Why do Farm Households Migrate? Evidence from Rural-Urban Interface of Bengaluru

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ABSTRACT

The study empirically assesses various factors affecting internal out-migration among farm households across rural urban interface of North Bengaluru. The study draws on both qualitative and quantitative information gathered through in-depth interviews of farm households in the context of internal out-migration. The data was collected from randomly selected 260 farm households (60 from urban and 100 each from transition and rural gradients). To identify the significant factors causing migration, Probit regression was used. results showed that education level of the migrant, household size, farm gross income, non-farm income and debt outstanding of the family were major influencing factors in shaping the out-migration among farm households. Study confirm the hypothesis that migrant and non-migrant farm households differ significantly in livelihood activities including farm income, non-farm income, household size, per capita land availability and outstanding debt of the household. The study also identifies various push and pull factors which causes out migration among the farm households and it was observed that major push factor were lack of employment and job opportunities at the origin. Prospects of higher wages, better employment opportunities were some of the critical pull factors for migration. This study underlines the need to have suitable policy and programmes to reduce rural-urban disparities and help prevent the large scale migration thereby reducing the stress on urban cities which might have impeding effects.

Keywords : Migration, Rural-urban interface, Push and pull factors, Urbanization, Probit model

IN recent decades, India and other developing countries are experiencing rapid urbanization along with rapid economic growth. Urbanization is the redistribution of population from rural to urban settlements with the passage of time. Most urbanization is the result of net rural to urban migration (Satterthwaite *et al*, 2010). As agriculture in India is becoming non-remunerative compared to other sectors of the economy, specially the farm households are moving away from agricultural areas and making their way towards urbanized cities nearby. Migration is an expression of the human aspiration for dignity, safety and a better future and it is part of the social fabric, part of our very make-up as a human family. Migration in India is influenced by major differences in the patterns of social and economical development. The development policies of the central and state governments have not been able to check the process of migration and this uneven development is the main cause behind migration. Predominantly, migration in India is of short distances with around 60 per cent of

the migrants changing their residence within their district of birth and 20 per cent within their state, while the rest move across the state boundaries (Thorat *et al*., 2007). Internal migration occurs in the form of rural-urban migration, transition-urban migration, and resettlement policies (Zenaselase, 2015). Barrios *et al.* (2006) reported that rural poverty is one of the main contributors to migration and rapid urban growth.

Bengaluru is one of the fastest growing cities in the world and is globally known for its development in terms of information technology, biotechnology, real estate and its diversity (Harishkumar and Chinnappa Reddy, 2017). Bengaluru is the capital city of Indian state of Karnataka which has a population of over twelve million, making it a megacity and the third-most populous city and fifth-most populous urban agglomeration in India. Table 1 shows the population growth of the city over the years. More than 50 per cent of the total population of the city are migrants and among them two third of the share is from internal

TABLE 1

Population growth of Bengaluru city
(Urbanization trend)

Census Year	Population (in numbers)	Percentage change in Population (%)
1941	406,760	—
1951	778,977	91.5
1961	1,207,000	54.9
1971	1,654,000	37.0
1981	2,922,000	76.7
1991	4,130,000	41.3
2001	5,101,000	23.5
2011	8,425,970	65.2
2021	12,764,935 *	51.5%

Source : Compiled from Census of India reports
*Note : Estimated values of UN World Urbanization
(Prospects, 2019)

migration (inter-state migration). Unsurprisingly, most of the migrants are from villages in and around Bengaluru city (Census of India, 2011). Bengaluru city has emerged as the hotspot for ample of job opportunities. Bhagath (2005), in his study on migration cited that predominance of non-agricultural activities and better provision of social amenities like health and educational infrastructure emerged as distinguishing features of settlements. The past literature and history on migration confirm that areas with urban centres, administrative headquarters and business sectors attract the migrants from backward areas, where employment opportunities are very less. Certainly, migration is not the way to urbanize as there are many undesirable outcomes that have resulted in rural as well as urban areas from the migration. Rural areas stand to lose from the out-migration of skilled residents (Sridhar *et al.,* 2012). Understanding the rural to urban migration has always been an inherent part of the economic development process, but its impacts are poorly understood, and are often feared by governments, which has led to policies that either attempt to explicitly or implicitly hinder migration. A major concern is that rural-urban migration can threaten increasing slums in the urban areas, food security through reductions in agricultural production. Todaro

and Smith (2003) opine that the movement of population from rural to urban centers is because of high income differentials between stagnant rural sectors and developing urban sectors.

