

Role of economic reforms on dismantling barriers to inter-state migration in India

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Abstract

Traditionally inter-state migration in India was limited compared to within state migration. Economic reforms in the early 1990s have boosted inter-state migration in the country. Hence, it is important to understand the impact of economic reforms on the determinants of inter-state migration. Recent studies have identified that state border; linguistic divide and per capita income play an important role in determining the location of inter-state migration in India. In this paper, we tried to understand the impact of economic reforms on the choice of the location of inter-state migration in the country by using a gravity model framework. We found that while the impact of per capita income difference has increased in the post-reform period, the impact of the common-border has declined. Moreover, the impact of the linguistic divide has initially increased after reforms.

Keywords: Migration; inter-state mobility; state border; economic reforms; economic growth

Introduction

The development history of India suggests that migration of the population is traditionally low compared to many other countries. Even though anyone is free to move legally³ from one state to another and federal laws are enacted to protect migrant workers from exploitation in the destination⁴, inter-state migration remained low compared to intra-state migration. Most probably due to this reason, most of the studies on migration in India ignore this issue (Singh, 1998; Srivastava and Sasikumar, 2003; Lusome and Bhagat, 2006). However, this trend has changed after economic reforms in the early 1990s and the number of overall migration in the country has increased⁵ and the number of inter-state migrants also has significantly increased⁶. This may be due to the fact that economic reforms have provided opportunities to the potential states to reap the benefit of the changing economic environment, such as

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³ The Constitution of India (Article 19) gives the right to all citizens "to move freely throughout the territory of India and to reside and settle in any part of the territory of India.

⁴ Minimum Wage Act, 1948; the Contract Labour Act, 1970; the Equal Remuneration Act, 1976; and the Building and Other Construction Workers' Act, 1996 (Srivastava and Sasikumar, 2003).

⁵ This may be due to the fact that economic reforms in the early 1990s increased regional inequality and pulled large number of labour from rural areas.

⁶ As per the 2001 Census of India, only 4 percent of the total population and approximately 14 per cent of total migrants in the country migrate from one state to another.



industrialisation, improved telecommunication and transportation network, better healthcare and education facilities, etc., resulting in a huge increase in regional per capita income disparity (Ahluwalia, 2002; Sachs et al., 2002; Shetty, 2003; Nagraj et al., 1998; Kar *et al.*, 2011) that pulled migrants from the backward regions to the advanced regions. In this paper, we try to study the role of economic reforms on dismantling inter-state barriers in the aspect of migration in India.

There are several reasons to study inter-state migration in the country. First, the magnitude of inter-state migration in the entire country is huge⁷. Second, it is believed that inter-state migration leads to an increase in labour supply to labour-scarce states (e.g. migration to Kerala from poor Northern and Eastern states) and contributes to the economic growth of those regions. Third, this can result in a political opposition (from the destination states) and social conflict; as migrants avail benefits of 'local public goods' and economic prosperity of the destination states⁸. Fourth, high-income regions may wary of the fiscal condition on account of the rising fiscal pressure created by the influx of migrants (Chakraborty and Garg, 2018)⁹. Fifth, inter-state migration increases the vulnerability of the migrants in the absence of support from the government, especially during a major crisis¹⁰. Finally, a huge influx of migrants results in a high density of population in urban centers and cause many other problems, like the growth of slums and growth of the unorganised sector, congestion, environmental pollution, etc.; and would impose further pressure on the job market for the residents of the advanced regions. Therefore, we need to understand the dimension of inter-state migration to formulate an integrated migration policy for the country which is not been revised after 1979¹¹.

The recent studies pointed out that inter-state migration is more between the physically contiguous states and the states using the same language (Economic Survey, 2016; Kone *et al.*, 2018). However, these studies haven't discussed the role of economic reforms on changing the impact of migration influencing factors mentioned above in determining the location of inter-state migration in the country. In this study, we want to understand that. The rest of the paper is organised as follows. Section 2 presents the migration measures, the control variables used in the study, and the empirical specification of the gravity model. Section 3 reports the results of the gravity model and Section 4 concludes the study.

