

Agglomeration Economies and Rural to Urban Migration: A District Level Study Based on 2011 Census Data

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Abstract

Keeping in view the concept of agglomeration economies and the New Economic Geography (NEG) angle, this paper makes an attempt to examine the rural to urban population movement at the district level in India. The findings tend to confirm that higher levels of urbanisation and higher migration rates are not strongly associated. Nevertheless, there exists a cluster of districts which are able to attract migrants on a large scale in spite of being already urbanised. The work participation rate, share of services and construction work, and literacy rate all form parts of this positive nexus, indicating that opportunities exist with increased levels of urbanisation which prompt people to migrate. The positive spill-over effects of higher levels of urbanisation are not limited to the urban spaces only as the adjoining rural areas are also indicative of a significant transformation process. The land use pattern and activities seem to be changing and some of the developmental impact is evident. However, having concluded with a positive note it is important to mention that the regional variations in this respect bring out sharp differences in the relationship between urbanisation level and migration rates, determinants of the nature of urbanisation and also, the outcome variables of urbanisation and migration. There are many districts with higher levels of urbanisation; yet, they are not able to attract migrants at a rapid pace. New investment opportunities are to be created in these spaces to reduce the cost of growth and make employment creation more effective, facilitating the rural population to take the benefits of agglomeration economies.

Key Words: migration, agglomeration, urbanisation, rural, mobility

1. Introduction

The lockdown of 2020 following the outbreak of the COVID-19 pandemic unravelled the massive number of migrants who reside in cities, originating from the rural and other small urban areas. Indirectly, it confirms the huge contributions the migrants make to the growth and value addition cities create, and in return, the sources of livelihood they access for themselves in the urban space. It may not be possible to capture the minute details of the population movement processes through secondary sources like population censuses or NSS, though these are the only sources of secondary data available at the country, state and district level. In other words, there are views that the secondary sources grossly underestimate the migrant population at the place of destination. For example, the floating population or the very short duration migrants are hardly captured by these sources. Srivastava (2020) argued that the estimates of migrants from the Census and the NSS both failed to satisfactorily measure seasonal/circular migrants. Nevertheless, the information available from the secondary sources can throw light on the broad patterns of population mobility and can at least provide clue for effective settlement and employment policies. The patterns can be delineated to understand the empirical validation of some of the theoretical underpinnings. For example, the literature on migration and agglomeration economies reinforced the fact that regions with large cities attract more migrant population as the job search costs are less there and the real earnings are relatively better (Mills and Becker, 1986). Hence, from an empirical standpoint, higher incidences of migration in regions with large cities strengthen our confidence levels in accepting the theoretical rationalisation, though the possibility of different causal structure with similar outcomes cannot be ruled out. This paper proposes to examine the rural to urban migration rates for males and females separately. Besides, the analysis is carried out at a fairly disaggregated level - at the district level –using the population census 2011 data so that the detailed patterns are retrieved. The broad methodology we follow includes bivariate summary tables and factor/cluster analysis.

2. Perspective

What determines migration, in what way the urban job market information is accessed, whether migration is associated with strong payoffs and who would migrate are important questions. Similarly, whether migration results in remittances and how the remittances are spent by the rural households encompass a great deal of discussion. Consumption smoothing and rural investment are some of the important aspects on which the literature has gained momentum.

While rural investment is instrumental to long term gains, consumption support drawn from remittances is rather seen as short-term benefits.

Rural to urban migrants look for jobs in the urban labour market for which they use a great deal of informal networks developed along the lines of caste and kinship bonds and contacts through co-villagers, friends and so on. These networks are, in fact, inevitable for seeking an entry to the labour market though network concentration is seen to reduce the probability of upward mobility (Kono, 2006). In other words, the lack of network diversification results into labour market information asymmetry which in turn reduces the upward mobility. However, looking from the point of view of city growth and development the contributions made by the low income migrants are enormously rich. In fact, the value addition they create is much more than the income they are able to earn for themselves (Hayami et.al. 2006). Hann, Brock and Caulibaly (2002) studied the patterns of migration in Mali and they go on to show how the people have successfully used migration as a strategy for risk management as migration for work (domestic as well as across borders) is an integral part of households in Mali.

However, in spite of the fact that migration for employment from rural to urban areas is a major tool of poverty alleviation, the opportunities are gradually declining (Kundu and Mohanan, 2009). Since, it is the urban economy which holds prospects for job opportunities with higher productivity and wages, and contributes towards eradicating abject poverty (Mills and Becker, 1986), rural to urban migration is usually directed towards the large cities (Kundu, 2006). The job prospects are definitely better for the migrants in large cities than those in small towns. But these possibilities are closing down for the unskilled, illiterate population because the metropolitan cities are resisting immigration of unskilled and illiterate male population due to changes in the requirements in labour market. The newly emerging activities in the urban areas, even including those in the informal sector, are skill intensive which the unskilled labour from the rural areas cannot match.

In the New Economic Geography (NEG) framework of industry location¹ (Krugman, 1991), external-scale economies make people and companies more productive through the following mechanisms, as pointed out by Frick and Rodriguez-Pose (2018): (a) knowledge spill-overs between workers enabling learning and spur innovation; (b) forward and backward linkages

¹Though the modern sector in the historical sense was manufacturing, in the present context the services sector falls within its scope and firms in this sector not only supply to consumers and manufacturing firms but also serve each other (Ottaviano and Thisse, 2004).

between companies, suppliers, and buyers, making interactions between economic actors more efficient; and (c) a pooled labour market allowing for an easier matching between firms and employees. They indicate that a high share of industries, a well-developed urban infrastructure, and an adequate level of governance effectiveness allow countries to take advantage of agglomeration benefits from larger cities. Besides, the productivity impact of metropolitan governance structures is well documented by Ahrend et al. (2015).

The difference between the NEG literature and the urban economists' agglomeration approach is that the former analyses the impact of city size or agglomeration on economic growth at the national level, while the latter is concerned with the impact of city size on the productivity of urban workers at the city level though the mechanisms which determine people's productivity are similar (Castells-Quintana and Royuela, 2017). Criticizing the existing literature on static agglomeration economies, Camagni, Capello, and Caragliu (2016) abandon the agglomeration-growth shortcut and unravel the role of dynamic agglomeration economies and their determinants. The quality of the activities, the quality of production factors, the density of external linkages and co-operation networks, and the characteristics of the overall urban system in which the city is located are some of the major factors which are expected to increase productivity and long-term 'structural dynamics' processes of urban transformation (Camagni, Capello, and Caragliu, 2016).