Thus, it is very essential to understand why the farm households decide to migrate or actually what compels them to move away from their origins. Hence, this study intends to understand and explore various determinants which affect the farm households across rural-urban interfaces to migrate to urban city. The study also makes an attempt to assess the various push and pull factors to understand the reasons behind migration which help in evolving appropriate policy measures.

With this backdrop, the study was conducted with the following specific objectives:

1. Identifying the factors affecting migration

2. Exploring various Pull and Push factors for migration

METHODOLOGY

The study was carried in rural-urban interface of North Bangalore in Karnataka (Fig. 1). North transect was further divided into three parts namely urban, transition (peri-urban) and rural gradients. The distinction of this transact into rural, transition and urban gradient was made based on the survey stratification index (Ellen *et al.*, 2017) developed by considering percentage of built-up area and its linear distance from the city centre
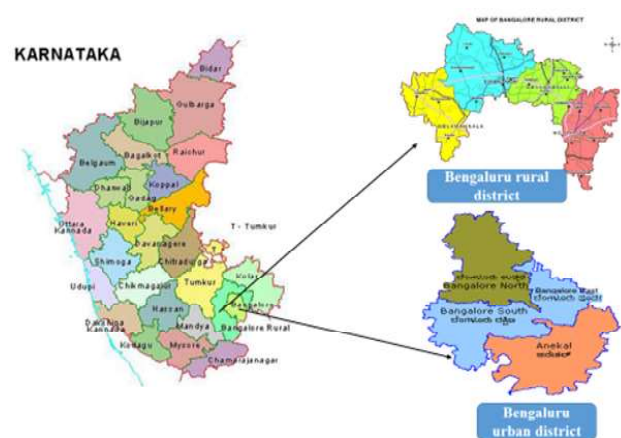

Fig 1 . Map of Karnataka showing Rural and Urban Bangalore regions.

(Fig. 2). *Vidhana Soudha*, the building of the state legislature, was used as the reference point to measure the distance. Up to about 20 to 25 km away from the city centre building density was strongly correlated to distance (the closer to the city, the higher the percentage of built-up area). Beyond that, however, the two parameters were negatively correlated (Udaykumar and Umesh, 2019).

The red area in the Fig. 2 corresponds to the districts under Bangalore's administrative authorities. The Outer Ring Road is shown in yellow. The blue contours indicate the Northern and Southern research transects, the star marks the reference point *(Vidhana Soudha)* in the city centre.
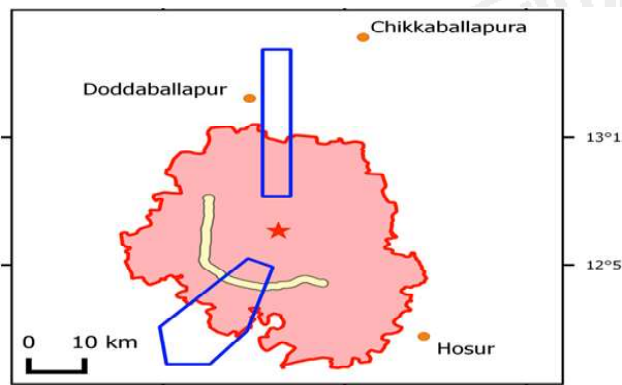
Source: Ellen, M. and co-workers

Fig. 2: Bangalore and its rural–urban interface.

