

RURAL-URBAN MIGRATION AND THE HARRIS-TODARO MODEL: A CASE STUDY OF GUWAHATI

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Migration is one of the three basic factors affecting population, the other two being fertility and mortality. Migration can be defined as the movement of individual or groups of people from one place of residence to another who have the intention of staying in the new place for a substantial period of time. The transitional stage of development, which is characterized by development of towns and cities, growth of manufacturing infrastructure and the advent of modern transport and communication, induces large scale movements of people from rural areas to urban centres. Such forms of migration take place in response to the creation of new livelihood opportunities in the newly developed and rapidly growing cities and towns.

At present when nearly all of the less developed countries of the so called third world are in their transitional stage of development, rural to urban migration constitutes the predominant migratory stream of the world. According to the Harris-Todaro migration model, migration is based largely on rational economic calculations by the potential migrants that are based on rural-urban differences in expected rather than actual earnings. Guwahati, the principal city in Assam, is experiencing explosive growth which is primarily fueled by migration. Interestingly, out of total population 885397 in 2001 of Guwahati, 378657 are migrants, constituting 42.77 percent of the total population. The tremendous influx of rural migrants to urban center has left the city grappling with massive problems of urban unemployment and has put enormous pressure on the socio-economic infrastructure. The paper focuses on the phenomenon of rural to urban migration in the city. Besides, an attempt is also made to identify the rationale of such a phenomenon by confronting the relevant primary data of rural-urban migration with the Harris-Todaro migration model.

The paper concludes that the Harris-Todaro model is inadequate to explain rural-urban migration into Guwahati as expected urban-rural income differential is found to be insignificant as a factor determining the migration rate. Alternatively, per capita gross domestic product and density of population at the place of origin constitutes significant factors inducing rural-urban migration into Guwahati.

INTRODUCTION

Migration is one of the three basic factors affecting population, the other two being fertility and mortality. Migration can be defined as the movement of individual or groups of people from one place of residence to another who have the intention of staying in the new place for a substantial period of time. Migration of human beings had taken place from time immemorial and it indicates the inherent tendency of human being to move from one place to another in search of better life. The transitional stage of development, which is characterized by development of towns and cities, growth of manufacturing infrastructure and the advent of modern transport and communication, induces large scale movements of people from rural areas to urban centres. Such forms of migration take place in response to the creation of new livelihood opportunities in the newly developed and rapidly growing cities and towns.

At present when nearly all of the less developed countries of the so called third world are in their transitional stage of development, rural to urban migration is the predominant migratory stream of the world. According to the Harris-Todaro migration model, migration is based largely on rational economic calculations by the potential migrants that are based on rural-urban differences in expected rather than actual earnings.

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Guwahati, the principal city in Assam, is experiencing explosive growth which is primarily fueled by migration. Interestingly, out of total population 885397 in 2001 of Guwahati, 378657 are migrants, constituting 42.77 percent of the total population. The tremendous influx of rural migrants to urban center has left the city grappling with massive problems of urban unemployment and has put enormous pressure on the socio-economic infra-structure. The paper focuses on the phenomenon of rural to urban migration into Guwahati city. Besides, an attempt is also made to identify the rationale of such a phenomenon by confronting the relevant primary data of rural-urban migration with the Harris-Todaro migration model.

The paper is divided into five sections. The second section deals with the conceptual framework of the paper. The relevance of the Harris-Todaro Model in explaining migration into Guwahati is tested in the third section. Section four attempts to fit an alternative migration model for Guwahati. Finally, the conclusion of the paper is presented in section five.

CONCEPTUAL FRAMEWORK

The study of migration, in general and rural-urban migration in particular, has for long been an important area of research in development economics. The Harris-Todaro framework (named after John R. Harris and Michael Todaro) has become a cornerstone of rural-urban migration models. The aim of the Harris-Todaro framework is to explain the persistent rural-urban migration in developing countries despite the high employment rates in cities. In the Harris-Todaro migration model, individuals are assumed to base their decision to migrate on considerations of wage maximization and what they perceive to be their expected wage streams in urban and rural areas. To explain the accelerated rural-urban migration in the face of rising urban unemployment, this model postulates that the migration decision is based on differences in expected earning between urban and rural areas (Harris and Todaro, 1970). Thus, the Harris-Todaro model assumes that migration is essentially an economic phenomenon and the existing urban - rural wage differential can adequately explain the rural-urban flow of migrants despite a high rate of urban unemployment. In other words, this model asserts that rural-urban migration will continue as long as expected wage rate in the urban sector is greater than the wage rate in the rural sector,

i.e. $W_{eu} > W_r$.