Migration measures and other controls

To understand the impact of economic reforms on the choice of location of inter-state migration in the country, we depend on a cost-benefit structure¹². We assume that in deciding

⁷ According to the Place of Birth criteria, inter-state migrants increased from around 11.5 million in 1981 to 42.34 million in 2001.

⁸ There was conflict with the huge influx of migrants from Bihar and Uttar Pradesh to Maharashtra. Available at www.rediff.com/news/2008/mar/05thackeray.htm (accessed 11 September 2017).

⁹ Maharashtra Chief Minister stated that 'Public amenities such as water, suburban rail network have to bear the burden (of influx)'. Available at www.timesofindia.indiatimes.com/india/Uncchecked-influx-straining-Mumbai-Deshmukh/articleshow/2850604.cms?Referral=PM (accessed 11 September 2017).

¹⁰ For example, after the recent lockdown in India due to Covid-19 pandemic, migrants fleeing from the destination states to the origin states attracted international media attention.

¹¹ The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979. https://www.indiacode.nic.in/bitstream/123456789/13209/1/the_inter-state_migrant_workmen_regulation_of_employment_and_conditions_of_service_act_1979.pdf

¹² This not only allows us to identify the factors influencing the location of inter-state migration in the country, it also permits us to study the possible impact of economic reforms on the factors influencing inter-state migration.



the destination of migration beyond the state boundary a person may be influenced by the resultant of two opposing forces - (i) per capita income difference between states, which pulls a migrant from a poor state to a rich state due to the larger expected returns from such a migration and (ii) better transportation and communication facilities between states, which would reduce the cost of migration (this involves monetary as well as psychological costs)¹³. Between any two states, if the first force is greater than the second, migration from a poorer state to a richer state is expected to be profitable and *vice-versa*. If this is the case, the post-reform increase in per capita income difference between the richer and the poorer states (which enhances the strength of the first force), and improvement in the overall transportation and communication facilities between states (which declines the strength of the second force) during the same period may lead to more migration from the poorer states to the richer states irrespective of their physical contiguity and linguistic differences. According to this framework, one can expect an increased effect of per capita income difference between any two states; and a reduced effect of linguistic barriers and contiguity on the choice of the location of inter-state migration in the post-reform period compared to the pre-reform period. In the present study, we want to analyze whether the role of distance, language, physical contiguity, and per capita income difference between the states have changed in the post-reform period (1991 to 2001) compared to the pre-reform period (1981 to 1991) among 18 major Indian states¹⁴ in determining the location of inter-state migration in India using a gravity model framework with the help of Census of India 1981, 1991, and 2001¹⁵ data.

Using the Newton's Law of Gravitation migration of population from origin i to destination j has defined by the economic forces at the origin and the destination. The population size has been taken as a proxy of the economic force at the origin and destination; distance is considered as the cost of migration. m_{ij} is defined as the stock of migrants, where i is the origin state and j is the destination state, is the key dependent variable. Thus, m_{ij91} represents the stock of migrants from state i to state j during the period 1981 to 1991. Similarly, m_{ij01} represents the stock of migrants from state i to state j during the period 1991 to 2001. Therefore, in the present context the traditional gravity model specification can be expressed as:

$$\log(m_{ij}) = \beta_1 \cdot \log Pop_i + \beta_2 \cdot \log Pop_j + \beta_3 \cdot \log Dist_{ij} + \beta_4 \cdot X_{ij} + u_{ij} \quad (1)^{16}$$

where Pop_i and Pop_j represents population size of states i and j respectively, $\log Dist_{ij}$ represents log of physical distance between states i and j , and X_{ij} represents control for bilateral (dyadic) variables representing contiguity, language, and log per capita income difference between states in determining the location of inter-state migration in India¹⁷.

¹³ This is different when we consider inter-state migration together with intra-state migration. Kone *et al.*, (2018) has shown that in such a case the state level entitlement benefit schemes may impose an additional cost to migration.

¹⁴ The major states used in this study are Maharashtra, Delhi, Gujarat, Haryana, Punjab, Karnataka, Goa, Himachal Pradesh, West Bengal, Madhya Pradesh, Assam, Kerala, Odisha, Andhra Pradesh, Rajasthan, Tamil Nadu, Bihar and Uttar Pradesh.

¹⁵ We have not included 2011 census data to make the period of comparison between the pre- and the post-reform periods balanced i.e. we have compared the decades just prior to the economic reforms and immediately after the economic reforms.