To simplify, the urban agglomeration literature would suggest that all firms and all workers in general are more productive in large cities, while the NEG angle would insist that the better performers compared to their average counterparts would get better or benefit more in large cities. Hence, among the migrants the better performers may be presumed to have moved to the large cities. And if that is the case, the combination of higher levels of urbanisation, higher migration rate and higher work participation rate is an expected outcome. Further, higher levels of urbanisation are also expected to be associated with better outcomes from demographic and socio-economic angle. In the following sections we pursue our analysis in the light of these hypotheses.

3. Empirical Analysis

Rural to urban migrants who moved to the urban areas in the last 10 years comprise only a small percentage of the urban population at the district level (Table 1). More than 60 percent of the districts reported a male migration rate of 8 per cent at the most. However, among the females the migration rates are much higher: more than 60 per cent of the districts registered a

rate of more than 8 per cent at least. Though the decadal migration rates are not phenomenal, particularly among the males, there are some districts which reported a rate of more than 15 per cent: nearly 6 and 12 per cent of the districts showed a migration rate of more than 15 per cent among the males and females respectively. The geographical location of districts with different magnitudes of migration rates are portrayed in Map 1.

Secondly, estimating the decadal movement of population as a percentage of the total migrant population of all duration in the urban areas, the population movement phenomenon does not seem to be insignificant by any means. Nearly 90 per cent of the districts registered a figure of more than 30 per cent (Table 2). From this angle, the current migration seems to be substantial: as a percentage of total migrant (male) population the decadal male migration, which can be interpreted as the fresh flow of population to the urban areas, comprises at least 40 per cent in around 40 per cent of the districts. Among the females the corresponding figure, however, seems to be much lower: only around 27 per cent of the districts show a figure of more than 40 per cent.

Table 1: Rural to Urban Migration Rate

(defined as the migrants of 0-9 years duration at the place of destination as a percentage of total urban population in the districts, 2011)

Migration Rate	Number of Districts			Percent of Districts		
	Person	Males	Females	Person	Males	Females
< 3 percent	17	73	7	2.7	11.5	1.1
3.0 - 4.0 percent	32	69	8	5.0	10.8	1.3
4.1- 5.0 percent	54	65	27	8.5	10.2	4.2
5.1- 6.0 percent	69	84	41	10.8	13.2	6.4
6.1- 7.0 percent	71	75	54	11.1	11.8	8.5
7.1- 8.0 percent	81	74	64	12.7	11.6	10.0
8.1- 9.0 percent	83	39	62	13.0	6.1	9.7
9.1- 10.0 percent	54	37	75	8.5	5.8	11.8
10.1- 11.0 percent	46	31	80	7.2	4.9	12.6
11.1-12.0 percent	25	13	61	3.9	2.0	9.6
12.1- 13.0 percent	28	14	39	4.4	2.2	6.1
13.1- 14.0 percent	15	14	23	2.4	2.2	3.6
14.1- 15.0 percent	14	9	22	2.2	1.4	3.5
>15 percent	48	40	74	7.5	6.3	11.6
No of Districts	637	637	637	100		100
Minimum (%)	2.0	0.5	2.0			
Maximum (%)	48.9	55.4	56.6			

Note: There is no rural-urban migration in 3 districts; so the total number of districts is 637.

Source: Population Census, 2011

Map 1: Rural to Urban Male and Female Migration Rates During 2001-2011 at the District Level (%)

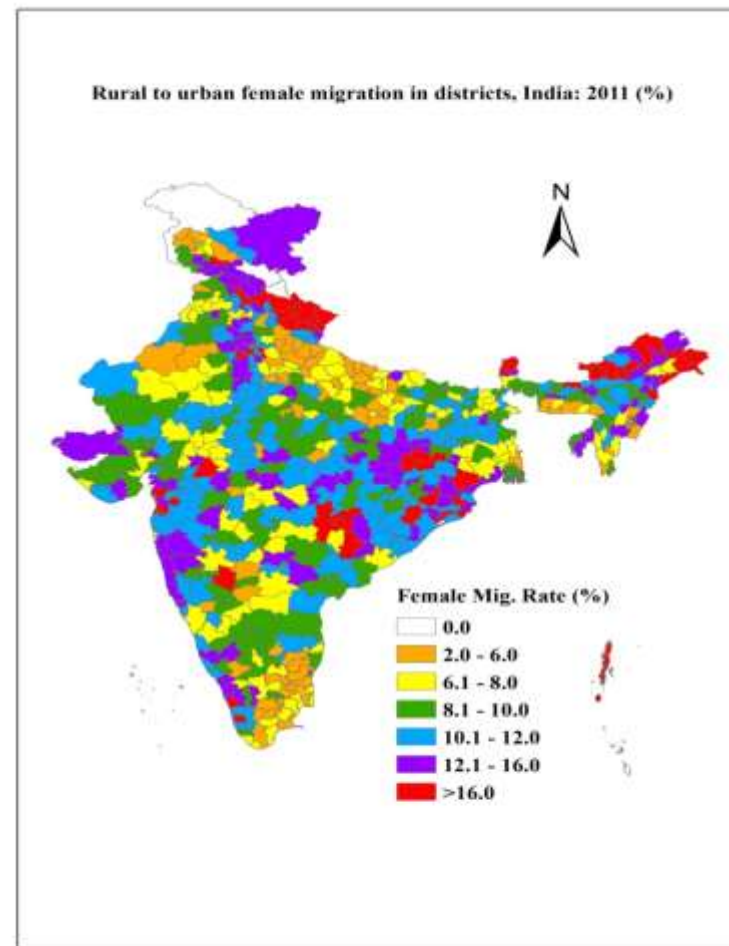
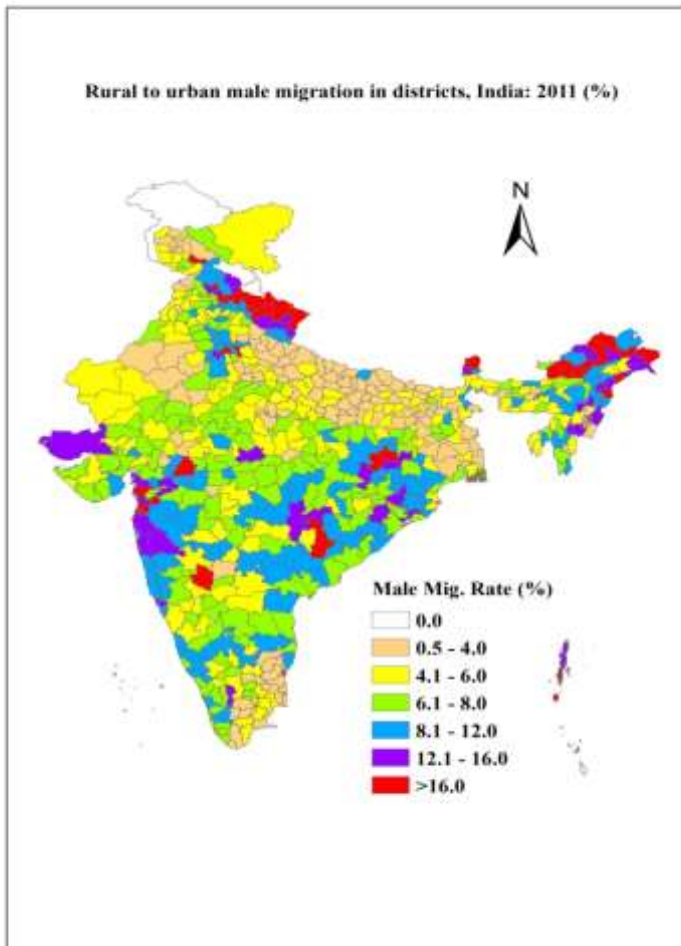