As articulated by Todaro (2004), “the fundamental premise is that migrants consider the various labour market opportunities available to them in the rural and urban sectors and choose the one that maximizes their expected gains from migration”. In developed countries with near full employment economies, the decision to migrate is simple one, i.e. the rural workers migrate to take up higher paid urban job in the face of rural-urban wage differentials. But the urban sectors of the developing countries are beset with substantial unemployment. So a potential rural migrant by comparing expected urban wage in a particular time period to the rural income, will weigh the rural-urban wage differential with the possibility that he may remain unemployed for a considerable period of time before he finds more lucrative urban employment. If the expected urban wage (the product of the actual urban wage and the probability of success in securing an urban job) exceeds the rural wage, the decision to migrate would certainly be rational despite the existence of urban unemployment. The equilibrium condition will prevail when the expected urban- rural wage differential is zero,

i.e. $W_{eu} = W_r$.

In this paper, the Harris-Todaro migration model is adapted and applied to situations of actual rural-urban migration into Guwahati. The model in this instance is used to explain the phenomenon of rural-urban migration in terms of differential in expected urban wage and rural wage.

APPLICATION OF THE HARRIS-TODARO MODEL TO MIGRATION INTO GUWAHATI

As is the case in other major Indian cities and metropolis, Guwahati is also experiencing an explosive rate of growth. This growth is mostly powered by unfettered migration from the rural areas as well as from some of the smaller urban centers. Census data indicates that most of the males migrate into the city in search of livelihood (Directorate of Census Operation, Assam, 2001). However, a majority of the female migrants move to the city after marriage, which is associational in nature. This research paper focuses its attention to only to the first form of migration, which by its very nature is non-associational and potentially dependant on socioeconomic and demographic factors.

The basic Harris-Todaro migration model (H-T model) can be expressed as:

$$MR = f(P, Y_u - Y_r)$$

where,

Migration ratio (MR) is a function of differential in expected urban wage and rural wage.

P is the probability of getting an urban job.

Y_u is the wage in the urban area (the place of destination) and

Y_r is the wage in the rural area (the place of origin).

In keeping with the main objective of the paper, the relevance of the Harris-Todaro model is tested in the context of rural-urban migration into Guwahati on the basis of the following null hypothesis:

Rural-urban migration into Guwahati is not affected by expected urban-rural wage differentials.

METHODOLOGY AND DATA SOURCE

Relevant primary data, obtained from field survey, are used to fit the model formulated to attend the above stated objective. The field survey was carried on existing 60 wards in Guwahati, from which a sample of 1000 individuals from the city's labour-force was collected on the basis of random sampling.

From the 1000 respondents, 911 were migrants from various districts of Assam as well as from other states of India, the rest 89 being locals. Again, out of 911 migrants, there are 869 migrant workers who were from rural areas. Only this group of migrants is studied in this research which endeavors to test the application of the Harris-Todaro model to explain rural-urban migration in Guwahati.

The Model

The research model formulated for this paper has been loosely adopted from the basic Harris-Todaro model where the migration ratio is determined in terms of differential in the expected urban wage and rural wage. Thus,

$$MR = b_0 + b_1 (P, Y_u - Y_r) + e \text{ ----- (1)}$$

where,

$$MR = (Mru / TP)$$

Mru = Migration from rural areas to Guwahati

TP = Total population of Guwahati

P = Probability of getting a job in urban area.

Where

$$P = UWF/ULF$$

i.e. the ratio of urban work force and urban labour force

and

$$Y_u = \text{Urban wage}$$

$$Y_r = \text{Rural wage}$$

This model is applied to three wage categories of migrants in the form of three sub-models. This was necessitated due to the presence of large wage differentials within a migrant group which causes distortion in the outcome due to the heterogeneous nature of the data. Hence, the categorization is expected to make the focus groups relatively homogeneous so that the significance of rural-urban wage differentials is captured. The sub-models test the same null hypothesis for their relevant data.

