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Determinants of Rural to Urban Migration in Large Agglomerations in India: An Empirical Analysis

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Abstract:

The present paper tries to investigate the relevant determinants of rural to urban migration in large agglomerations/cities in India. OLS regression analysis is used in this paper to analyse data pertaining to 51 large cities in India by using data from Census of India and unit level data of National Sample Survey (NSS) on employment and unemployment and consumption expenditure data. The OLS regression results show that city-wise employment and unemployment situation (measured by male self employed, not in labour force male, male casual labourer) have a negative impact on city level rural to urban migration. The level of poverty (measured by poverty head count ratio) and inequality conditions (measured by Gini coefficients) of a city also has a negative impact. However, infrastructure condition (availability of total number of electricity connection) of a city has a positive impact on city-wise rural to urban migration. Economic conditions also matters higher level of rural to urban migration. Finally, it suggests that cities need to equip themselves with better infrastructural facilities along with higher job opportunities to encourage urbanization through rural-urban migration for higher and sustainable economic growth in India.

Key Words: Urbanization, rural to urban migration, urban economic growth, India.

JEL Classification: R12, O10, O15

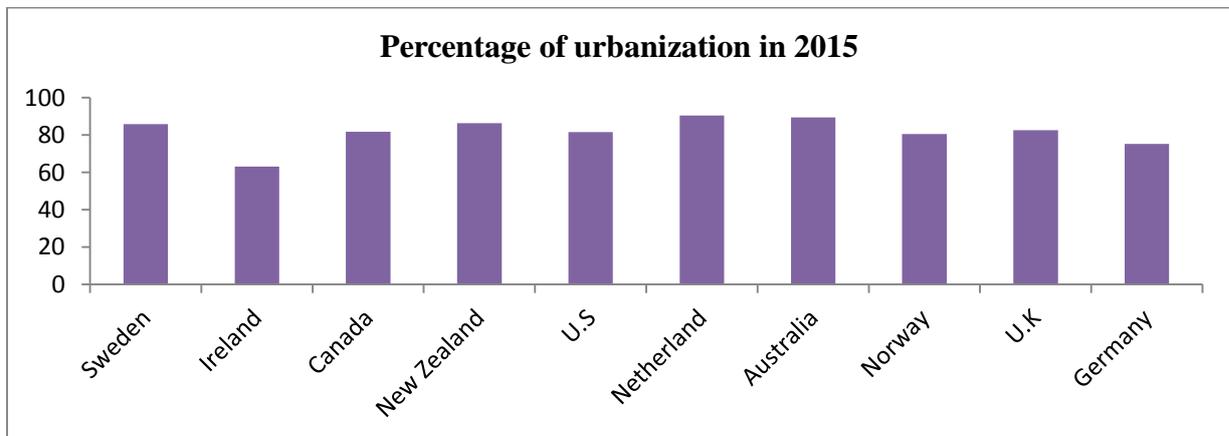
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I. Introduction

In the wake of the rapid urbanization in recent years, Indian economy is witnessing a transformation from an agro-based rural economy to an urbanized modern economy. After independence, urbanization rate has increased continuously; in urban population in India was 28.53 percent in 2001 which increased to 31.16 per cent in 2011. The growth of urbanization has led to higher economic growth (Tripathi, 2013; Tripathi and Mahey, forthcoming) i.e., urbanization is the engine of economic growth in India. Currently 31.16% urban population is contributing about 63% of India's GDP (GOI, 2011). However, the percentage of population residing in urban areas in developed countries is far greater than in India. As shown in Figure 1, per the data given by World Urbanization Prospects (WUP) (UN, 2014) 85.8 % (or 75.3 % or 63% or 81% or 90.5 % or 89.4 % or 80.5 % or 82.6 %) urban population live in Sweden (or Germany or Ireland or Canada or New Zealand or U.S.A. or Netherlands or Australia or Norway or U.K.) as of 2015. This clearly indicates that India's urbanization rate is lower than in the developed countries.¹ It is also predicted that India's future development process ought to be lead by high urbanization rate.