¹⁶ Migration takes place when $b_1 > 0$, $b_2 < 0$, $b_3 > 0$ and a positive sign for the relative differences in the per capita income.

¹⁷ We have taken the independent variables following Kone, *et al.* (2018) and the economic survey of India, chapter 12 (2016). Similar to these two studies, we have taken fixed effect to control for other variables that may affect estimation. In addition, we have taken per capita income difference between the destination state and origin state to observe the impact of per capita income difference on bilateral flow of migrants.

Let's briefly discuss the dyadic independent or control variables and the expected impact of economic reforms on them in our model. The bilateral independent variable *physical distance* is presumed to strongly depend on the transportation cost and, hence, the level of migration. Migration to a more distant state involves higher monetary costs and also at a distant place uncertainty of earning would also be higher owing to an information gap. Thus, the expected sign of this variable will be negative in all the regression models. We have collected information on the bilateral distance between any two states from the google map as the minimum distance of traveling by road from one state's capital to the capital of another state.

Physical contiguity is a binary variable, '0' when any two states don't share a common border and '1' when two states share a common border, i.e. when the states are physically contiguous. The empirical literature on international migration (Mayda, 2010; Artuc *et al.*, 2015) has shown higher migration between countries sharing a common border compared to non-contiguous countries. Similarly, in the case of internal migration in India, Kone *et al.* (2018) noticed more migration among the states sharing a common inter-state border. If we assume the same mechanism to hold in the case of inter-state migration in India, we would be expecting more migration among the states sharing common borders relative to non-contiguous states in the pre-reform period. However, there will be some decline in the migration flow between physically contiguous states in the post-reform period. In the post-reform period, as the per capita income disparity between the states has increased and the transportation and communication facility to a distant place has become better, the expected return from migration will be more in migrating to a non-contiguous, but a richer state. Thus, there is expected to be a decline in the impact of physical contiguity in the post-reform period compared to the same impact in the pre-reform period.

Another important component of bilateral migration that imposes an additional cost on the bilateral movement of migrants is *linguistic differences* (Belot and Ederveen, 2012; Adsera and Pytlikova, 2015). When any two states have the same language, migration to such states would reduce the cost of migration. This is because communication and skill transferability becomes easier among persons using the same language, especially among the unskilled and the poor (Kone *et al.*, 2018). In our study, linguistic proximity is also a binary variable, '1' when any two states use Hindi as the main language for communication and '0' otherwise¹⁸. The impact of economic reforms on this variable is difficult to predict and may depend on the population dynamics and cultural acceptance of outsiders by the population of the destination regions.

The last bilateral variable that we have taken is the *per capita income difference* between any two states. This is the most important variable in our model as the benefit of inter-state migration depends on per capita income difference. Higher per capita income difference between the states is expected to increase inter-state migration as the future expected income in a high-income state is expected to be more relative to in a low-income state. To construct this variable we have calculated the ratio of per capita income of all the possible combinations of an origin and a destination state and then taken log to the ratio. The per capita income data of the states have been collected from CSO, Government of India. The empirical specification that we follow to estimate the gravity model is as follows.

$$\log(m_{ij}) = \alpha + \beta_1 \cdot \log DIS_{ij} + \beta_2 \cdot LAN_{ij} + \beta_3 \cdot CONT_{ij} + \beta_4 \cdot \log PCIR_{ij} + \delta_i + \delta_j + \varepsilon_{ij} \quad (2)$$

¹⁸ In order to divide the states based on the main language used in the state, we have followed the criterion that has been used in chapter 12 of economic survey of India 2016.



Here the dependent variable, m_{ij} , measures inter-state migration stock that comes from state i to state j . The bilateral explanatory variables that we have used are: $\log DIS_{ij}$, log of the distance between the capitals of state i and j ; LAN_{ij} , a dummy variable, indicates whether states i and j use the same language; $CONT_{ij}$, also a dummy variable, shows whether state i and state j share a common border or whether they are physically contiguous; $\log PCIR_{ij}$ is the log of the ratio of per capita incomes of state i and state j . This represents the log per capita income difference between state i and state j . Finally, δ_i and δ_j are the origin and destination-specific fixed effects. The origin- and destination-specific factors such as push and pull factors, the attractiveness of the destination to others, the population size of the origin and the destination states, etc. come under these fixed effects.