The villages were selected randomly across all the three transects. The random sampling method was adopted for the selection of farm households. The sample frame consisted of 260 farm households representing 60 from urban and 100 each from the transition and rural gradients. Pre-tested well-structured schedule was used for data collection through personal interviews. Through the interviews, data regarding age, education, farm and non-farm income of the family, cropping pattern, land holdings, family size, number of migrants in the family, reasons behind migration etc were collected. The data was collected in 2020 and the farm households were asked to give information of all the households who have migrated to city and not living with them from last 12 months to consider them as migrants.

Analytical Tools

Migration : Is defined as a move from one defining area to another (a move of some specified minimum distance) that may involve permanent shift in the residence of the people. United Nations defines migration as 'permanent change of residence' lasting for more than one year. In present study, the household members who are away from the family from last 12 months are only considered as migrant. While collecting data, we have only considered movement of household members who migrated to Bangalore city only for employment and economical purpose and we ignored migration of marriage and educational purpose as the main focus of the study was to identify the economic aspects of the migration across the rural-urban interface.

Migrant farm household : In areas of origin, migrant households are those with at least one member of the family is out migrated to Bangalore city for various reasons, while those without anyone of the family member migrated to Bangalore are non-migrant households.

Internal Migration : Movement of people from one place to another place has been broadly categorised into internal and international migration. International migration is the movement of people from one country to another country (usually crossing international borders). According to United Nations, internal migration is defined as the movement of people within the country or movement of people over short distances. Since this study is concerned about the out migration of people within short distances (the sample villages are within 50 km of city centre Bangalore), migration has been considered as internal migration.

Out migration : Movement of people out of their region (out of their original residence) to new settlement region is called as out migration. In this study, out migration means movement of people from their origins (resident areas) to Bangalore city.

Intra-Migration : Migration within the same transact (urban to urban / rural to rural). In this study, urban to

urban migration within the same city has been considered identified as intra migration.

Push & pull factors : Push and pull factors of migration help to understand why the migration actually happens and why people decide to move. Push factors (pushing away from the origin) explains about the conditions of the rural areas which compel people to move away from their origin settlement areas. Pull factors (attract people towards) help us to understand the different conditions of the cities or urban areas which attract the people towards it.

Many migration studies and literature works consider some of the major push factors for migration as lack of suitable employment opportunities and educational facilities, lack of infrastructure, health facilities, business opportunities, conflicts, and death of family members. In the same way, major pull factors observed in the studies were access to basic facilities, better employment or business opportunities, proximity to village, presence of social networks like friends, family members or relatives, and secured job in cities.

Probit model : Probit model is also called as probit regression and it is used to model dichotomous or binary outcome variables. Probit model is a statistical probability model which have two categories in the

dependent variable (Liao, 1994). Probit analysis is based on the cumulative normal probability distribution. The binary dependent variable, y, takes on the values of zero and one (Aldrich and Nelson, 1984). The Probit analysis provides statistically significant findings of which factor increase or decrease the probability of migration.

In this study, migrating family was taken as 1 and non-migrated family was taken as 0. It is assumed that if there is at least one migrant in the family, such household is considered as a migrant household and if there are no migrant in the family, such household is considered as non-migrant. In view of the fact that the there were both migrant and non-migrant farm households in the sample, Probit model was used to find the important factors affecting the migration. Probit regression commands in the Stata 14.2 version software were used to find the maximum likelihood estimation of the independent variables.

$$Pr(y=1) = \Phi (\beta'x)$$

Where Pr denotes probability and Φ is the cumulative density function of the standard normal distribution with $\varepsilon \sim N (0, 1)$, which gives us the likelihood for both cases y=0 and y =1. Here, $\beta'x$ denotes the probit score/index. The inference will be like a one-unit

TABLE 2

Selection of variables and their meanings (n=260)