Figure 1: Rate of urbanization in different countries

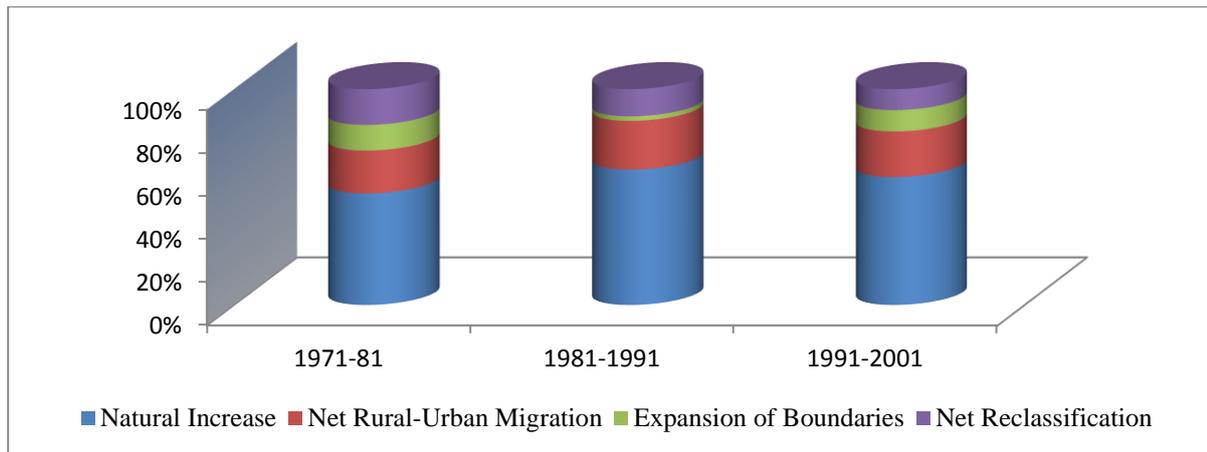


Source: WUP (2014)

The urban growth occurs due to the natural growth of population, expansion of city boundaries, net rural to urban migration, and reclassification of rural areas into urban. Figure 2 shows that net migration from rural to urban areas contributed to about 21 per cent to the increase in urban population in the 1990s, a little smaller than its contribution of 22.6 per cent in the 1980s. Natural increase has been by far the largest source of increase in urban population (62.7 per cent in the 1980s and 59.2 per cent in the 1990s).

¹ Though different countries follow different definitions to measure urbanization still we can say India's urbanization rate is much lower than other developed countries.

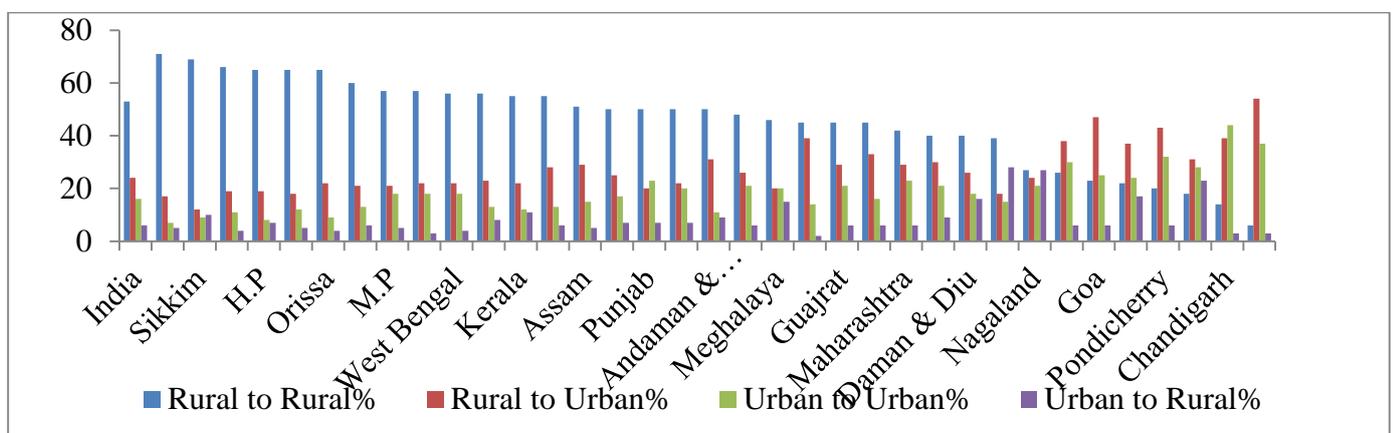
Figure 2: Sources of Increase in Urban Population



Source: GOI (2011)

Migration is the transfer of population from one area to another. Labour migration from agricultural sector to non-agriculture sector in 2007-08 was 66% in which 63% of migrants were men in India. The migration of male population is greater than female. Migration leads to higher growth in urban population, but the migration rate has been very low in India. To increase the growth rate of urbanization, it is essential to promote rural to urban migration. Migration depends upon many factors like job opportunities in urban areas, urban poverty, and higher urban wage rate. Thus, migration positively impacts, the growth of economy, albeit indirectly. Rural to urban migration leads to the growth of economy through the growth of urbanization. Migration could be voluntary or coercive. Voluntary migration occurs due to the promise of job opportunities, education, better medical care, securing family links, industrial job, higher income etc. in the host city. On the other hand, forced migration occurs due to drought, political war, poor medical care, loss of wealth, forced labour, etc.