Sub-Models

Model-A is confined to unskilled workers whose wage rates are assumed not to exceed Rs. 6000 per month. Model-B includes semi-skilled workers whose wage rates are assumed not to exceed Rs. 15000 while Model-C includes skilled workers whose monthly earning is assumed to be above Rs. 15000.

Table-1: Wage Differential of Unskilled Migrants in Guwahati

| PLACE OF ORIGIN | MIGRATION RATIO | WAGE AT DESTINATION | EXPECTED WAGE AT DESTINATION | RURAL WAGE | WAGE DIFFERENTIAL |
|-----------------|-----------------|---------------------|------------------------------|------------|-------------------|
| ANDHRA PRADESH | 0.049275362 | 4300 | 4214 | 671 | 3543 |
| BAKSA | 0.063768116 | 5000 | 4900 | 995 | 3905 |
| BARPETA | 0.136231884 | 4940 | 4841.2 | 826 | 4015.2 |
| BIHAR | 0.142028986 | 4822 | 4725.56 | 790 | 3935.56 |
| BONGAIGAON | 0.005797101 | 4750 | 4655 | 550 | 4105 |
| CACHAR | 0.008695652 | 5333 | 5226.34 | 1400 | 3826.34 |
| DARRANG | 0.052173913 | 4711 | 4616.78 | 961 | 3655.78 |
| DHUBRI | 0.139130435 | 5198 | 5094.04 | 848 | 4246.04 |
| GOALPARA | 0.037681159 | 5462 | 5352.76 | 1308 | 4044.76 |
| KAMRUP | 0.153623188 | 4913 | 4814.74 | 968 | 3846.74 |
| NAGAON | 0.017391304 | 5583 | 5471.34 | 1083 | 4388.34 |
| NALBARI | 0.089855072 | 4903 | 4804.94 | 1123 | 3681.94 |
| RAJASTHAN | 0.005797101 | 6000 | 5880 | 2000 | 3880 |
| SONITPUR | 0.008695652 | 5667 | 5553.66 | 1167 | 4386.66 |
| UP | 0.014492754 | 5200 | 5096 | 960 | 4136 |
| WEST BENGAL | 0.026086957 | 4444 | 435.12 | 922 | 3433.12 |

Source: Field Survey

Out of the 869 migrants in the sample size of 1000, 345 are included in Model-A, while the number of respondents in Model-B and Model-C are 430 and 94 respectively. Besides, Model-A considers 16 places of origin while the number of places of origin in Model-B and Model-C is 20 and 14 respectively.

The relevant data in Model-A are presented in Table-1. The migration ratio is estimated from 12 districts of Assam and 4 Indian states. The four states namely Andhra Pradesh, Uttar Pradesh, Bihar and West Bengal have been included as a large number of respondents have named them as their place of origin. The wage rate of these migrants at their place of origins and in Guwahati, within the group and sub-groups have been averaged. The differential in expected wage rate at Guwahati and the wage rate at the place of origin is estimated for all migrants by place of origin.

Similarly, data of migrants from 20 and 14 places of origin are inducted in Model-B and Model-C respectively which are presented in Table-2 and Table-3.

Table-2: Wage Differential of Semi-Skilled Migrants in Guwahati

| PLACE OF ORIGIN | MIGRATION RATIO | WAGE AT DESTINATION | EXPECTED WAGE AT DESTINATION | RURAL WAGE | WAGE DIFFERENTIAL |
|-----------------|-----------------|---------------------|------------------------------|------------|-------------------|
| ANDHRA PRADESH | 0.043052838 | 8886 | 8352.84 | 1091 | 7261.84 |
| BAKSA | 0.060665362 | 8732 | 8208.08 | 1781 | 6427.08 |
| BARPETA | 0.13111546 | 9507 | 8936.58 | 2273 | 6663.58 |
| BIHAR | 0.086105675 | 10698 | 10056.12 | 2370 | 7686.12 |
| BONGAIGAON | 0.007827789 | 9375 | 8812.5 | 2375 | 6437.5 |
| CACHAR | 0.019569472 | 9900 | 9306 | 2420 | 6886 |
| DARRANG | 0.04109589 | 10667 | 10026.98 | 2905 | 7121.98 |
| DHUBRI | 0.070450098 | 9153 | 8603.82 | 1736 | 6867.82 |
| GOALPARA | 0.054794521 | 10607 | 997.58 | 2257 | 7713.58 |
| JORHAT | 0.003913894 | 7750 | 7285 | 3000 | 4285 |
| KAMRUP | 0.154598826 | 9665 | 9085.1 | 2325 | 6760.1 |
| LAKHIMPUR | 0.005870841 | 7167 | 6736.98 | 2333 | 4403.98 |
| MORIGAON | 0.007827789 | 9000 | 8460 | 2175 | 6285 |
| NAGAON | 0.029354207 | 10820 | 10170.8 | 3200 | 6970.8 |
| NALBARI | 0.138943249 | 9683 | 9102.02 | 2365 | 6737.02 |
| RAJASTHAN | 0.003913894 | 13500 | 12690 | 3750 | 8940 |
| SONITPUR | 0.011741683 | 9333 | 8773.02 | 1617 | 7156.02 |
| TINSUKIA | 0.001956947 | 10000 | 9400 | 1000 | 8400 |
| UP | 0.019569472 | 11800 | 11092 | 3970 | 7122 |
| WEST BENGAL | 0.031311155 | 9656 | 9076.64 | 2619 | 6457.64 |

