Mobility at the Lower Echelons?

Evidence Based on Slum Household Panel Data from a Dynamic Indian City

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Evidence Based on Slum Household Panel Data from a Dynamic Indian City

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Abstract

This paper based on the household panel data collected from the slum surveys in the national capital of India notes that the extent of mobility is not uniform across slum households, which in the literature is interpreted as time independent mobility. It tries to identify the determinants of mobility through various econometric models, keeping in view the appropriateness to reflect on the mobility aspect. Given the city environment, the individual specific factors such as educational attainments are important in determining mobility. Even within the city, activities and labour market vary widely across regions, and the outcomes in terms of mobility are different, reflecting on physical segmentation, the mobility constraints and the variations in individual motivational drive. Access to information also differs depending on the migration status of the population. In the labour market gender discriminatory factors are at place for which the wages diverge between females and males, resulting in variations in mobility. The policy implications may be envisaged in terms of educational and skill imparting programmes, effective dissemination of job market information, provision of inexpensive commuting facilities within the city and reduction in gender differentials in the labour market.

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1. Introduction

Studies on mobility undoubtedly provide a strong basis for an in-depth understanding of the endemic causes of poverty. While assessing the recipient's wellbeing in the base year versus the terminal year the determinants of successful cases and the episodes of immiseration both offer policy insights, particularly in relation to employment planning, income support initiatives and sustenance of consumption above the poverty line. Fields (2000) talked about the concept of time independent mobility. If in a bivariate distribution pertaining to the base year and the terminal year the households/individuals across different size classes formed by certain measurable indicators remain along the leading diagonal, it reveals either stagnancy or time dependent mobility. An equi-proportionate change (increase or decrease) in the wellbeing of different individuals might have been caused by macro changes or certain other exogenous shocks which are already included in the information set. There is need for exploration only when mobility is time independent, i.e., different units have experienced different magnitudes of change. So, in the matrix representing the positioning of the units in the base and the terminal years many of the off-diagonal elements will be non-zero if the mobility is time independent. The differences in the wellbeing indicators as observed across units are different which raise a pertinent question as to what factors are responsible for such variations in outcomes. The key variables and the control variables may explain part of the differences in the differences though the unit specific effects (time invariant or time variant) may also be present.

Mobility studies are in a sense connected to inequality issues. Relative inequality, for example, remains the same as time dependent mobility occurs. On the other hand, time independent mobility would imply significant changes in the level of inequality. Particularly in the context of low income households the mobility studies are important as they unravel the percolation effects of growth, taking place at the macro level. Without any direct policy intervention whether economic growth is able to benefit all sections of the society, and if so, how much variations exist across different income groups are some of the key questions. Based on the extent of inclusiveness and its ramifications policy directiveswill have to be then initiated for having wider developmental outcomes. Hence, what happens at the lower echelons and why households move up and down the poverty line over time form the basis of mobility studies in a developing country context.

An important angle from which different units may be expected to have registered different outcomes relates to locational or neighbourhood characteristics. Even within a given region significant variations may be observed across space. For example, some of the neighbourhoods may motivate households/individuals to work towards upward mobility while some other may lack the dynamism. Ioannides and Loury (2004) mention how poor neighbourhood effects reduce the probability of job accessibility ad upward mobility. Information passed from employed individuals to their unemployed acquaintances makes it more likely that their acquaintances will become employed implying that there is a positive correlation between employment and wages of networked individuals within and across periods.Duration dependence and persistence in unemployment may be explained by arguing that when an individual's direct and indirect social contacts are unemployed, the likelihood of obtaining information about jobs through contacts is accordingly determined. Also, the

likelihood of dropping from labour force increases if the individual's social contacts have poor employment experience and higher initial drop-out rates.So, history matters in clarifying wage inequality and this explanation is different from the one relating to human capital differences (Ioannides and Loury, 2004)

Chetty (2018) observed that slums in the neighbourhood of middle-income households could accept the latter as their role model and struggled hard to experience upward mobility. On the other hand, the slums in the vicinity of the rich households could hardly draw lessons for replication. The economic and social gap never allowed them to form ambition or to strategize their efforts. Housing vouchers to families to move to higher-opportunity and higher mobility areas help children in their later life to shift to better employments and incomes.

Also, the past and present seem to have a strong correlation as the labour income is equal to parental effect, ethnic group effect, neighbourhood of upbringing effect and social network effects (Ioannides and Loury, 2004). For example, those who spent their childhood in poor neighbourhoods or low opportunity areas are less likely to overcome poverty and experience rapid mobility when grown up. The parents' income and the adult income of their children are highly correlated though college education is a significant leveller. But the probability of going to college immediately after completing the school depends to a large extent on the household income. As Woolard and Klasen(2005) based on their South Africa study point out, there are four types of poverty traps, associated with large initial household size, poor initial education, poor initial asset endowment and poor initial employment access.

The most important theoretical underpinnings on locational characteristics can be drawn from the fundamentals of urban economics literature. The agglomeration economies which are associated with city size, and their productivity augmenting effects entail impact on the general wage level and economic wellbeing of the workers. Even the informal sector in a large and dynamic city would offer better earnings compared to the informal sector in a small and stagnant town. The new economic geography (NEG) theory would suggest while large cities may result in higher productivity in general, the relatively efficient firms and individuals gain more in large cities. Whether all those who moved to large cities are more efficient than the ones who went to other towns is not known. However, if it happened so then the slum dwellers in a large city would gain much more than what the slum-dwellers in a small town would have gained had they come to the large city. In fact, Mitra (2010) observed a relatively much lower percentage of slum dwellers being located at the lower end of the distribution relating to the wellbeing index in large cities compared to the small and stagnant cities. This perspective puts up two important propositions. First, if those who move into large and dynamic cities are more capable, then the migrants will be expected to get better-off compared to the natives. This would mean that the migrants will be expected to undergo a greater upward mobility in comparison to the natives. The other question relates to the capability of the individuals to experience upward mobility. Those with higher levels of skill and education are expected to perform better in the labour market and get better-off in due course.