Figure 3: state wise migration rate (%) in different streams of India

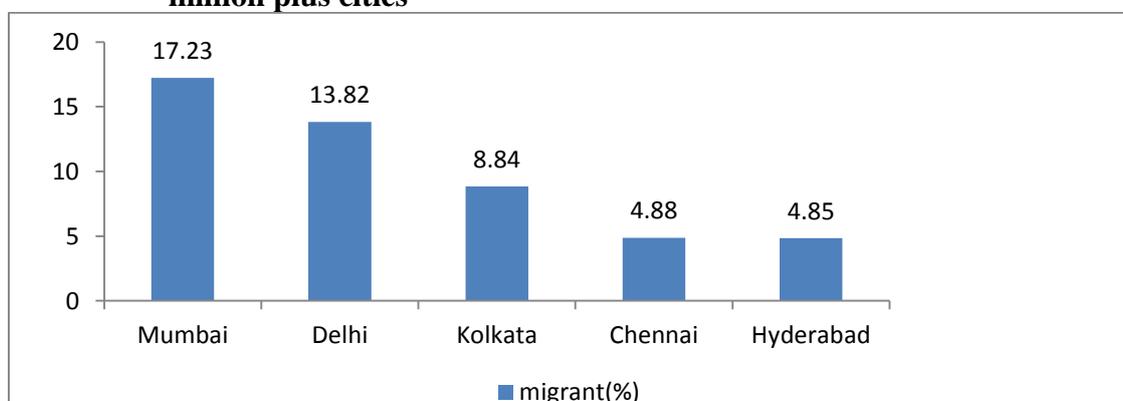


Source of data: NSSO 64th round National Sample Survey of India

The 64th round of Indian National Sample Survey Office (NSSO) on “Employment & Unemployment and Migration Particulars” during July 7 to June 8 2007-08, covered a sample of 1,25,578 households and 5,72,254 persons. The survey, taking into account the entire mobility including within - and between states, estimates the mobility of the Indian population as about 30 percent. However, within this 30% the share of migrants within the state was 85% and across state, 15%. In other words, migration was by and large rural to rural. Figure 3 provides figure of state- wise migration between rural to rural, rural to urban, urban to urban, and urban to rural. As can be seen from the table, in internal migration, the maximum percentage of migration was rural to rural. Rural to urban migration was the highest in Delhi at 54%. In the rural to urban migration stream, Sikkim had the lowest percentage value of 12%. The percentage of urban to urban migration was quite in Chandigarh at 44%. The percentage value of urban to urban migration was quite for Manipur also. The figure shows that the percentage of rural to urban migration is less than that of rural to rural migration in India. On the other hand, developed or economically advanced Indian states have a higher level of rural to urban migration rate than the less developed states. It becomes clear from the above analysis that in order to have higher development, rural-urban migration needs to be promoted.

Given the present focus on smart cities/million plus cities, it is necessary to consider India-specific data on migration, particularly rural-urban migration arrive at any meaningful conclusion. The diagram below (Figure 4) shows the trends of migration in top five million plus cities on the basis of census of India in 2001 on a time-scale of ten years and more than 10 years. Mumbai reported 17.32% its population as migrants, which is quite higher than in other million plus cities. The second-ranking city, Delhi, reported 13.82% as its migration of population.

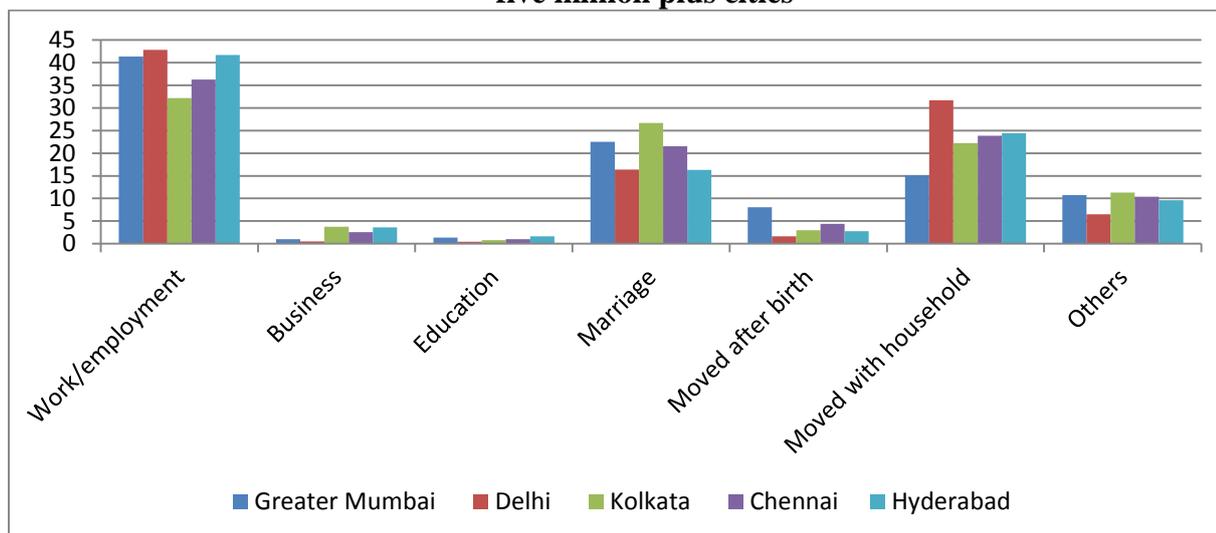
Figure 4: Percentage of rural to urban migration in top five (as per population size) million plus cities



Source: Census of India 2001

The Census data also provides enough clues about the reasons for rural to urban migration in these cities. Figure 5 shows the percentage of rural to urban migrants on the basis of reasons of migration in top five million plus cities with the time duration of ten years and more than ten years. The figure indicates that the main reasons behind the migration of population are work and employment. A large part of migrants move from backward to modern areas due to lure of job opportunities. It is observed that the largest rural-urban migration was to Mumbai (28,47,510 persons), of which 41% people cited work and employment as reasons for migration; 22% people migrated due to marriage in which the percentage of women was higher than that of men. Migration to Delhi, Chennai and Hyderabad also show the same pattern; higher rural to urban migration was dominated by work and employment reasons in these cities. Marriage and consequent re location of households is also cited as causes for rural to urban migration.