Variable	Mean	Std. Dev.	Meaning
Education	9.115	4.378	Education of the respondent (in years)
Age	33.638	7.786	Age of the respondent (in years)
HH size	4.773	2.378	Total number of household members
Land	2.315	2.466	Landholding of the household (in Acres)
Farm income	78018.3	134703	Gross farm income of the household per year (in Rs.)
Non-farm Income	16155.38	22302.21	Total non-farm income of the household per month (in Rs.)
Debt	0.265	0.442	"Debt=1" if family having debt outstanding; "Debt=0" if family having no debt outstanding
Commercial crops	0.184	0.388	"Comm=1" if the family growing commercial crops; "Comm=0" if family not growing commercial crops
R_T_UR (rural) T (Transition) U (urban)	0.403	0.491	"R_T_U=1" if the household is in urban area; "R_T_U=2" if the household is in transition area; "R_T_U=3" if the household is in rural area.

change (either increase or decrease) in the x coefficient leads to a change in the probit score/index by β standard deviations.

$$y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \mu_i$$

Where,

$X_1 =$ Age of the respondent (years)

$X_2 =$ Education of the respondent (years of schooling)

$X_3 =$ Size of the houshehold (numbers)

$X_4 =$ Total land holding (acres)

$X_5 =$ Gross farm income of the household (Rs.) per annum

$X_6 =$ Non-farm income of the household per month (Rs.)

D_1 : Dummy variable as '1 0' for household having any outstanding debt

D_2 : Dummy variable as '1 0' for household growing commercial crop

D_3 : Dummy variable as '1 2 3': '1' for urban farm household, '2' for transition farm households and '3' for rural farm households.

μ_i : Error term

b_1, b_2, ... b_6 are the regression co-efficient for the variables X_1, X_2,…… X_6, respectively. b_7, b_8 and b_9 are the regression coefficients for dummy variables D_1, D_2 and D_3, respectively.

RESULTS AND DISCUSSION

Characteristics of Migrating and Non-Migrating Households

As mentioned in the methodology section, in a family, if at least one person is migrated such family/household is considered as migrant and otherwise. Table 3, shows the distinctive general characteristics of the migrant and non-migrant households. To know whether there was significant difference between the characteristics of the migrant and non-migrant households, t-test has been conducted and the difference was significant. It was evident from the table that education level of the migrant family, household size, dependent household members on working members of the family, non-farm income have more mean value in migrated households compared to non-migrant households. Whereas, age, farm income and land holding mean values of non-migrated families were more than the migrated families. Hence, it is clearly understood that, education level, less farm income, more non-farm income, more household size, more number of dependent family members, less land holding and less land per capita were the characteristics of the migrant households and these can be taken as influencing factors for migration.

Factors Influencing Migration

This study attempts to identify the factors influencing the farm households to migrate by using Probit analysis. The selection of variables and their respective meanings are provided in Table 2. In this study, the dependent variable considered was migrant and non-migrant household. Qin (2010), in his study to identify different factors of migration has used the same approach taking dependent variable as migrant and non-migrant households. The results of the Probit regression (Table 3) analysis indicated that, independent variables like education (total number of schooling years), household size, farm income, non-farm income, total outstanding debt of the household and rural farm household were significantly affecting the probability of the farm household migrating. It was observed that among the significant factors, education, household size, non-farm income of the household and outstanding debt had positive effect while, farm income alone had negative effect on the probability of household migration. Results confirm the hypothesis that migrant and non-migrant households differ significantly in livelihood activities including education, household size, farm income, non- farm income and location of the household (urban/transition/rural). The results are in line with the study by Unal (2018). It was observed that as the education of the household member increases, there is more probability that the household will migrate because households having better-educated individuals move to find better jobs. Related relationship between education of the households and migration was found in the study on migration by Agnes and Scott (2005).

TABLE 3

Descriptive statistics of migrated households and non-migrated households

Variables	Migrated Household (n=105)			Non migrated household (n=155)		
	Mean	S.D.	C.V.	Mean	S.D.	C.V.
Age (years)	33.304	7.271	52.867	36.609	9.870	97.426
Education (years)	10.123	3.618	13.090	8.185	4.620	21.352
HH size (numbers)	6.161	3.168	10.040	4.635	1.899	3.606
Dependent HH*	5.257	3.110	9.673	2.682	1.196	1.431
Land (in acres)	1.508	1.088	1.184	2.576	2.482	6.162
Land/capita* (acre)	0.290	0.244	0.059	0.611	0.634	0.401
Farm income (Rs.)	33985.97	28509.86	81300	99567.75	155529.7	24200
Non-farm income(Rs.)	26629.32	26980.12	72800	9365.56	14942.55	22300