Source: Field Survey

Table-3: Wage Differential of Skilled Migrants in Guwahati

| PLACE OF ORIGIN | MIGRATION RATIO | WAGE AT DESTINATION | EXPECTED WAGE AT DESTINATION | RURAL WAGE | WAGE DIFFERENTIAL |
|-----------------|-----------------|---------------------|------------------------------|------------|-------------------|
| BAKSA | 0.010638298 | 25000 | 21500 | 5000 | 16500 |
| BARPETA | 0.053191489 | 19600 | 16856 | 4900 | 11956 |
| BIHAR | 0.106382979 | 19500 | 16770 | 5000 | 11770 |
| BONGAIGAON | 0.010638298 | 16000 | 13760 | 4500 | 9260 |
| DARRANG | 0.021276596 | 20000 | 17200 | 6500 | 10700 |
| DHUBRI | 0.031914894 | 20333 | 17486.38 | 4333 | 13153.38 |
| GOALPARA | 0.010638298 | 16000 | 13760 | 2000 | 11760 |
| KAMRUP | 0.180851064 | 21382 | 18388.52 | 5059 | 13329.52 |
| LAKHIMPUR | 0.021276596 | 16000 | 13760 | 5000 | 8760 |
| NAGAON | 0.063829787 | 21250 | 18275 | 4833 | 13442 |
| NALBARI | 0.063829787 | 17833 | 15336.38 | 4417 | 10919.38 |
| RAJASTHAN | 0.074468085 | 23000 | 19780 | 6286 | 13494 |
| UP | 0.074468085 | 20857 | 17937.02 | 6571 | 11366.02 |
| WEST BENGAL | 0.010638298 | 20000 | 17200 | 8000 | 9200 |

Source: Field Survey

The three sub-models are applied to the data in Table-1, Table-2 and Table-3 respectively using linear regression analysis so as to identify and estimate the relationship between the migration ratio and differential in urban expected wage rate and rural wage.

The result of regression is as follows:

| | Model-A | Model-B | Model-C |
|----------------------|--------------|-------------|-------------|
| R | .072 | .071 | .271 |
| R² | .005 | .005 | .073 |
| F | .072 (.792) | .090 (.767) | .951 (.349) |
| b₁ | -00001.412 | 000003.130 | 000006.245 |
| t | -.269 (.792) | .301 (.767) | .975 (.349) |

Note: Figures in bracket indicate the p-value of the test parameters

For Model-A, the value of R is estimated at .072 indicating a very poor correlation between migration ratio and expected urban-rural wage differential. Again, the value of R² (.005) revealed that expected urban-rural wage differential can account for only 0.5% of the variation in migration from rural areas to Guwahati. Similarly the F –value is found to be insignificant implying that the model does not efficiently predict the dependant variable. Finally, the t-value is found to be insignificant implying that the null hypothesis stating that rural-urban migration into Guwahati is not induced by expected urban-rural wage differentials is true.

Similar outcomes are arrived at in both Model-B and Model-C implying that even for these subgroups of migrants the basic null hypothesis can be accepted.