Table 2: Rural to Urban Migration of 0-9 Years Duration as a Percentage of Rural to Urban migration of All-Duration, 2011

% of all duration migrants	Number of Districts			Percent of Districts		
	Persons	Males	Females	Persons	Males	Females
< 30 percent	45	51	66	7.1	8.0	10.4
30- 35 percent	196	134	195	30.8	21.0	30.6
35.1- 40 percent	211	186	206	33.1	29.2	32.3
40.1- 45 percent	96	140	93	15.1	22.0	14.6
> 45 percent	89	126	77	14.0	19.8	12.1
No of Districts	637	637	637			
Minimum (%)	24.5	20.7	23.1			
Maximum (%)	89.3	88.6	90.2			

Note and Source: See Table 1

Table 3: Districts across Regions Distributed by Migration Rate

Regions	No. of districts	Very Low	Low	Moderate	High	Very High	Extremely High
		0.1-5	5.1-10	10.1-15	15.1-20	20.1-25	>25
Males							
North	131*	32 (24.4)	65 (49.6)	21 (16.0)	3 (2.3)	2 (1.5)	6 (4.6)
Central	139	70 (50.4)	56 (40.3)	7 (5.0)	5 (3.6)	0 (0.0)	1 (0.7)
East	111	53 (47.7)	46 (41.4)	9 (8.1)	3 (2.7)	0 (0.0)	0 (0.0)
North-East	86	14 (16.3)	42 (48.8)	17 (19.8)	8 (9.3)	4 (4.7)	1 (1.2)
West	66	7 (10.6)	36 (54.5)	17 (25.8)	2 (3.0)	1 (1.5)	3 (4.5)
South	107**	31 (29.0)	64 (59.8)	10 (9.3)	1 (0.9)	0 (0.0)	0 (0.0)
Total Dist	640	207 (32.3)	309 (48.3)	81 (12.7)	22 (3.4)	7 (1.1)	11 (1.7)
Females							
North	131*	7 (5.3)	50 (38.2)	52 (39.7)	12 (9.2)	3 (2.3)	5 (3.8)
Central	139	17 (12.2)	75 (54.0)	38 (27.3)	6 (4.3)	2 (1.4)	1 (0.7)
East	111	2 (1.8)	48 (43.2)	48 (43.2)	13(11.7)	0 (0.0)	0 (0.0)
North-East	86	7 (8.1)	29 (33.7)	28 (32.6)	15(17.4)	6 (7.0)	1 (1.2)
West	66	1 (1.5)	25 (37.9)	34 (51.5)	2 (3.0)	2 (3.0)	2 (3.0)
South	107**	8 (7.5)	69 (64.5)	25 (23.4)	3 (2.8)	1 (0.9)	0 (0.0)
Total Dist	640	42 (6.6)	296 (46.3)	225 (35.2)	51 (8.0)	14 (2.2)	9 (1.4)

Note: * No urban Population in Kinnaur and Lahul & Spiti district in north region

**No Urban Population in Nicobar district in south region

Figures in parentheses are percentages relative to the row total.

Source: Population Census, 2011

The distribution of districts across migration rates in different geographic regions (see Table A1 in Appendix 1, for formation of regions) seems to be different between the males and the

females. Even among the males; the central and eastern regions, for example, comprise nearly 90 per cent of the districts with very low/ low migration rates (Table 3), a pattern which is quite different from the other regions where districts with higher rates of migration are perceivable. Similarly, among the females nearly 70 per cent of the south and central region districts are characterised in terms of very low/low migration rates while in other regions the percentage of districts with higher rates of migration is not all that insignificant. On the whole, the regional variations in the context of migration are noteworthy: north-east, for example, is an exception with a noticeable percentage of districts with very high rates of migration.

Table 4: District Distributed by Urbanisation Rate

		Very Low	Low	Moderate	High	Very High	Extremely High
Region	No. of districts	<10.0	10.1-20.0	20.1-40.0	40.1-60.0	60.1-80.0	>80.0
North	131*	22 (16.8)	37 (28.2)	43 (32.8)	13 (9.9)	3 (2.3)	11 (8.4)
Central	139	24 (17.3)	57 (41.0)	46 (33.1)	6 (4.3)	5 (3.6)	1 (0.7)
East	111	51 (45.9)	37 (33.3)	13 (11.7)	8 (7.2)	1 (0.9)	1 (0.9)
North-East	86	23 (26.7)	34 (39.5)	16 (18.6)	10 (11.6)	2 (2.3)	1 (1.2)
West	66	2 (3.0)	17 (25.8)	27 (40.9)	10 (15.2)	6 (9.1)	4 (6.1)
South	107**	3 (2.8)	16 (15.0)	47 (43.9)	22 (20.6)	12(11.2)	6 (5.6)
Total Dist	640	125 (19.5)	198 (30.9)	192 (30.0)	69 (10.8)	29 (4.5)	24 (3.8)

Note: * No urban Population in Kinnaur and Lahul & Spiti district in north region

**No Urban Population in Nicobar district in south region

Figures in parentheses are percentages relative to the row total.

Source: Population Census, 2011

At higher levels of urbanisation though it is difficult to trace districts with very high levels of rural to urban migration either among the males or the females (Table 5), it is still evident that even at higher levels of urbanisation migrants are attracted from the rural areas. In other words, instead of leading to a saturation point, districts with higher levels of urbanisation are able to draw migrants at a low pace. At relatively lower levels of urbanisation there are clusters of districts with low and moderate rates of migration and, also, with high rates of population movement. In other words, the migration rate is quite varied, indicating that rural to urban mobility contributes to urban growth in such districts even when urban dynamism may not be present. The lack of livelihood opportunities in the rural areas can be seen as a driving force in these districts. On the whole, we are able to observe that higher urbanisation levels still attract

migration and secondly, with lower levels of urbanisation, migration is not necessarily insignificant. In the following section we pursue our hypothesis quantitatively.