Figure 5: Percentage of rural to urban migrants on the basis of reasons of migration in top five million plus cities



Source: Census of India (2001)

Recently, government of India has launched several policies and programmes to promote urbanisation-led development in India as urban areas have traditionally contributed higher level of GDP than rural areas. Among the various policies, 100 Smart Cities Programme, AMRUT (Atal Mission for Rejuvenation and Urban Transformation), JNNURM (Jawaharlal Nehru National Urban Renewal Mission), UIDSSMT (Urban Infrastructure Development Scheme for Small and Medium Towns), NERUDP (North Eastern Region Urban Development Programme), NUIS (National Urban Information System), Capacity Building for Urban Local Bodies, Lump Sum Provision Scheme for the benefit of North East Region (NER) including Sikkim, Brihan Mumbai Storm Water Drainage (BRIMSTOWAD) project at Mumbai, PPP (Public Private

Partnership), Clean India Mission are the major programme and policies introduced by governments in recent years to promote urbanization in India.

The above discussion clearly indicates that India is experiencing a higher level of urbanization and its contribution to national income is also high. This in turn indicates that Indian economy is going through a transformation from an agricultural based rural economy to an industry and service lead urban economy. In fact, recent years government has initiated and implemented various urban related policies and programs to promote urbanization in India. However, the country needs still better policies in the days to come to promote planned urbanization in India and to absorb the maximum economic potential that urban areas can provide for sustainable economic growth in India. Given the importance of knowing the factors which contribute to rural to urban migration in India, it is imperative to systematically study the determinants of rural to urban migration in India. It is only fair to that rural to urban migration will lead to future rapid urbanization in India which in turn will lead to higher and sustainable economic growth. It is hoped that the findings of this paper will help policy makers to formulate effective policies in India to promote urbanization through rural to urban migration. It is also surmised from a review of existing studies on this topic is that this is first study in India which considers city specific factors to identify the reasons behind city level rural to urban migration.

In this study, urban agglomeration is defined as a geographic concentration of urban population and related economic activities. This implies that urban agglomeration includes, but is not equal to, urbanization. Here, cities with 750,000 or more inhabitants as of 2015 are defined as large urban agglomerations. There are several reasons behind the selection of such large agglomerations as the units of analysis. First, World Urbanization Prospects provide updated data for the cities with 750,000 or more inhabitants for the years 1950 to 2025 with five year intervals, whereas Indian census data only provides data up to the 2001 census (as latest 2011 census data is yet to be published) with a 10 year interval. Second, because of the unavailability of city specific data for a large number of variables used in this study (e.g. city income data), city district (where the sample city is located) is used as a proxy of a city. Larger cities are a good proxy for a city district as they cover a larger portion of a district than the smaller cities. Third, as India's urbanization (i.e. share of urban population) is mainly centred around Class I cities, these cities by definition belong to Class I cities. On the other hand, urban economic growth is defined by growth rate of city domestic income (i.e. non - primary district domestic product [DDP])

II. Brief Review of Literatures

To understand the movement of people occurring within the country, it is important to study the migration pattern initially. Arzaghi and Rupasingha (2013) argued that the migration of rural to urban occurs due to diversification. The migrants get opportunities to migrate due to correlation of income between origin and destination as measure of diversification, as in the case of United States. Iversen (2006) argues that the rural to urban migration is a dynamic migration model. The reasons of migration are social network, multipliers, spillovers, and caste affinities and the job opportunities in urban areas. According to McCatty (2004) who examined the need of rural to urban migration in developing countries, migration takes place in these countries due to both the push-pull migration forces these forces are of two types -- voluntary forces and involuntary forces. Voluntary forces are job opportunities; education, medical facilities, high per capita income, transport facilities, high living standard etc., and the involuntary forces are political disputes, strike, fighting with neighbors, lack of transport facility, illiteracy, natural disaster, bullying etc.

In the context of India, Mitra and Murayama (2009) found that intra state migration is much higher in magnitude than inter-state migration rate in India. Male and female migration rates are closely inter connected irrespective of whether they migrate from rural areas within the states and outside the states. The social and cultural diversity in India stands as a major hindrance to population mobility. Bhagat (2014) argued that migrants with low education and skills, given with the seasonal and temporary nature of their employment, are more vulnerable and subject to various kinds of exclusions in urban areas. Migration is treated more as an issue of governance rather than one of development in developing countries like India. Akram (2015) analyzed the push factors of rural to urban labour migration in India. His empirical analysis shows that increase in per capita Net State Domestic Product tends to decrease the number of out-migrants from the rural areas of that state whereas increase in the proportion of population living below poverty line, higher proportion of Scheduled Castes in the population and illiteracy rate in the rural area of the state, etc. tend to decrease rural to urban labour migration from that state to other states. Agasty and Patra (2013) who examined the determinants of rural to urban migration in the Indian states of Orissa states that there are two types of variables that influence the migration rural to urban: micro variables and macro variables. These are the two variables that influence people to move from one place to another. Micro variables are individual variables and

macro variables refer to the factors that influence the whole population of a particular place or area to move.