Hence, on the basis of the above analysis, we can safely conclude that the Harris-Todaro model is inadequate to explain rural-urban migration into Guwahati as differential in expected urban wage and rural wage rate is found to be an insignificant factor affecting the rural-urban migration rate into the city.

RURAL-URBAN MIGRATION INTO GUWAHATI AS A FUNCTION OF SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS IN THE PLACE OF ORIGIN

Given the inadequacy of the Harris-Todaro model in explaining rural-urban migration into Guwahati, the research study as an alternative seeks to explore other factors which could significantly influence this phenomenon. Different factors considered includes density of population of the place of origin, literacy rate of the place of origin, percentage of agricultural labourers to agricultural workers at the place of origin, distance from the place of origin to the place of destination, and per capita gross district domestic product of the place of origin. The study computes a multiple linear regression equation to identify and estimate the relationship between the migration ratio and different socio-economic and demographic factors.

$$MR = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + e \text{ ----- (2)}$$

where, the migration ratio is

$$MR = (Mru / TP)$$

with

Mru = Number of migrants from rural areas to Guwahati

TP = Total population of Guwahati

X_1 = Literacy rate of the place of origin

X_2 = Density of population of the place of origin (per sq. km.)

X_3 = Percentage of agricultural labourers to agricultural workers at the place of origin

X_4 = Distance from the place of origin to the place of destination

X_5 = Per capita gross district domestic product of the place of origin

e = Error term

In the above equation, the dependant variable is the rural-urban migration ratio which is the ratio of the migrants from the rural areas of Assam (the place of origin) and Guwahati city (the place of destination). Primary data relating to the dependant variable are mobilized by field survey, while data for all the explanatory variables are sourced from Census data (DCO, Assam, 2001).

Here, the study do not consider inter-state migration and restricts itself to rural-urban migration at the intra-district and inter-district level. In this section, out of the original sample of 1000 individuals, inter-state migrants into Guwahati numbering 205 are ignored.

Among the factors determining rural-urban migration, literacy rate at the place of origin is considered to be important. Theoretically, greater educational attainment is considered to be positively correlated with the decision to move of the potential rural migrants. Hence, literacy rate at the place of origin is taken as an explanatory variable to determine rural-urban migration into the city.

In any economy, land provides the major source of livelihood for the majority of the people. Heavy pressure of population on land is considered to be an important factor inducing the rural population to migrate to urban areas. Therefore, the study incorporates the rural density of population into the model as a predictor.

In a rural economy, the availability of land is indicated by the percentage of cultivators relative to agricultural labourers in the total work force. Cultivators are those having land of their own while agricultural labourers are mostly landless working against wages. Pressure of agricultural labourers on a particular rural area may be another influencing factor that determines rural-urban migration.

Similarly, distance from the place of origin to the place of destination may also be an influencing factor in the decision to migrate. Generally people migrated from rural areas to their nearest urban area for seeking better livelihood opportunities.

Finally, existing poverty and deprivation in rural areas are considered to be important factors inducing rural people to migrate to the city. Hence, the district domestic per capita income is adopted to capture the influence of the above two factors on the decision to migrate of the rural population.

The places of origin are constituted by a sample of fourteen districts of Assam. Respective data of these districts for both independent as well as for the dependant variables are presented in Table-4.

Table- 4: Factors Influencing Rural-Urban Migration into Guwahati

| PLACE OF ORIGIN | MIGRANTS FROM THE PLACE OF ORIGIN TO THE PLACE OF DESTINATION | MIGRATION RATIO | DENSITY OF POPULATION | % OF AGRI. LAB. TO TOTAL AGRI. WORKERS | DISTANCE FROM GUWAHATI | PCGDDP* | LITERACY RATE |
|-----------------|---------------------------------------------------------------|-----------------|-----------------------|----------------------------------------|------------------------|---------|---------------|
| BARPETA | 134 | 0.169 | 473 | 28.08 | 140 | 12040 | 53.75 |
| BONGAIGAON | 7 | 0.009 | 374 | 31.35 | 240 | 7619 | 55.31 |
| CACHAR | 13 | 0.016 | 331 | 36.84 | 343 | 11621 | 64.77 |
| DARRANG | 42 | 0.053 | 412 | 25.28 | 154 | 7466 | 53.77 |
| DHUBRI | 93 | 0.117 | 522 | 39 | 287 | 6801 | 43.9 |
| GOALPARA | 43 | 0.054 | 418 | 33.14 | 150 | 7643 | 56.25 |
| JORHAT | 2 | 0.003 | 299 | 17.13 | 308 | 16723 | 74.07 |
| KAMRUP | 172 | 0.216 | 395 | 26.82 | 0 | 22292 | 66.9 |
| LAKHIMPUR | 5 | 0.006 | 346 | 9.31 | 390 | 8341 | 67.62 |
| MORIGAON | 4 | 0.005 | 481 | 27.3 | 78 | 8295 | 57.09 |
| NAGAON | 28 | 0.035 | 522 | 34.12 | 123 | 8081 | 58.3 |
| NALBARI | 139 | 0.175 | 500 | 26.89 | 71 | 8169 | 66.73 |
| SONITPUR | 10 | 0.013 | 286 | 27.68 | 154 | 8323 | 55.15 |
| TINSUKIA | 2 | 0.003 | 248 | 16.53 | 491 | 17707 | 55.07 |