Since in the case of log-linear estimation, OLS estimators are biased and inconsistent in the presence of heteroskedasticity of ε_{ij} , we have estimated the above gravity model using the Poisson Pseudo-Maximum Likelihood (PPML) estimator¹⁹.

Empirical Results

To estimate the six different gravity models for the pre- and the post-reform periods, three bilateral migration stock variables were constructed using 0-9 year stock of migrants, respectively, for total, male, and female migrants separately for the periods 1981-1991 (pre-reform period) and 1991-2001 (post-reform period). In the first model, bilateral factors like distance, linguistic difference, and physical contiguity were included as the main explanatory variables while in the second model another bilateral variable - log ratio of per capita income of state i and state j - was included. In the study, we have used only bilateral control variables in the estimation. This is because the origin and destination fixed effects²⁰ would take care of the other factors like population size and other push and pull factors of the origin and the destination in the models. We have used robust standard errors in the estimation of all the models.

The results of the gravity model for the pre-reform period (1981-91) have been presented in Table 1. In the first column, the independent variables are physical distance, contiguity, and linguistic difference between the states. The variable log GSDP ratio of destination state and origin state has been added in the model presented in column 2. Similarly, columns 3 and 4 represent coefficients of the independent variables for male migration, and columns 5 and 6 represent coefficients of the independent variables for female migrants. The sign of the coefficient of log distance in all the models is negative, which suggests that physical distance plays a negative role in the inter-state migration. The sign of the coefficients of physical contiguity and linguistic difference in all the models is positive. This indicates that more migration takes place between physically contiguous states and to the states using similar language. The sign of the coefficient of the variable 'log GSDP ratio' is also positive in all the models. This shows that a large per capita income difference is associated with an increase in the inter-state migration.

A comparison of the coefficients of the independent variables for the regressions of male and female migrants provides many interesting pieces of evidence. First, the negative impact of

¹⁹ We have also derived at the results using OLS estimators. The results are broadly similar.

²⁰ We have conducted Hausman test to differentiate between fixed effects model and random effects model and random effect is rejected in favour of fixed effect.

physical distance on the inter-state migration is more for male migrants compared to females. In the case of physical contiguity, the coefficient is more for females compared to males. This may be because female migration is mostly due to marriage, which takes place normally among physically contiguous states. In the case of male migration, which is largely work-related migration, physical contiguity seems to be of lesser importance. Instead, per capita income difference becomes crucial in determining the location of the inter-state male migration. This is reflected by the higher coefficient of log per capita income ratio between the destination and the origin states for male migrants compared to female migrants.

Table 1: Results of the Gravity Models for the Pre-reforms Period

Variables	Total		Male		Female	
	Log Distance	-0.860 (0.097)***	-0.927 (0.103)***	-0.899 (0.103)***	-0.997 (0.111)***	-0.808 (0.093)***
Physical Contiguity	1.155 (0.163)***	1.114 (0.165)***	0.948 (0.161)***	0.891 (0.163)***	1.417 (0.160)***	1.404 (0.163)***
Language	1.172 (0.329)***	1.902 (0.345)***	1.482 (0.291)***	1.746 (0.320)***	1.979 (0.349)***	2.034 (0.351)***
Log GSDP Ratio		0.541 (0.251)***		0.880 (0.252)***		0.153 (0.253)***
Origin Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Source: Authors' Calculation. Notes: *** $p < 0.01$.

The results of the gravity models for the post-reform period (1991-2001) are similarly presented in Table 2 for total, male and female migrants. The sign of the coefficient of log distance in all the models was negative. The coefficients of the other independent variables are positive. Thus, during the post-reform period, more migration took place between the physically contiguous states, the states that use the same language, and largely from the poorer states to the richer states.

Similar to the case of the pre-reform period, in the post-reform period also, the coefficient of physical contiguity is more for female migrants compared to the male migrants. In the case of the linguistic divide, the coefficients of male and female migration are close to each other. However, in the case of log per capita income difference, the coefficients are more for male migration compared to female migration.