However, there only a few studies that have tried to investigate the economic factors that contributes to rural to urban migration in India. Therefore, it is hoped that the present study will be useful not only to measure the effect of migration on urbanization but also its effect on economic growth and development.

III. Empirical Framework and Results of the Estimation of Determinants

To empirically investigate the determinants of rural to urban migration in large agglomeration in India, the following OLS regression model is used for estimation.

$$\text{Migrant} = \alpha_0 + \sum_{i=1}^9 \alpha_i X_i + \epsilon \dots \dots \dots (1)$$

Here, the dependent variable ‘Migrant’ in equation 1 has two different forms; first it is measured by percentage of rural to urban migration in large agglomeration in India and secondly, it is measured in terms of the total number of rural to urban migrants. The X_i s are independent variables i.e. city wise total self employed male, city-wise self employed female, level of inequality, railway station- distance from the city, total number of electricity connections, not in male labour force, city-wise total number of universities, casual worker male, city output, city-wise poverty headcount ratio, city-wise poverty gap ratio, city-wise total no. of medical facilities, city wise average rain fall, city-wise total receipts and city-wise total number of colleges.

Appendix table AI lists out the all the cities which are considered for the study. Summarized in Appendix table AII are the descriptions, measurements, and data sources of all of the variables used in estimation of OLS regression of Equation 1. 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 in a way that does not depend on the variable’s measurement unit. The higher values of CV for railway station distance from the city in and total number of electricity connections indicate a greater dispersion in these variables. On the other hand, city output, city wise average rain fall and city wise total number of self employed male show a lower dispersion in these variables. On the other hand, Table 2 presents the row correlation coefficients.

Table 1: Description of data used in the regression equation

Variables	Mean	Std. Dev.	Min.	Max.	C.V.
Percentage of rural to urban migration in 2001 (prum)	18.6	12.2	2.7	47.4	65.7
Total number of rural to urban migrants (trum) (in thousands)	383.1	794.9	25.7	4651.5	0.21
City wise total Self employed male in 2004-05 (selfm)	328.4	94.6	188.8	615.8	28.8
City-wise self employed female in 2004-05 (self)	91.0	71.8	7.4	348.2	79.0
Level of inequality in 2004-05 (Gini)	0.3	0.1	0.1	0.6	28.7
Railway Station distance from the city in 2001 (rail dist)	0.4	1.4	0.0	8.0	383.6
Total no. of electricity connection in 2001 (elect) (in thousands)	461.4	1222.2	0.0	8560.3	0.26
Not in male labour force in 2004-05 (nlfm)	215.1	64.2	72.3	439.2	29.8
City-wise total number of universities in 2001 (univ)	1.1	1.2	0.0	5.0	105.0
Casual worker male in 2004-05 (casualm)	104.3	60.4	9.3	300.9	57.9
City output in 2001 (ddp)	16597.8	7614.6	797.2	38412.6	45.9
City-wise poverty headcount ration in 2004-05 (fgt0)	12.2	12.5	0.2	57.8	102.4
City-wise poverty headcount ration in 2004-05 (fgt1)	2.3	3.1	0.0	16.1	132.7
City-wise total no. of medical facilities in 2001 (medi)	187.4	213.8	2.0	781.0	114.1
City wise average rain fall in 2001 (rain)	1075.3	570.2	266.0	3053.0	53.0
City-wise total receipt through taxes and revenue derived from municipal properties (trmp) (in lakh) in 2001	14.9	53.2	0.0	380	0.004
City-wise total no. of colleges (ctc) in 2001	41.5	49.0	1.0	195.0	118.2

Source: Calculated by authors' by using 51 observations

Table 2: Correlation Coefficient of Determinants of rural to urban migration in large cities in India

	prum	trum	selfm	selff	gini	raildist	elect	nlfm	univ	casualm	ddp	fgt0	fgt1	medi	rain	trmp	ctc
prum	1																
trum	0.39	1															
selfm	-0.16	-0.09	1														
selff	0.33	0.16	0.54	1													
gini	-0.23	0.08	-0.20	-0.09	1												
raildist	0.03	-0.03	-0.04	-0.22	-0.04	1											
elect	0.15	-0.05	-0.16	-0.21	-0.16	-0.07	1										
nlfm	-0.03	-0.02	-0.46	-0.34	0.16	0.37	0.24	1									
univ	-0.14	-0.15	-0.05	-0.04	-0.06	-0.23	0.11	-0.11	1								
casualm	0.09	0.20	-0.26	0.03	-0.14	-0.19	0.22	-0.17	0.24	1							
ddp	0.04	-0.03	-0.28	-0.22	0.01	-0.01	-0.07	-0.17	-0.12	-0.03	1						
fgt0	-0.11	0.08	-0.10	-0.08	0.17	-0.06	-0.07	0.12	-0.13	0.28	-0.18	1					
fgt1	-0.05	0.08	-0.18	-0.09	0.15	0.06	-0.05	0.20	-0.15	0.30	-0.12	0.93	1				
medi	0.06	-0.03	-0.17	-0.23	-0.11	0.29	0.10	0.04	0.02	0.04	0.22	-0.08	0.01	1			
rain	0.03	-0.19	-0.09	-0.19	0.10	0.06	-0.03	0.03	-0.03	-0.21	-0.03	-0.15	-0.14	0.03	1		
trmp	0.08	-0.03	0.08	-0.08	-0.16	-0.07	0.27	-0.19	0.13	0.06	-0.01	-0.06	-0.08	0.32	0.26	1	
ctc	-0.03	-0.08	-0.11	-0.19	-0.13	-0.11	0.61	0.06	0.17	0.19	0.11	0.02	0.04	0.48	0.04	0.50	1

Note: See Table 1 for variable definitions. The correlation coefficients are based on 51 observations.