**Table 5: Districts Distributed by Urbanisation Rate and Migration Rate, 2011
(In Number and Percentage)**

	Urbanisation Rate	No. of districts	Migration Rate					
			0.1-5	5.1-10	10.1-15	15.1-20	20.1-25	>25.1
Male								
Very Low	<10.0	129 (20.2)	53 (8.3)	48 (7.5)	16 (2.5)	5 (0.8)	1 (0.2)	3 (0.5)
Low	10.1-20.0	197 (30.8)	58 (9.1)	98 (15.3)	24 (3.8)	10 (1.6)	2 (0.3)	5 (0.8)
Moderate	20.1-40.0	192 (30.0)	60 (9.4)	107 (16.7)	18 (2.8)	3 (0.5)	4 (0.6)	0 (0.0)
High	40.1-60.0	69 (10.8)	25 (3.9)	29 (4.5)	11 (1.7)	3 (0.5)	0 (0.0)	1 (0.2)
Very High	60.1-80.0	29 (4.5)	5 (0.8)	14 (2.2)	8 (1.3)	1 (0.2)	0 (0.0)	1 (0.2)
Extremely High	>80.0	24 (3.8)	6 (0.9)	12 (1.9)	5 (0.8)	0 (0.0)	0 (0.0)	1 (0.2)
Total Dist		640 (100)	207 (32.3)	308 (48.1)	82 (12.8)	22 (3.4)	7 (1.1)	11 (1.7)
Female								
Very Low	<10.0	129 (20.2)	6 (0.9)	50 (7.8)	47 (7.3)	17 (2.7)	3 (0.5)	3 (0.5)
Low	10.1-20.0	197 (30.8)	10 (1.6)	82 (12.8)	76 (11.9)	20 (3.1)	5 (0.8)	4 (0.6)
Moderate	20.1-40.0	192 (30.0)	11 (1.7)	99 (15.5)	69 (10.8)	8 (1.3)	5 (0.8)	0 (0.0)
High	40.1-60.0	69 (10.8)	7 (1.1)	40 (6.3)	17 (2.7)	4 (0.6)	0 (0.0)	1 (0.2)
Very High	60.1-80.0	29 (4.5)	3 (0.5)	11 (1.7)	12 (1.9)	2 (0.3)	0 (0.0)	1 (0.2)
Extremely High	>80.0	24 (3.8)	5 (0.8)	14 (2.2)	4 (0.6)	0 (0.0)	0 (0.0)	1 (0.2)
Total Dist		640 (100)	42 (6.6)	296 (46.3)	225 (35.2)	51 (8.0)	13 (2.0)	10 (1.6)

Note: Percentage in parentheses is relative to the total number of 640 districts.

Source: *Population Census, 2011*

Association among the variables in the urban context

In order to understand the association among different variables we have pursued factor analysis as mentioned in the beginning. In the urban context we have considered the urbanisation level, migration rate for males and females, sex ratio, share of 0-6 years population, child sex ratio, child- women ratio, share of SC population, share of ST population, literacy rate for males and females, work participation rate for males and females, males and female workers engaged in manufacturing household industries, non-household manufacturing industries, construction works, and services. In the rural context, in addition to these variables we have considered males and females engaged as cultivators, agricultural labourers and those in forestry.

Six factors turn out to be statistically significant each with an Eigen value of greater than unity though the significance of factor 1 supersedes the others considerably. In the light of our hypothesis, we are able to note that there is a positive relationship between urbanisation level and the male migration rate (F-1). Of course, the association is not strong as the factor loadings corresponding to both the variables are 0.33 and 0.16 respectively. This means that there is a cluster of districts where higher levels of urbanisation reduce the rate of migration (F-4). However, the cluster with districts, where higher levels of urbanisation are associated with higher migration rates is dominant. Thus, on the whole, we are still able to observe positive factor loadings for both the variables though the magnitudes due to the neutralisation effects are low/moderate (F-1).

These findings offer clue to the theoretical underpinnings that the districts with higher levels of urbanisation comprise more productive opportunities and hence, are able to draw population from the rural areas at higher rates. The urban space in these districts appears to be profitable (in spite of overcrowding) to those who are possibly endowed better with human capital. The better performers are able to recognise the potentiality that the large urban spaces offer and hence, they flow on a large scale from the rural areas with the hope of getting better off. The NEG angle is in a sense underlying these findings though it is equally true that not all highly urbanised districts are associated with higher migration rates. Over-exhaustion of scope in the urban space, diseconomies and the absence of better performers to locate and utilise the potentiality of the large urban spaces are some of the reasons which may explain the absence of a strong positive association between the urbanisation level and the migration rate.

The positive factor loadings corresponding to the literacy rates further substantiate the NEG line of rationalisation as better human capital is likely to get much better off in large urban spaces (F-1). The key evidence in this respect relates to the male work participation rate which corresponds to positive factor loadings the magnitude of which is on the high side. In other words, higher urbanisation levels being associated with greater work opportunities, even in relative sense, are very much reflected in the findings which tend to conform to the NEG angle. Activities like services and construction also take positive factor loadings, indicating that they comprise productive opportunities from the livelihood point of view. On the other hand, household manufacturing takes negative factor loadings implying that own account enterprises are less likely to offer productive opportunities; hence, with higher urbanisation workers shift from these stagnant activities as better outlets may be emerging. Non-manufacturing take negligible factor loadings as industries from the urban space are almost disappearing due to

regulations and other constraints. The source of agglomeration economies now seems to be originating from the service hubs.

Finally, the association between male and female migration rates though do not turn out to be significant (F-1), there is a cluster of districts where both the rates are strongly associated. The number of such districts may be small as a result of which the significance of the relationship between the variables is evident only in factor 4, that is, statistically less prominent. Females possibly accompany the males in the districts belonging to this cluster which result in a strong positive relationship between both the rates. This could also be the reason why the sex ratio does not deteriorate with rising urbanisation; rather it shows a positive association in factor 1.

Interestingly, some of the demographic transitions also seem to be in progress along with urbanisation. The share of population in the 0-6 years age bracket, which represents fertility broadly speaking, declines with increase in urbanisation. The migrants are also seen to follow the small family norm after they move into the urban space. The child-sex improves, marginally though, suggesting a mild tendency of erosion of the sex biases of the parents. The scheduled caste population share is positively associated with urbanisation and migration, indirectly indicating that they may have moved from the rural areas to the more urbanised areas in order to take advantage of the prospects. Overall, the findings are suggestive of positive spill-over effects of urbanisation, though they are extremely weak as seen from the magnitude of the factor loadings.