A comparison of the coefficients of the gravity models between the pre-reform and the post-reform periods reveals the impact of the independent variables on the stock of total, male, and female migrants. The sign of the coefficients of log distance in the models of total, male, and female migrants during both the periods was negative. While the values of the coefficient of physical contiguity of the states are all positive during both the periods, it is important to note that their values declined in the post-reform period for all the three types of migration – total, male, and female. This implies that a lesser amount of migration took place between the physically contiguous states in the post-reform period relative to the pre-reform period. In contrast to the coefficient of physical contiguity, the impact of the linguistic divide has increased for all three categories of migration (total, male, and female) in the post-reform period. In the post-reform period, more migration took place between the states using similar language compared to the pre-reform period. This may be because we have taken only the first decade after the initiation of economic reforms in this study, the period when economic



growth took place mostly in the northern and western parts of the country where the language is close to Hindi²¹.

Table 2: Results of the Gravity Models for the Post-reforms Period

Variables	Total		Male		Female	
Log	-0.779	-0.932	-0.818	-1.001	-0.764	-0.867
Distance	(0.119)***	(0.126)***	(0.127)***	(0.132)***	(0.107)***	(0.115)***
Physical	0.975	0.889	0.757	0.659	1.242	1.181
Contiguity	(0.181)***	(0.180)***	(0.182)***	(0.179)***	(0.172)***	(0.174)***
Language	2.276	2.933	2.193	3.065	2.393	2.808
	(0.323)***	(0.381)***	(0.288)***	(0.362)***	(0.358)***	(0.399)***
Log GSDP		1.026		1.511		0.588
Ratio		(0.228)***		(0.235)***		(0.219)***
Origin Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Effects						
Destination	Yes	Yes	Yes	Yes	Yes	Yes
Fixed						
Effects						

Source: Authors' Calculation. Notes: ***p<0.01.

The high economic growth of the south Indian states (where the language is very different from Hindi) took place after 2001. The recent data published by Census 2011 shows that during the 2001 to 2011 period a large number of people have migrated from the poorer north Indian states to the fast-growing and rich south Indian states after 2001. Finally, the coefficient of log per capita income ratio of the states for all the three categories of migration has increased in the post-reform period compared to the pre-reform period. This implies that the difference between per capita incomes of the states has become one of the most important determinants of inter-state migration for total, male, and female migration in the post-reform period compared to the pre-reform period.

Overall, we found that while the negative impact of physical distance remained intact even during the post-reform period, the role of physical contiguity in determining inter-state migration declined after the initiation of economic reforms. And in contrast to physical contiguity, more migration took place between the states using the same language after reforms compared to the pre-reform period, at least during the first decade. More importantly, the role of per capita income difference between the states has become one of the most important determinants of inter-state migration in India in the post-reform period.

Conclusion

In this paper, we tried to analyse the role of economic reforms on dismantling barriers of inter-state migration in India using a gravity model framework. The results show that in contrast to the pre-reform period, while the role of physical contiguity in determining the location of inter-state migration in India has declined, the role of per capita income difference and the common language have increased in the post-reform period. Moreover, a comparison of male and female inter-state migration shows that in the post-reform period, in the case of male migration, the role of physical contiguity between the states has declined more than in the case of females. This may be because female migration is mostly marriage migration while male migration is mainly work-related migration.

²¹ We have taken these states as Hindi speaking states because the native language in these states is close to Hindi.

In India, as anyone is free to cross the state border and federal laws, workmen act, are enacted to protect migrant workers, increased per capita income differences across states after economic reforms, and improved transportation, communication facilities will exhilarate inter-state migration in near future. As the increased per capita income difference in the post-reform period will lead to more migration from the poorer states to the richer states, we need an integrated and concrete policy to mitigate fiscal pressures to the migrant-receiving regions. Moreover, in the migrant-receiving regions, different kinds of social security measures for the migrants are necessary as the existing Inter-State Migrant Workmen Act (1979) is rarely invoked and the penalty is minimal. The recent “one nation one ration card” policy of the central government is a positive step in this direction. However, ensuring food availability is not the solution for all the challenges of the migrants at the destination. To solve the problem, we need the accountability of the political system. One possible direction may be to integrate the migrants in the democratic process of the destination states by the portability of the voter card for the entire nation.

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