* (Dependent HH= No. of dependent persons on working members of a family; Land/capita= per capita availability of land per person in the household)

Further, the study showed that the rural households have more probability of migrating than the urban and transition households, since the urban and transition households are near to the Bengaluru city and had more job opportunities compared to the rural households. Similar observations were made by Roopa and Chinnappa Reddy (2016) on urbanization effect in Bengaluru, which showed that, there had been industrialization at the fringes of Bengaluru city which attracts rural people to work there. These results were analogous to the results of the study conducted by Pandey and Singh (2003) in which they concluded that vicinity of urban areas facilitates the growth and development of non-farm sector. The households having lesser farm income had higher probability of migrating. The results were similar to the results Mazambani (1990); Rozelle *et al.* (1999) and Schmook & Radel (2008). This indicates that it is a depressed, rather than a prosperous agriculture sector that ultimately leads to higher migration and higher urbanization (Tripathy and rani, 2017).

Thorat *et al.* (2007) also observed very similar results on farm and non-farm income and concluded that there is a negative relationship between migration of family members and income from agriculture and as off-farm income of a household increases, the probability of migration of its family member decreases. The remaining variables like age, land holding of the household and the households growing commercial crops did not have any significant effect on the migration. To know the extent of changes in the household decision to migrate because of the respective factors, marginal effects have been estimated (Table 4).

Push and Pull Factors

Another way of determining the factors responsible for the households to migrate is looking at different pull and push factors. As the words themselves reveal the meanings, push factors push people away from their hometowns (village), whereas, pull factors pull people (attract) to a new destination (*i.e.,* city like Bengaluru in this study). The reasons people migrate are usually economic, political, cultural, or environmental. Many migration studies identified various push and pull factors at both origin and destination of migration. Since, the present study was limited to the farm households, the factors considered were from the origin side of the migration but not at the destination side. Lee (1966) determines push (unemployment, lower income, little access to basic public services, conflicts in rural areas) and pull (employment opportunities, higher incomes, better

TABLE 4

Probit regression analysis results for identifying the factors of migration (n=260)

Explanatory variables	Coef.		Robust Std.error	P>|z|	dy/dx(Marginal effect)
R_T_U					
R_T_U 2	0.065		0.262	0.804	0.014
R_T_U 3	0.459	*	0.261	0.079	0.099
Education	0.053	**	0.023	0.023	0.011
Age	-0.017	0.012	0.183	-0.003	
HH size	0.333	***	0.064	0	0.070
Land		0.024	0.050	0.639	0.005
Farm income	-0.0001	***	0.000	0	-0.000
Non-farm Income	0.00001	***	0.000	0	0.001
1.Debt	0.806	***	0.234	0.001	0.188
1.Commrcial crops	-0.363	0.413	0.378	-0.076	
_Cons	1.81999	0.64824	0.005		

(Note:*, **, *** means P < 0.1, P < 0.05 and P < 0.01 respectively)

provision of basic public services in urban areas) factors causing rural-urban migration.

In most of the migration studies, the major motivation behind migration is economic factors. In developing countries like India, low or marginal agricultural income, agricultural unemployment and less job opportunities are considered as basic push factors. In the same manner, Table 5 illustrates various push and pull factors and it was seen that low agricultural income/ agricultural unemployment/ low wages were the major push factor with 52 per cent followed by lack of employment and business opportunities (20.95 %). Brauw (2017) study also describes that in most of the world a rural urban labour productivity gap exists, and urban labourers obtain roughly twice the return to their labour that rural labourers do.

Thus, it was evident that more wages in the urban areas is one of the pull factors. Among the pull factors, more employment and business opportunities (33.33 %) followed by prospects of high wages (29.52 %) were the major pull factors. Since Bengaluru city is near to the study area, about 12 per cent of the migrant households expressed that it is also one of the pull factors for them to migrate.