Table 6: Rotated Factor Loadings on Selected Variables in Urban Areas (N=637)

Variables	F-1	F-2	F-3	F-4	F-5	F-6
Urb_rate	0.326	0.558	0.029	-0.185	-0.332	-0.143
MigRate_M	0.160	0.098	0.180	0.890	-0.163	0.039
MigRate_F	0.088	-0.099	0.043	0.924	-0.062	0.157
Sex_Ratio	0.210	0.052	0.306	-0.537	0.110	0.526
Share_06 pop	-0.947	-0.049	0.121	-0.040	0.021	-0.063
CSR	0.141	-0.052	0.654	-0.149	0.125	0.387
SC_share	0.171	0.033	-0.682	-0.121	0.232	0.171
ST_share	-0.102	-0.250	0.796	0.199	-0.177	-0.039
Lirate_M	0.856	-0.053	0.163	0.148	-0.195	0.023
Lirate_F	0.822	-0.025	0.247	0.053	-0.224	0.055
WPR_M	0.659	0.380	-0.018	0.236	0.020	-0.062
WPR_F	0.290	0.047	0.763	0.074	0.223	-0.015
CWR	-0.931	-0.016	0.058	0.020	-0.007	-0.133
HHE_M	-0.134	0.035	-0.146	-0.161	0.784	-0.160

HHE_F	-0.096	0.121	0.002	-0.153	0.854	-0.045
NonHHE_M	0.075	0.873	-0.212	0.095	-0.005	-0.071
NonHHE_F	0.092	0.844	-0.023	-0.049	0.189	0.047
Const_M	0.123	0.070	-0.045	0.141	-0.083	0.776
Const_F	0.137	-0.025	-0.071	0.287	-0.097	0.719
Service_M	0.284	-0.670	-0.038	0.092	-0.337	-0.294
Service_F	0.251	-0.427	-0.283	0.050	-0.586	-0.320
Eigen Value	4.153	2.678	2.497	2.307	2.244	1.877
% Explained	0.198	0.128	0.119	0.110	0.107	0.089

For the description of the variables see Table A3 in Appendix 3.

Source: Based on Population Census, 2011

Association among the variables in the rural context

The factor analysis has also been conducted in rural context on the urbanisation level, migration rate and a wide range of rural specific variables of the districts mentioned in the previous section. The rural migrants may have come from the rural areas of the same district and also from the other districts of the same state or other states. This is one rationale why we try to reflect on the background of some of the rural migrants, if not all. However, from another angle the wide-reaching effects of urbanisation on the rest of the rural areas are of primary concern. With improved levels of urbanisation how the rest of the district behaves is a key question for assessing the quality of urbanisation. Whether the rural profile undergoes a significant transformation with an increase in urbanisation is the central issue. From Table 7 it may again be confirmed (F-1) that both urbanisation and the migration rates, particularly among the males, are positively associated though the extent of relationship is low. The work force participation rate, especially among the males, is also correlated positively.

Some of the traditional activities like cultivation, decline and non-household manufacturing and services in the rural areas rise in response to increasing urbanisation. Literacy too improves though the child sex ratio in the rural areas actually declines, indicating no positive impact on social transformation. The aggregate sex ratio rises but that could be because of the outgoing male population from the rural areas. On the whole, at least on some of the aspects, increased urbanisation is seen to generate beneficial impact. At least, in terms of labour market indicators and the structure of employment, urbanisation is able to bring in changes in the adjoining rural areas. Some of the urban activities shift to the rural space in an attempt to reduce cost and the rural transformation becomes evident. On the other hand, rural land use pattern changes remarkably as the land price increases with improved urbanisation within the district.

Table 7: Rotated Factor Loadings on Selected Variables in Rural Areas (N=628)

Variables	F-1	F-2	F-3	F-4	F-5	F-6	F-7	F-8	F-9
Urb_rate	0.329	0.051	-0.139	0.003	0.167	0.747	-0.174	-0.143	-0.049
MigRate_M	0.121	0.195	0.086	0.138	0.009	0.153	0.914	-0.127	-0.033
MigRate_F	0.044	0.146	0.042	0.067	0.087	-0.092	0.950	-0.073	-0.027
Sex_Ratio	0.407	-0.104	0.207	0.507	0.107	-0.359	0.047	0.244	0.046
Share_06 pop	-0.906	0.111	-0.118	0.138	-0.160	-0.137	-0.063	-0.046	-0.074
CSR	-0.031	-0.247	0.247	0.734	0.166	-0.190	0.098	0.138	0.093
SC_share	0.201	-0.270	0.065	-0.776	0.071	-0.075	-0.146	0.160	-0.029
ST_share	-0.189	0.335	0.259	0.663	-0.051	-0.002	0.184	-0.217	-0.171
Litrate_M	0.869	0.114	-0.240	-0.092	-0.010	0.098	0.033	-0.034	0.066
Litrate_F	0.852	0.123	-0.286	0.089	0.015	0.120	0.030	-0.040	0.118
WPR_M	0.572	-0.219	0.542	0.088	0.078	0.263	0.093	-0.072	0.055
WPR_F	0.142	0.086	0.768	0.339	-0.039	-0.149	0.147	-0.132	-0.187
CWR	-0.906	0.053	-0.127	0.068	-0.166	-0.104	-0.073	-0.065	-0.075
Cul_M	-0.318	0.462	0.510	-0.023	-0.398	-0.318	0.036	-0.162	-0.142
Cul_F	-0.154	0.682	0.417	0.112	-0.173	-0.267	0.183	-0.241	-0.258
AgL_M	-0.077	-0.918	0.086	-0.073	-0.199	-0.060	-0.164	0.008	-0.128
AgL_F	0.006	-0.914	0.228	-0.011	-0.127	-0.050	-0.134	-0.083	-0.170
For_M	0.221	0.068	-0.079	0.243	0.208	0.041	-0.085	0.026	0.809
For_F	0.094	0.135	-0.087	-0.168	0.019	0.013	-0.001	-0.077	0.883
HHE_M	0.025	-0.043	-0.207	-0.131	0.055	0.016	-0.160	0.790	-0.146
HHE_F	-0.029	0.017	-0.051	0.025	-0.012	0.174	-0.154	0.814	0.045
NonHHE_M	0.246	-0.042	-0.148	-0.190	0.157	0.727	0.220	0.223	0.026
NonHHE_F	0.199	0.002	-0.153	0.007	0.185	0.690	0.097	0.364	0.140
Const_M	0.193	0.195	-0.207	-0.070	0.855	0.108	0.044	0.107	0.089
Const_F	0.075	0.075	-0.102	0.092	0.895	0.138	0.074	-0.056	0.090
Service_M	0.271	0.392	-0.625	0.118	0.350	0.175	0.103	0.002	-0.038
Service_F	0.103	0.183	-0.836	-0.087	0.241	0.139	-0.074	0.099	0.056
Eigen Value	4.253	3.031	2.998	2.217	2.206	2.201	2.093	1.814	1.742
% Explained	0.158	0.112	0.111	0.082	0.082	0.082	0.078	0.067	0.065

For the description of the variables see Table A3 in Appendix 3.