Source: Authors'.

Table 3: Determinants of rural to urban migration in large cities in India

<i>Independent variables</i>	Dependent variable:				
	<i>Percentage of Rural to Urban Migration</i>				<i>Total Migrants from Rural to Urban</i>
	(1)	(2)	(3)	(4)	(5)
City wise total no. of self employed male	-0.081** (0.031)	-0.092*** (0.027)	-0.094*** (0.027)		-0.006*** (0.002)
City-wise self employed female	0.117** (0.048)	0.123*** (0.045)	0.123*** (0.044)		0.006* (0.004)
City-wise level of inequality	-23.74 (19.69)	-31.714* (16.61)	-30.98** (14.39)		-0.447 (1.59)
Road distance to nearest railway station from a city	0.817 (0.847)	1.761* (1.02)	2.091** (0.782)		0.192 (0.109)
City-wise total no. of electricity connection	6.48*** (2.23)	0.276*** (0.081)	0.279*** (0.087)	6.01*** (1.48)	0.005 (0.007)
City-wise total no. of persons not in labour force	-0.005 (0.032)	-0.051* (0.028)	-0.054* (0.029)		-0.003 (0.003)
City-wise total number of universities	-0.855 (1.42)	-1.387 (1.162)		-1.93 (1.621)	
City-wise total no. of casual male worker	-0.033 (0.035)	-0.036 (0.030)	-0.048* (0.028)		
City wise per capita income	-6.284* (3.61)	-0.189 (1.908)			-0.054 (0.283)
City-wise poverty headcount ration	-0.024 (0.265)	0.032 (0.134)	0.051 (0.122)	-0.549** (0.263)	0.026 (0.046)
City-wise squared poverty headcount ration	0.216 (1.35)			2.12 (1.35)	-0.077 (0.194)
City-wise total no. of medical facilities	0.006 (0.008)	0.001 (0.008)			
City wise average rain fall	0.0004 (0.003)	0.002 (0.002)			
City-wise total receipt through taxes and revenue derived from municipal properties	0.056 (0.018)			0.028*** (0.009)	
City-wise total number of colleges	-0.069* (0.039)			-0.122*** (0.037)	
Intercept	56.39 (52.67)	61.405** (27.289)	62.96*** (14.38)	45.83*** (16.45)	14.59** (3.64)
No. of observations	51	51	51	51	51
R square	0.51	0.46	0.44	0.19	0.18
Adjusted R ²	0.28	0.29	0.33	0.08	0.003
F Statistics	4.59***	7.42***	9.65***	7.79***	1.74
Mean VIF	3.62	1.57	1.59	4.07	3.47

Note: Figures in parentheses represent robust standard errors. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively. Source: Estimated using equation 1.

Table 3 presents the estimated regression results from Equation (1). Regression 1 reports the full model where all the independent variables for OLS estimation are considered. On the other hand, regression models 2-4 represent the parsimonious model by excluding the explanatory variables that did not show statistically significant results or match with the expected sign conditions. Regression models 1-5 consider the robust standard errors (to control for heteroskedasticity). The significant values of F statistics for Regressions 1-4 indicate that the overall model is statistically significant. The higher values of R^2 indicate that Regression 1 explains a good percentage of total variation in the dependent variable. The study has also calculated the adjusted R^2 , as it adjusts for the number of explanatory terms in a model, i.e., it incorporates the model's degrees of freedom. The multicollinearity problem does not seem to be troublesome, as the mean VIF values do not exceed 10 for Regression model 1-5.

Regression 1 shows that city-wise total self employed male has a negative impact on the percentage of rural to urban migration. In particular, a 100 percent increase of city-wise total self employed males decreases rural to urban migration by 8 percentage points. However, percentage of city-wise total self employed female has a positive impact on the percentage of rural to urban migration. This indicates that cities having higher percentage self employed female attract higher rural to urban migration whereas cities having higher percentage self employed male discourage rural to urban migration. This may be the case that if women have the chance to make themselves self employed in the city; more rural women from rural households will migrate to urban areas to earn more provided that their male partners also find jobs in the same city. The possible increases in income of the households make rural to urban migration easier and also attractive. On the other hand, city-wise availability of higher number of electricity connections has a positive impact on rural to urban migration. The estimated result shows that a 10 percent increase of total number of electricity connection in the host city increases rural to urban migration by about 65 percent. It is important to indicate here that availability of electricity connections stand as a proxy of availability of infrastructure facility. The result indicates that infrastructure facility has a positive impact on rural to urban migration. Finally, regression 1 shows that city wise per capita income also has a negative impact on percentage of rural to urban migration. This means that if a city has higher per capita income (i.e., richer city), it discourages rural to urban migration. It therefore indicates that a richer city may be more expensive for a person to migrate from rural to urban areas. City-wise total number of colleges also has a negative impact on percentage of rural to urban migration. This indicates that the educational facilities do not attract

higher percentage of rural to urban migration. The other independent variables i.e., city-wise level of inequality, road distance from a city to nearest railway station, poverty ratios, medical facilities, number of universities, average rain fall, and total receipt through taxes and revenue derived from municipal properties do not show any statistically significant effect on the percentage of rural to urban migration.