TABLE 5

Various Push and Pull factors for migration (n=105)

Various push factors	Frequency	Percentage
Low agricultural income / agricultural Unemployment / low wages	55	52.38
Lack of employment and business opportunities	22	20.95
Lack of suitable jobs	18	17.14
Lack of educational and health facilities	7	6.66
Family / social conflicts	3	2.85
Various Pull factors		
More employment and business opportunities	35	33.33
Prospects of higher wages	31	29.52
Promise for better life and better standard of living	26	24.76
Near to their home town	13	12.38

The study identifies major factors affecting migration using Probit regression analysis. Results of the analysis clearly showed that, migrant households and non-migrant households differ significantly in many socio-

economic characteristics. The important and significant factors among many factors of migration were households having outstanding debt followed by household size. It was not surprising that, the results were in line with the hypothesis that, as the households have more members in the family, have outstanding debt to be paid and less farm income then the probability that the household moving to the migrant household category is also more. Further, the results also showed that, the rural household have more probability to migrate compared to the transition and urban. It means that rural households migrate more than that of transition and urban households as they are deprived of better employment and better living standard opportunities compared to the latter.

Meanwhile, the study also helped in identifying various important push and pull factors of migration and listed them according to their importance and it was pretty clear that better employment and job opportunities and prospects of higher wages in urban areas that made the households to migrate towards Bengaluru city.

These outcomes of the study have implications for designing development policy strategies to reduce rural-urban gaps and migration including basis for future research works. The study also helps in improving our understanding about the various factors of internal out migration as the concept of urbanization and migration are often complex and examining the characteristics of the migration is very essential for the policy makers. Especially, developing countries like India, where getting exact and accurate data related to migration is a hardship and a difficult task. This study is a modest attempt to understand and find out various significant factors affecting migration in the rural-urban interface opening up of plethora of opportunities for further research in this area.

Policy Recommendations

Based on the outcome of the study few policy inputs can be drawn for the policy makers and rural-urban development institutions.

1. Encouraging youths in villages to take up agriculture seriously and providing required and essential investment and capital factors for making agriculture remunerative for them. Thus, realising the importance of rural youth in agricultural development especially from the point of view of food security of the country, ICAR's programme on "Attracting and Retaining of Youth in Agriculture (ARYA)" can be implemented in rural areas.

2. Ensuring that farmers have timely access to seeds, fertilizers etc at competitive rates and also availability of credit at low interest rates. Further, ensuring that people also have easy access to loans or credits to start small and petty businesses in their own areas.

3. Establishment of skill development institutes and training centres in rural areas for the capacity and skill development of unemployed youth is the need of the hour.

4. Setting up of new small and medium industries in rural and transition areas which will reduce the number of migrants who migrate to cities in search of jobs and also reduce the pressure on urban cities.

5. Setting up of a data management organisation where correct/reliable data and details of migrants can be recorded from time to time for better management of migrants at the destination.

It is very clear from the above discussion that migration is an inevitable part of any economy which undergoes economic development but regulating it in a proper and gradual manner will be a better option for both rural and urban areas. Controlling this transition from rural to urban using both central and state policies and powers would make migration not a bane but a boon for further economic progress of a prosperous nation. Implementation of Provision of Urban Amenities to Rural Areas (PURA) strategy, a concept as given by former president Dr. A.P.J. Abdul Kalam can also be done which proposes that urban infrastructure and services be provided in rural hubs to create economic opportunities outside of cities. Thus, coordinating with all the stakeholders to make it

The Mysore Journal of Agricultural Sciences

a controlled and gradual transition will bring better opportunities for all.

Limitations of the Study

1. The most critical limitation of this study was finding the farmers in the urban area of Bengaluru with at least one member migrated to compare with the non-migrant, so the sample in urban area was limited to 60 while in transition and urban, the sample size was 100 each.

2. It would have been easy if the secondary data was available to compare the percentage of migrants from each transect to Bengaluru.

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