Source: Based on Population Census, 2011

Regional variations among the variables in the urban context

As we tried to address the regional variations in the relationship among the variables by conducting the factor analysis at the regional level (districts being grouped into regional categories), sharp differences are noted across regions (Table A2.1 to Table A2.6 in Appendix 2). In the western region, for example, urbanisation level, and male and female migration rates both are quite strongly associated in comparison to all other regions. However, it is non-household manufacturing which takes significant factor loadings instead of services. In other

words, in the western region industry plays a major role in generating the agglomeration benefits in response to which migration takes place to the highly urbanised spaces. Such pattern of development, however, does not result in any improvement in the sex ratio as more males compared to females may be migrating to the relatively more urbanised areas in order to seek employment in the industry. In fact, the male literacy takes a low magnitude of factor loading while female literacy is almost insignificant. Again, it is the male work participation rate which improves with a rise in urbanisation level and migration.

In the districts in the northern region, the positive association between urbanisation level and migration is moderate while in the central region the variables are almost unrelated. In eastern and southern regions urbanisation unravels a moderate association in relation to male migration only. On the other hand, north-east districts are characterised in terms of rapid population mobility without any correspondence to the urbanisation levels. In relation to work participation rates, literacy and activities considerable variations are evident across regions. On the whole, the role of geography is pertinent in shaping the level and type of urbanisation and also the population mobility from the rural to the urban areas.

4. Conclusion and Policy

Keeping in view the concept of agglomeration economies and the NEG angle this paper made an attempt to examine the rural to urban population movement at the district level. Migration rate is defined as the decadal flow of population from the rural to the urban areas as a percentage of total population at the place of destination. Further, migration includes the movement of population from the rural areas of the same district, other districts of the same state and other districts of different states. The decadal flow (2001-2011) constitutes a significant proportion of the all-duration migrants though as a percentage of the total urban population it is moderate. A high urban to urban population movement and natural growth of population at the place of destination are some of the obvious reasons of a low rural to urban movement.

The findings tend to confirm that higher levels of urbanisation and higher migration rates are not strongly associated. Nevertheless, there exists a cluster of districts which are able to attract migrants on a large scale in spite of being already urbanised. In other words, some of the large urban spaces, though not all, are able to draw population from the rural areas at a rapid pace. The work participation rate, share of services, and construction and literacy rate all form parts of this positive nexus, indicating that opportunities exist with increased levels of urbanisation

which prompt people to migrate. Of course, those who have the confidence of mitigating the adverse effect of large population bases and are able to take advantages associated with concentration will be migrating to such spaces.

The NEG angle is somewhat sublime in this broad pattern. Instead of shifting to the districts which are less urbanised they have decided otherwise, and this brings to the fore that lower levels of urbanisation need not be endowed with benefits though lower population bases may be reducing the adversity associated with concentration. The positive spill-over effects of higher levels of urbanisation are not limited to the urban spaces only as the adjoining rural areas (rural-urban fringe) are also indicative of a significant transformation process. The land use pattern and activities seem to be changing and some of the developmental impact is evident though social transformation is still a far-fetched outcome. In the urban areas of the highly urbanised districts both the social and economic changes are evident, though.

However, having concluded with a positive note it is important to mention that there are many districts with higher levels of urbanisation; yet they are not able to attract migrants at a rapid pace for which the association between urbanisation and migration is rather weak in spite of being positive. The regional variations in the factor analysis results bring out sharp differences in the relationship between urbanisation level and migration rates, the determinants of the nature of urbanisation and also certain outcome variables of urbanisation and migration. The role of geography is pertinent in shaping the level and type of urbanisation and also the population mobility from the rural to the urban areas.

Mere concentration of population does not seem to have resulted in economic opportunities in some of the districts; migrants are aware of such lacuna and thus, respond rationally by not migrating at a rapid pace. Better ones endowed with higher human capital and efficiency possibly drop out, keeping the migration rates at such districts within a domain of low magnitude. The governments including the local authorities are expected to make these spaces economically profitable, taking the advantages of population concentration. On the whole, new investment opportunities are to be created in spaces which have picked up in terms of urbanisation level but did not have the benefits of reaping the agglomeration economies. Greater investments in such spaces can reduce the cost of growth and make employment creation more effective, facilitating the rural population to take the benefits of agglomeration economies.

Appendix 1

Table A1: States categorised into Regions (NFHS criteria followed to categorise states into Region)

Sl. No	States/UTs	Regions
1	Chandigarh	North
2	Delhi	
3	Haryana	
4	Himachal Pradesh	
5	Jammu & Kashmir	
6	Punjab	
7	Rajasthan	
8	Uttarakhand	
9	Chhattisgarh	Central
10	Madhya Pradesh	
11	Uttar Pradesh	
12	Bihar	East
13	Jharkhand	
14	Odisha	
15	West Bengal	Northeast
16	Arunachal Pradesh	
17	Assam	
18	Manipur	
19	Meghalaya	
20	Mizoram	
21	Nagaland	
22	Sikkim	
23	Tripura	West
24	Dadra & Nagar haveli	
25	Daman	
26	Goa	
27	Gujarat	
28	Maharashtra	South
29	Andaman & Nicobar Islands	
30	Andhra	
31	Karnataka	
32	Kerala	
33	Lakshadweep	
34	Puducherry	
35	Tamil Nadu	
36	Telangana	