Regression 2 shows very important results; it shows that level of inequality in a city has a negative impact on the percentage of rural to urban migration. On the other hand, road distance from the nearest railway station to a city exerts a positive impact. In particular, a one percent increase in level of inequality (or road distance from nearest railway station to a city) decreases (or increases) 32 (or 2) percentage of the rural to urban migration. The result indicates that if a city has higher level of inequality, it discourages rural to urban migration. On the other hand, if a city has higher road distance from the nearest railway station, naturally indicates the lower economic potential and therefore it encourages rural to urban migration. This means that cities having lower economic potential attract higher rural to urban migration. Similarly, cities having lower percentage (number) of the higher number of persons those are not in labour force attract lower percentage of rural to urban migrations. This shows that employment potential in the host city is one of the main factors behind rural to urban migration. People moves from rural areas with the expectation of getting absorbed in the urban areas. City wise total number of self employed male or females, and total number of electricity connections of the host city has a similar impact on percentage of rural to urban migration as explained in regression 1. However, city-wise total number of universities, number of male casual worker, poverty head count ratio, medical facilities, and average rain fall again do not show any statistically significant effect on percentage of rural to urban migration. Most importantly, city wise per capita income lost its significant level in regression 2 compared to regression 1.

Regression 3 shows that city-wise total number of male casual worker has a negative impact on rural to urban migration. A 100 percent increase in total number of casual workers decreases rural to urban migration by about 5 percent. This clearly indicates that cities need to provide formal regular jobs than making the migrants casual workers to attract higher level of rural to urban migration. City-wise total number of self employed males or females, level of inequality, road distance from nearest railway station to a city, availability of electricity connections and number of persons not in labour force show a similar impact on percentage of rural to urban

migration. However, city-wise poverty situation does not have any significant impact on rural to urban migration.

Regression 4 shows that city-wise higher poverty ratio (measured by poverty head count) has a negative impact on city-wise rural to urban migration. A 10 percent increase in poverty head count ratio decreases city-wise rural to urban migration by about 5.5 percent. This indicates that poorer cities discourage rural to urban migration. On the other hand, city-wise higher total receipt received through taxes and revenue derived from municipal properties, also have a positive impact on rural to urban migration. This indicates that strong economic conditions encourage higher rural to urban migration. The availability of electricity connection in a city shows a positive impact on rural to urban migration as explained in regression 3. However, city wise total number of universities and squared poverty gap ratio again do not show any statistically significant affect on city-wise rural to urban migration.

Finally regression 5 considers the total numbers of rural to urban migrants as the dependent variables. The estimated results show that city-wise total number of self employed males has a negative impact, and city-wise total number of self employed female has a positive impact on city-wise rural to urban migration. These results are identical to the results obtained in regression models 1-3. However, other independent variables do not show any statistically significant effect on city-wise rural to urban migration. It also indicates that the data considered in this study does not fit properly when the total number of rural to urban migrants is considered as a dependent variable.

IV. Conclusion and policy implication

This paper tries to investigate the determinants of rural to urban migration in large cities of India based on 2001 data. For this analysis, data from various sources such as Census of India and unit/individual level data of National Sample Survey data on employment and unemployment and consumption expenditure data have been used for analysis. Due to lack of city-wise data district level data is used by considering urban sample located in that particular district as a proxy of the city. OLS regression method is used to analysis data in this study. City wise rural to urban migration rate and total number of rural to urban migrants are considered as dependent variables.

The descriptive analysis shows that India's urbanization rate is much lower than other developed countries. Natural increase in population is one of the main sources of increase in urban population in India. The net rural to urban migration from 1991 to 2001 is about 21 percent.

Economically developed states have been witnessing higher rural to urban migration than economically underdeveloped states. Among the large cities, Mumbai has recorded the highest (i.e., 17.32%) rural to urban migration rate in the time span of ten years and more, among all other large agglomerations. City-wise analysis shows that reasons for rural to urban migration are predominantly work/employment and marriage.

The OLS regression results show that city-wise total number of male self-employed, level of city level inequality, males not in labour force, male casual labour, city-wise per capita income, city level poverty measured by poverty head count ratio, and city wise total number of colleges have a negative effect on city-wise percentage of rural to urban migration. On the other hand, city wise total number of self employed female, road distance to nearest railway station from a city, total of number of electricity connections and city-wise total receipts through taxes and revenue derived from municipal properties have a positive impact on city-wise rural to urban migration. On the other hand, city-wise total number of self employed male has a negative and city wise total number of self employed female has a positive impact on city-wise total number of rural to urban migrants. This results indicate that city level employment situations, city level inequality level, city level poverty and infrastructure facilities play an important role in rural to urban migration.

