introduced. There is dire need to think about Indian migrants and bring about holistic approach that will benefit the migrants. Registration of migrants, equal participation in job opportunities at destination, providing access to ration and other Government schemes on Pan India basis and decentralization will help the migrants to enhance their living conditions. Along with these policies should be framed to protect the educational right of the children of migrants. This will certainly help in curbing child labour and prevent discrimination. The study outlines some of the significant driving aspects for migration, which may be useful information for social demographers and decision-makers.

References

Baltagi, B. H. (2001). Econometric Analysis of Panel Data (3rd ed.). Chichester: John Wiley & Sons Ltd.

Bhagat R. (2009). "Internal Migration in India: Are the underclass More Mobile?" in the *26thIUSSP General Population proceedings of the international conference* in *Morocco*, 27 September- 2 October 2009, 1-21.

Chakraborty, D., Kuri, P.K. (2013). "Rural-Urban Migration and Urban Informal Sector in India: An Inter-State Analysis", *International Journal of Current Research*, 5 (4), 950-956.

Ghaffari, H., Singh, S. P. (2000). "Pull-Push Determinants of Inter-Provincial Migration: Iran's Case Study", Indian Journal of Economics, 81 (321), 269-275.

Gimba, Z. and Kumshe, M.G. (2011), "Census and Effects of Rural Urban Migration in Borno State: A Case Study of Maiduguri Metropolis", *Asian Journal of Business and Management Science*, 1 (1), 168-172.

Hofmann, A., & Wan, G. (2013). Determinants of Urbanisation. ADB Economics Working Paper Series 355 Asian Development Bank.

Icduygu, A., Sirkeci, I., & Muradoglu, G. (2001). "Socio-economic Development and International Migration: A Turkish Study", *International Migration*, 39(4), 39–61. doi:10.1111/1468-2435.00162

Kumari, B., Khan, T.L. (2021). "Migration of Human Capital and its Impact on Social and Economic Development of India", *Recent Developments in Financial Institutions and Market,* 310-316.

Lusome, R. and Bhagat, R.B. (2006). Trends and Patterns of Internal Migration in India: 1971-2001. *International Household Survey Network,* 1-19.

Samal, K.C., Mishra, S. (1998). Migrant workers in a coal mine region of Orissa. *The Indian Journal of Labour economics:a Quarterly journal of Indian Society of Labour Economics,* Vol. 41, 745-754.

Sarkar, R. (2017). Recent Changing Patterns of Migration and Spatial Patterns of Urbanization in West Bengal: A Demographic Analysis. *South-Asian Journal of Multidisciplinary Studies, 4* (1), 46-56.

Sarkar, R. (2020). Association of urbanisation with demographic dynamics in India. *GeoJournal, 85*, 779–803. https://doi.org/10.1007/s10708-019-09988-y

Sarkar, R. (2019). Urbanization in India Before and After the Economic Reforms: What Does the Census Data Reveal? *Journal of Asian and African Studies*, 54(8), 1213–1226. https://doi.org/10.1177/0021909619865581

Sarkar, R, & Kumari B (2022). Determinants and Consequences of different Streams of Internal Migration in India, 2011. *Indian Journal of Spatial Science*, 13 (Autumn Issue) https://www.indiansss.org/ijss/current-issue

Sarkar, R., & Lakshmana, C. M. (2022). Measuring Urbanisation, Growth of Urban Agglomeration, Urban Growth Sustainability and Role of Urban Primacy in India. *Journal of Asian and African Studies.* https://doi.org/10.1177/00219096221111360

Sridhar, K.S., Reddy, A.V., Srinath, P. (2010). Is it Push or Pull? Recent Evidence from Migration in India. *South Asia Network of Economic Research Institutes*, 10, 1-17

Sundari, S. (2005). Gender perspective on Migration as Livelihood Strategy, *Economics and Political Weekly*, 40 (22/23), 2295-2303.

Taralekar, R., Waingankar, P., Thatkar, P. (2012). A Study to Assess Pattern of Migration Across India Based on Census Data. *International Journal of Recent Trends in Science and Technology*, 5 (2), 74-77.

Zachariah, K. C., Mathew, E. T., & Rajan, S. I. (2001). Impact of migration on Kerala's economy and society. *International Migration*, 39(1), 63-87.

Appendix

Table a. Variance Inflation Factor (VIF) for Model 1

Variable	VIF	1/VIF
Urbanisation rate	2.55	0.392144
Per Capita Income	1.75	0.580147
Urban Primacy	1.68	0.596533
Urban Road density	1.61	0.620355
Mean VIF	1.89	

Table b. Variance Inflation Factor (VIF) for Model 2

Variable	VIF	1/VIF
Per Capita Income	2.60	0.384082
Urbanisation rate	2.13	0.470158
Poverty rate	1.90	0.527093
Urban Primacy	1.45	0.690768
Mean VIF	2.02	