Appendix 2
Rotated Factor Loadings at the Regional Level in the Urban Context

Table A2.1: Rotated Factor Analysis Results for Northern Region

North (N=129)	F-1	F-2	F-3	F-4	F-5	F-6
Urb_rate	0.249	0.477	-0.168	-0.323	-0.117	-0.349
MigRate_M	0.271	0.008	-0.052	0.901	-0.070	-0.083
MigRate_F	0.218	-0.152	-0.029	0.931	-0.066	0.088
Sex_Ratio	0.037	0.186	-0.541	-0.158	0.532	0.373
Share_06 pop	-0.926	0.110	-0.185	-0.074	0.135	0.072
CSR	0.095	0.057	0.657	-0.362	0.144	0.154
SC_share	0.482	0.251	-0.381	-0.051	-0.014	0.499
ST_share	0.046	-0.212	0.807	-0.022	-0.047	0.028
Litrate_M	0.722	-0.143	0.244	0.394	-0.229	-0.062
Litrate_F	0.863	0.011	-0.104	0.340	-0.197	-0.122
WPR_M	0.448	0.144	0.594	-0.141	-0.298	-0.243
WPR_F	0.185	-0.209	0.539	0.230	0.365	-0.372
CWR	-0.950	0.000	-0.022	-0.117	-0.066	-0.046
HHE_M	-0.076	0.410	-0.191	-0.142	0.713	0.048
HHE_F	-0.290	0.093	0.095	-0.161	0.773	0.172
NonHHE_M	0.048	0.937	-0.098	-0.059	0.054	0.098
NonHHE_F	-0.207	0.785	0.063	-0.062	0.275	0.142
Const_M	-0.030	0.041	-0.290	-0.034	0.255	0.717
Const_F	-0.098	0.269	0.142	0.054	0.128	0.759
Service_M	0.190	-0.645	0.266	0.128	-0.347	-0.429
Service_F	0.424	-0.299	-0.122	-0.106	-0.568	-0.493
Eigen Value	4.050	2.744	2.549	2.390	2.375	2.352
% Explained	0.193	0.131	0.121	0.114	0.113	0.112

Source: Based on Population Census, 2011

Table A2.2: Rotated Factor Analysis Results for Central Region

Central (N=139)	F-1	F-2	F-3	F-4	F-5	F-6
Urb_rate	0.297	-0.039	-0.353	-0.131	0.228	0.635
MigRate_M	0.098	0.961	0.034	-0.109	0.074	-0.027
MigRate_F	0.060	0.944	0.059	-0.013	0.109	-0.173
Sex_Ratio	0.250	0.175	0.843	0.114	0.044	-0.085
Share_06 pop	-0.911	0.041	-0.068	0.226	-0.061	-0.034
CSR	0.071	0.121	0.901	0.094	0.001	-0.097
SC_share	0.155	-0.107	-0.551	0.312	0.572	-0.010
ST_share	0.140	0.813	0.381	-0.114	-0.065	-0.109
Litrate_M	0.829	0.304	0.039	0.080	0.253	-0.143
Litrate_F	0.908	0.160	0.079	0.025	0.129	-0.037

WPR_M	0.383	0.388	0.371	-0.030	0.409	0.468
WPR_F	0.387	0.502	0.450	0.401	0.147	0.033
CWR	-0.903	-0.021	-0.133	0.228	0.031	0.016
HHE_M	-0.073	-0.274	0.025	0.702	-0.439	-0.009
HHE_F	-0.155	-0.186	-0.013	0.824	-0.192	0.064
NonHHE_M	-0.172	-0.212	-0.065	0.073	-0.160	0.831
NonHHE_F	-0.159	-0.158	-0.054	0.265	0.084	0.793
Const_M	0.094	0.024	-0.053	-0.109	0.867	0.067
Const_F	0.299	0.339	0.257	-0.155	0.669	-0.102
Service_M	0.541	0.244	0.015	-0.540	0.037	-0.313
Service_F	0.212	-0.190	-0.274	-0.763	-0.296	-0.157
Eigen Value	4.187	3.446	2.622	2.589	2.227	2.166
% Explained	0.199	0.164	0.125	0.123	0.106	0.103

Source: Based on Population Census, 2011

Table A2.3: Rotated Factor Analysis Results for Eastern Region

East (N=111)	F-1	F-2	F-3	F-4	F-5	F-6
Urb_rate	0.465	-0.282	-0.057	-0.063	0.596	-0.192
MigRate_M	0.283	0.919	-0.084	0.017	0.008	-0.025
MigRate_F	0.044	0.910	0.006	-0.128	-0.152	0.087
Sex_Ratio	0.467	0.219	0.108	0.685	-0.035	0.213
Share_06 pop	-0.955	-0.060	-0.016	-0.141	-0.117	-0.154
CSR	-0.055	-0.143	0.053	0.850	-0.023	-0.033
SC_share	0.305	-0.130	0.068	0.199	-0.231	0.777
ST_share	0.155	0.779	-0.159	0.310	0.040	-0.234
Literate_M	0.931	0.234	-0.074	-0.052	0.044	0.082
Literate_F	0.945	0.181	0.009	-0.023	0.095	-0.044
WPR_M	0.698	-0.019	0.123	0.341	0.264	0.414
WPR_F	0.222	0.158	0.426	0.692	0.026	0.226
CWR	-0.948	-0.141	-0.013	-0.154	-0.131	-0.138
HHE_M	0.110	-0.158	0.886	-0.012	-0.065	0.003
HHE_F	-0.078	-0.114	0.902	0.197	0.073	0.025
NonHHE_M	0.242	-0.023	-0.005	-0.074	0.844	-0.009
NonHHE_F	0.020	0.013	0.320	0.333	0.617	-0.099
Const_M	0.142	0.286	0.178	-0.044	0.423	0.502
Const_F	0.223	0.592	-0.207	-0.006	0.398	0.441
Service_M	0.548	0.114	-0.330	0.139	-0.349	-0.241
Service_F	0.594	-0.145	-0.577	-0.262	-0.266	-0.191
Eigen Value	5.542	3.085	2.475	2.234	2.178	1.575
% Explained	0.264	0.147	0.118	0.106	0.104	0.075

Table A2.4: Rotated Factor Analysis Results for North-Eastern Region

North-East (N=86)	F-1	F-2	F-3	F-4	F-5	F-6
Urb_rate	-0.044	-0.610	0.236	0.397	-0.100	0.193
MigRate_M	0.835	-0.253	-0.236	-0.175	-0.089	-0.102
MigRate_F	0.866	-0.039	-0.108	-0.117	-0.092	-0.338
Sex_Ratio	-0.326	0.142	0.200	0.066	0.099	0.829
Share_06 pop	-0.179	-0.324	-0.280	-0.640	0.391	0.384
CSR	0.430	-0.087	-0.166	0.102	0.447	-0.030
SC_share	-0.126	0.782	0.258	0.220	-0.003	-0.059
ST_share	-0.006	-0.666	-0.476	-0.160	0.370	0.227
Litrate_M	-0.207	0.029	0.007	0.919	-0.125	-0.181
Litrate_F	-0.042	0.041	-0.131	0.915	0.112	0.191
WPR_M	0.095	0.320	0.231	0.299	-0.041	-0.753
WPR_F	-0.167	-0.680	0.097	-0.061	0.436	-0.035
CWR	-0.072	-0.301	-0.312	-0.621	0.480	0.176
HHE_M	-0.118	0.134	0.832	0.017	0.098	-0.023
HHE_F	-0.131	0.005	0.886	-0.023	0.217	-0.018
NonHHE_M	-0.065	0.717	0.334	0.185	-0.270	0.161
NonHHE_F	-0.185	0.267	0.753	0.046	-0.073	0.138
Const_M	0.929	0.147	0.004	0.034	0.080	0.033
Const_F	0.599	0.422	-0.144	0.035	-0.134	-0.285
Service_M	-0.105	0.034	-0.177	0.033	-0.870	-0.137
Service_F	0.255	0.340	-0.152	0.187	-0.783	0.018
Eigen Value	3.243	3.203	2.968	2.935	2.503	1.869
% Explained	0.154	0.153	0.141	0.140	0.119	0.089