It is quite obvious that the country needs more rural to urban migration for economic development in India. In rural areas, more population depend upon agriculture, and the higher dependence on agriculture leads to disguised unemployment in rural area. If the disguised unemployed population is relocated in urban areas, then the supply of labour and demand of consumer goods in urban areas will increase. This will in turn lead to more production, higher level of economic activity and also higher per capita income. The level of job opportunities in the cities will also increase in this process. And this increase will promote investment which will in turn lead to further economic growth. So, the economic growth in India can be catalyzed through the growth of urbanization resulting from rural to urban migration.

In this perspective we suggest the following policies; first, we need to increase the job opportunities in the urban area for higher rural to urban migration. Second, level of urban poverty and urban inequality has to control for this purpose. Third, basic urban infrastructure facilities such as road, electricity, education etc has to increase not only to make investment friendly but also to promote rural to urban migration. Finally, living cost such as urban housing

prices has to control for making Indian cities migrant friendly for higher and sustainable economic growth.

Appendix

Table A1. Names of Cities Used in Regression Analysis

Agra (Agra), Aligarh (Aligarh), Allahabad (Allahabad), Amritsar (Amritsar), Asansol (Bardhaman), Aurangabad (Aurangabad), Bangalore (Bangalore Urban), Bareilly (Bareilly), Bhiwandi (Thane), Bhopal (Bhopal), Bhubaneswar (Khordha), Chennai (Chennai), Coimbatore (Coimbatore), Delhi@, Dhanbad (Dhanbad), Durg-Bhilainagar (Durg), Guwahati (Kamrup), Gwalior (Gwalior), Hubli-Dharwad (Dharwad), Hyderabad (Hyderabad), Indore (Indore), Jabalpur (Jabalpur), Jaipur (Jaipur), Jalandhar (Jalandhar), Jamshedpur (Purbi- Singhbhum), Jodhpur (Jodhpur), Kanpur (Kanpur Nagar), Kochi (Eranakulam), Kolkata (Kolkata), Kota (Kota), Kozhikode (Kozhikode), Lucknow (Lucknow), Ludhiana (Ludhiana), Madurai (Madurai), Meerut (Meerut), Moradabad (Moradabad), Mumbai (Mumbai), Mysore (Mysore), Nagpur (Nagpur), Nashik (Nashik), Patna (Patna), Pune (Pune), Raipur (Raipur), Ranchi (Ranchi), Salem (Salem), Solapur (Solapur), Thiruvananthapuram (Thiruvananthapuram), Tiruchirappalli (Tiruchirappalli), Varanasi (Varanasi), Vijayawada (Krishna), Visakhapatnam (Visakhapatnam).

Note: City district (where the sample city is located) is used as a proxy of a city to measure all the variables (except population data) used in estimation of OLS regression of Equation 1 by considering urban sample persons (if data available for rural and urban separately) of that district. Name in parentheses indicates the name of the district in which the city is located. @ Delhi are considered as a whole proxy of a city district.

Appendix A2: Variable sources and definitions

Work-force participation rate (WPR)(As given in NSSO: The number of persons employed in usual status (ps+ss) per 1000 persons is referred to as work force participation rate (WFPR) or worker population ratio (WPR) in usual status (ps+ss). **Usual principal activity status:** The usual activity status relates to the activity status of a person during the reference period of 365 days preceding the date of survey. **Usual subsidiary economic activity status:** A person whose usual principal status was determined on the basis of the major time criterion could have pursued some economic activity for a shorter time throughout the reference year of 365 days preceding the date of survey or for a minor period, which is not less than 30 days, during the reference year. **Usual activity status considering principal and subsidiary status taken together:** The usual status, determined on the basis of the usual principal activity and usual subsidiary economic activity of a person taken together, is considered as the usual activity status of the person and is written as usual status (ps+ss). According to the usual status (ps+ss), workers are those who perform some work activity either in the principal status or in the subsidiary status. Thus, a person who is not a worker in the usual principal status is considered as worker according to the usual status (ps+ss), if the person pursues some subsidiary economic activity for 30 days or more during 365 days preceding the date of survey.

City output: Per capita non-primary District Domestic Product (DDP) over the period 2000-01 to 2004-05 at 1999-2000 constant prices is taken as a measure of urban economic growth. Source: Directorate of Economics and Statistics (DES), various State Governments, GoI.

City inequality level: Gini coefficient of the large city districts by considering urban sample persons of that district. Source: Unit level data of NSS 2011-12 on consumer expenditure.

Rain fall: City wise average rainfall.

Medical facilities (Numbers): City- wise Total Number of Hospital + Number of Dispensary + Number of Health Centre + Number of Family Welfare Centre + Number of TB Clinics + Number of Nursing Home + Number of Other Medical Institutions.

Total university (Numbers): City-wise total number of universities.

Electrification (Number of Connections): City- wise Total number of connection by Domestic + Industrial + Commercial + Road Lighting (Points) + Others

Railway Station distance: Railway Station Road Distance (in kms)

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