NOTE: PCGDDP* - per capita gross district domestic product

Source: Field Survey & Census of India, (Assam), 2001.

A multiple linear regression analysis is undertaken for the model defined by equation- 2. The backward stepwise method is used on the basis of which the following outcomes are presented.

The first model defined by the analysis indicates the coefficient of determination at 0.64 implying that 64percent of the variation in migration ratio can be accounted for by the five dependant variables. However, subsequent models arrived at by dropping the insignificant dependant variable exhibit successively lower

values of R2. The fourth and the final model which defines the migration ratio in terms of only the two significant independent variables i.e. per capita gross domestic product and density of population, indicate a relatively lower R2 of 0.59. Besides, the Durbin-Watson value of 1.859 reveals that the data is free from auto-correlation.

Box-1

| Model | R2 | F | Sig. | Variables entered | B | t | Sig. | VIF |
|---------|------|-------|------|-----------------------------------------------------|----------|--------|------|-------|
| Model-1 | .643 | 2.887 | .088 | (Constant) | -.122 | -.492 | .636 | |
| | | | | Literacy rate at the place of origin | -.001 | -.491 | .636 | 1.663 |
| | | | | Density of population at the place of origin | .000 | 1.834 | .104 | 2.325 |
| | | | | % of agricultural labourers to agricultural workers | .000 | -.118 | .909 | 1.800 |
| | | | | Distance from Guwahati | .000 | -1.020 | .338 | 1.835 |
| | | | | Per Capita gross district domestic product | 9.889E-6 | 2.428 | .041 | 1.508 |
| Model-2 | .643 | 4.049 | .038 | (Constant) | -.137 | -.673 | .518 | |
| | | | | Literacy rate at the place of origin | -.001 | -.518 | .617 | 1.350 |
| | | | | Density of population at the place of origin | .000 | 1.962 | .081 | 2.219 |
| | | | | Distance from Guwahati | .000 | -1.082 | .307 | 1.732 |
| | | | | Per Capita gross district domestic product | 9.902E-6 | 2.578 | .030 | 1.507 |
| Model-3 | .632 | 5.729 | .015 | (Constant) | -.213 | -1.580 | .145 | |
| | | | | Density of population at the place of origin | .001 | 2.233 | .050 | 2.090 |
| | | | | Distance from Guwahati | .000 | -1.042 | .322 | 1.672 |
| | | | | Per Capita gross district domestic product | 9.263E-6 | 2.645 | .025 | 1.352 |
| Model-4 | .592 | 7.987 | .007 | (Constant) | -.313 | -3.292 | .007 | |
| | | | | Density of population at the place of origin | .001 | 3.709 | .003 | 1.259 |
| | | | | Per Capita gross district domestic product | 1.022E-5 | 3.010 | .012 | 1.259 |

Note:

Dependent variable: Migration ratio

Model-1: Predictors: (Constant), Per Capita gross district domestic product, Distance from Guwahati, Literacy rate

at place of origin, % of agri. laborers to agri. workers at the place of origin, Density of population at place of origin

Model-2: Predictors: (Constant), Per Capita gross district domestic product, Distance from Guwahati, Rural literacy rate at the place of origin, Density of population at the place of origin

Model-3: Predictors: (Constant), Per Capita gross district domestic product, Distance from Guwahati, Density of population at the place of origin

Model-4: Predictors: (Constant), Per Capita gross district domestic product, Density of population at the place of origin

The F-value of the first model is found to be significant at 10 percent, implying that the model-1 predicts migration ratio fairly efficiently. With the subsequent omission of the insignificant independent variables i.e. distance from Guwahati, literacy rate at place of origin, percentage of agricultural laborers to agricultural workers, model-4 represents a much more efficient model with an F-value of 7.987 which is significant at 1percent.