Source: Based on Population Census, 2011

Table A2.5: Rotated Factor Analysis Results for Eastern Region

West (N=66)	F-1	F-2	F-3	F-4	F-5	F-6
Urb_rate	0.513	0.176	-0.185	0.192	-0.104	-0.664
MigRate_M	0.928	0.047	-0.060	0.088	-0.072	0.243
MigRate_F	0.821	0.094	-0.018	0.023	0.008	0.488
Sex_Ratio	-0.899	0.173	0.075	0.076	0.100	0.109
Share_06 pop	-0.010	-0.901	0.006	-0.094	0.104	0.107
CSR	-0.098	0.219	-0.010	0.802	0.156	0.058
SC_share	-0.311	0.079	0.531	-0.008	0.614	-0.134
ST_share	0.029	-0.048	-0.216	0.328	-0.096	0.776
Litrate_M	0.148	0.915	-0.032	0.113	-0.144	0.069
Litrate_F	-0.052	0.897	-0.021	0.185	-0.096	0.020
WPR_M	0.871	0.125	-0.194	0.013	-0.200	-0.257
WPR_F	0.035	0.275	0.331	0.772	-0.107	0.107
CWR	0.285	-0.867	-0.007	-0.080	0.053	0.093

HHE_M	-0.283	0.271	0.601	0.417	0.069	0.236
HHE_F	-0.071	-0.083	0.840	0.193	-0.016	-0.194
NonHHE_M	0.926	-0.074	-0.060	-0.070	-0.133	-0.149
NonHHE_F	0.896	-0.098	0.096	0.031	-0.114	-0.226
Const_M	-0.547	-0.246	0.141	0.042	0.677	-0.010
Const_F	-0.107	-0.328	-0.060	0.023	0.838	0.036
Service_M	-0.840	0.183	-0.087	0.361	-0.005	-0.075
Service_F	-0.277	0.394	-0.579	0.349	-0.250	-0.217
Eigen Value	6.419	3.877	1.967	1.932	1.791	1.696
% Explained	0.306	0.185	0.094	0.092	0.085	0.081

Source: Based on Population Census, 2011

Table A2.6: Rotated Factor Analysis Results for Southern Region

South (N=106)	F-1	F-2	F-3	F-4	F-5	F-6	F-7
Urb_rate	0.356	0.237	0.024	-0.286	-0.276	0.105	0.599
MigRate_M	0.100	-0.082	-0.090	0.935	-0.122	0.092	0.098
MigRate_F	0.032	0.152	-0.015	0.935	-0.025	0.232	-0.086
Sex_Ratio	-0.088	0.856	0.023	0.031	0.056	0.107	-0.194
Share_06 pop	-0.046	-0.218	0.941	-0.042	-0.014	-0.042	-0.006
CSR	0.030	0.251	-0.199	0.122	-0.197	0.716	-0.195
SC_share	0.140	-0.286	-0.003	-0.461	-0.082	-0.238	-0.594
ST_share	-0.240	-0.172	0.094	0.030	0.023	-0.208	0.592
Litrate_M	-0.007	0.734	-0.461	0.042	-0.239	0.030	0.226
Litrate_F	-0.029	0.813	-0.324	0.094	-0.287	0.042	0.254
WPR_M	0.615	-0.288	-0.543	-0.057	-0.131	-0.086	-0.143
WPR_F	0.570	-0.257	-0.326	-0.116	0.337	-0.106	-0.230
CWR	-0.022	-0.118	0.942	-0.070	-0.012	-0.047	0.030
HHE_M	0.162	-0.225	0.111	-0.036	0.643	-0.224	-0.094
HHE_F	0.080	-0.081	-0.025	-0.122	0.875	-0.008	0.044
NonHHE_M	0.861	-0.136	-0.040	0.082	-0.047	-0.162	0.069
NonHHE_F	0.813	0.126	-0.013	0.107	0.237	-0.065	0.179
Const_M	-0.124	0.252	0.049	0.262	0.032	0.794	0.254
Const_F	-0.150	-0.424	-0.032	0.281	-0.062	0.730	-0.050
Service_M	-0.721	-0.167	-0.075	-0.080	-0.140	-0.123	0.327
Service_F	-0.543	0.251	0.001	0.073	-0.564	0.050	0.411
Eigen Value	3.218	2.829	2.571	2.287	1.990	1.984	1.735
% Explained	0.153	0.135	0.122	0.109	0.095	0.095	0.083

Source: Based on Population Census, 2011

Appendix 3

Table A3: Description of Variables Included in the Factor Analysis

Variables	Description
Urb_rate	Urbanisation Rate (%)
MigRate_M	Male Migration Rate (%)
MigRate_F	Female Migration Rate (%)
Sex_Ratio	No of females per 1000 males
Share_06 pop	Share of 0-6 years pop in total population (%)
CSR	Child Sex Ratio (Per 1000)
SC_share	Share of Scheduled Caste in total Population (%)
ST_share	Share of Scheduled Tribe in total Population (%)
Literate_M	Male Literacy Rate (%)
Literate_F	Female Literacy Rate (%)
WPR_M	Male Work Participation Rate (%)
WPR_F	Female Work Participation Rate (%)
CWR	Child women Ratio (per 1000 women)
HHE_M	Share of main male worker in Household Enterprises (%)
HHE_F	Share of main female worker in Household Enterprises (%)
NonHHE_M	Share of main male worker in Non Household Enterprises (%)
NonHHE_F	Share of main female worker in Non Household Enterprises (%)
Const_M	Share of main male worker in Construction work (%)
Const_F	Share of main female worker in construction work (%)
Service_M	Share of main male worker in service sector (%)
Service_F	Share of main female worker in service sector (%)
Cul_M	Share of main male worker in cultivation (%)
Cul_F	Share of main female worker in cultivation (%)
AgL_M	Share of main male worker as agricultural labourers (%)
AgL_F	Share of main female worker as agricultural labourers (%)
For_M	Share of main male worker in forestry (%)
For_F	Share of main female worker in forestry (%)
<i>Note: These variables have been calculated separately for the rural and urban areas.</i>	

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