The coefficients estimated for the four models involve the backward stepwise regression process. Model-1 reveals only per capita district gross domestic product as a significant factor affecting the migration ratio. In the subsequent models, i.e. model-2, model-3 and model-4, the insignificant factors, i.e. percentage of agricultural labourers to agricultural workers, literacy rate and distance from Guwahati, are successively dropped. Model-4 reveals only density of population and per capita gross district domestic product to be significant factors affecting the migration ratio at 1percent and 5percent respectively, with corresponding B-values of .001 and 00001.

Hence, we reject the implicit null hypothesis of the model that density of population and per capita gross district domestic product do not individually affect the migration ratio and an alternately accept the contention that these two predictors independently do have an impact on the migration ratio of Guwahati. The authenticity of the result is further strengthened by the absence of colinearity as evidenced by values assumed by the Tolerance and VIF parameters against the various regression coefficients.

CONCLUSION

In most developing countries, development activities are focused in the big towns and cities. The rapid expansion of trade & commerce along with industrial development has resulted in the concentration of employment opportunities and socio-economic infra-structures in these urban centres. Given the relative underdevelopment of the rural areas in India which is manifests into low wages and under employment, the existing disparity serves as an inducement for rural-urban migration.

Although this paper fails in its attempt to explain rural-urban migration on the basis of The Harris-Todaro model, however, it establishes a significant relationship between migration rate in Guwahati and the density of population and per capita gross domestic product at the place of origin. On the basis of the results, we can conclude that a greater population density can act as a push factor in the rural areas inducing migration into Guwahati. On the other hand, per capita gross district domestic product has been established to have a positive impact on Guwahati's migration rate. This may be interpreted as people belonging to relatively higher income zones having a greater propensity to migrate because of their relatively higher education and skills which is reflected in the higher gross district domestic product.

However, most literature on rural-urban migration endorses the Harris-Todaro model which explains rural-urban migration in terms of expected urban rural wage differentials. There is also unanimity in migration literature on the fact that the concentration of socio-economic infrastructure in urban centres, greater livelihood opportunities and access to modern amenities acts as a major inducement for people in rural areas to migrate to cities.

However, unfettered flow of rural migrants imposes tremendous pressure on existing infrastructures of the towns and cities creating undesirable fallout in the form of unemployment, congestion, slums & squalor, environmental degradation and spiralling crime rate. Economic plans by focusing their allocation in urban centres contributes to the problem by aggravating the urban-rural disparity.

Although, Guwahati is the engine of growth for the entire north eastern region but its uncontrollable expansion is generating unmanageable problems resulting in a significant decline in the quality of life of the population. Given the increasing pressure exerted on the existing socio-economic infrastructure, there is a growing realisation that future growth of the city must be rationally planned and unchecked in-migration regulated if the city is to be protected from the inevitable decline and decay. It is imperative that the ad-hoc policies related to urbanization and migration need to be replaced by a consistent, logical and a systematic strategy which can sustained over a long period of time.

In this context, the unfettered flow of rural migrants into Guwahati can be checked if a sustained effort is made to induce development of the rural sector. Greater public investment in rural socioeconomic infrastructure will result in a multiple stream of benefits; creation of such infrastructure will attract private investment in the form of forward and backward linkages. This also will enhance rural income, besides providing for the basic amenities of modern life which will induce the rural population to refrain from migrating. But, whatever be the policy pursued by the state, the sheer momentum of the growth of cities like Guwahati would ensure that, they would be an exposed to a minimum level of migration. Under such circumstances, it is widely agreed that the establishment of Satellite Township would lead to a significant reduction in the burden of such agglomerations. Thus, adoption of a multipronged strategy which endeavours to develop the rural sector while seeking to attain a planned growth of the urban centres is the order of the day. This would enable the economy to attain its true potential while at the same time, ensure for all its citizens equitable benefit that flows from the balanced growth which will ensue.

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