When disaggregating the sources of mobility Woolard and Klasen (2005) find that demographic changes and employment changes account for most of the mobility.Based on the city specific study from India Mitra and Tsujita (2016) noted several key variables such as saving, asset creation, improvement in educational attainment and skill acquisition

contributing to upward income mobility. Among the control variables age, gender and marital status often determine the dynamics of change. Relatively younger ones, males compared to the females and unmarried in comparison to the married workers are found to get better off over time.

At times in spite of having plethora of interventions upward mobility among the low income households is limited. The leakages and pitfalls in the policy initiatives might have been enormously large or the initiatives might not have been appropriate in a given context which can be attributed to the lack of evidence-based-research and the appropriate methodology applied to analyse the data. In the backdrop of these concerns the present paper aims at analysing the mobility issue among those located at the lower echelons (slums) in a dynamic city such as the nation capital which has been attracting huge investible resourcesfor infrastructure building and economic growth within and around its territory. The database is drawn from a household level panel survey carried out in various slums in 2007-08 and 2018.

2. Data Problems and Reconciliation

In this section we present a short note on the data and the comparability issues keeping in view the problem of attrition. The first survey was conducted in 2007-08, the second in 2012 and the third in 2018. However, in this paper we propose to reflect on the first and the third survey results in order to capture a long-term perspective. The first survey was based on a three-stage stratified random sampling technique. In the first stage, using the Jhuggi-Jhompadi (rudimentary dwellings) list prepared by the Delhi Government, slum clusters with 200 or more households in all the nine revenue districts were considered. Since the sample was confined to a total of 50 clusters due to time and financial constraints, the population of the number of clusters in each district to the total number was used as weight in deciding the number of clusters to be selected from each district; and then the specific clusters were randomly selected. In the second stage, the proportion of the number of households in each of the sample clusters to the total number of households in the 50 clusters was used as weight to determine the distribution of 417 sample households across the city. In the final stage, based on interviews with the slum chief or informal leaders in the selected clusters regarding various socio-economic aspects of the slums and the residents, households were randomly selected for interviews. For the second round of survey, we tried to revisit the same 417 households. However, out of 50 slums, 44 could be traced. Further, not all the households selected for interview in the first survey could be identified in the third survey. In fact, 279 (66.9%) out of 417 households from 46 slum-clusters were revisited, and the rest were selected on random basis from the same clusters. In the first survey a three-stage stratified random sampling technique was followed to select 417 sample households from 50 clusters. However, out of 50 slums, six were demolished by the time the third round was conducted. Further, within the 44 clusters not all the households selected for interview in the first survey could be identified in the third survey. In fact, only 212 (66.9%) out of 417 households from 44 slum-clusters were revisited and in our analysis we have confined to these 212 households which could be identified in both the rounds. One important question which may still arise is whether the 212 households selected finally can be interpreted as a random draw. More concisely, whether the distribution of 417 households and that of 212 households follow the same logic of sample selection?As Table 1 indicates the percentage distribution of slum households across different districts is by and large same in both the surveys of 2007-08 and 2018. Our next line of defence against the problem of attrition is that all the zones with most

of the clusters have been surveyed. Besides, the mean of the variables of the revisited and the excluded households are almost same (Table 2). No variable is statistically different. Hence, the dropped-out households are not supposed to affect our tabular and econometric analysis.

Table 1 Distribution of surveyed slum households

Table 2 Comparison of revisited and dropped households

3. Income and Expenditure Mobility and Other Correlates

Time dependent mobility would imply that the off-diagonal entries in the bivariate distribution of the households as per the base year and the terminal year would be mostly zero. However, from Table 3 we are able to observe that several of the cells above the leading diagonal have non-zero entries, indicating significant upward mobility in terms of income over the decade 2007/08-2018. Similarly, from Table 4 upward mobility in terms of consumption is discernible though the decline in the consumption expenditure can also be traced. Further, in the relatively higher expenditure classes the percentage of upward mobility is less compared to that in terms of income. As consumption needs do not increase proportionately with increases in income it is understandable that upward mobility as per income and consumption are not similar. However, our mobility study is not based on sample representing the city population which is expected to include high income classes with sluggish consumption mobility. The magnitude of the top income classes of the slum population in our study are quite moderate, hence, the relatively sluggish mobility in consumption in those classes can be attributed to forced saving and increase in other expenditure which do not directly fall into the category of consumption expenditure. Considering the quality of housing (*pucca* houses for example), access to toilets, having motorcycles, mobile phones, pressure cooker and bank accounts/permanent account numbersand voter ID we are able to note a significant improvement in the percentage of households which confirmed in affirmative (Table 5). However, there are still a number of attributes left in terms of which no positive change is noted. For example, households with medical insurance comprise only around 5 percentage of the total sample in 2018. Similarly, though the proportion of households with ration cards is on the high side in the both the base and the terminal years, it is still not 100 per cent. Nearly 50 per cent of the households did not have a token card which is important for access to land tenure. On the whole, while some of the indicators which are important for the slum dwellers to be used as political vote banks show rapid progress, i.e., almost cent per cent have voter ID, the wellbeing related dimensions are still below any reasonable limit. Only one quarter of the households could have access to private latrines in 2018, though it rose from bare 10 per cent in 2007-08.

Table 3 Per capita household mean incomes in 2007/08 and 2018 at 2001 prices in INR

Table 4 Monthly per capita expenditures in 2007/08 and 2018 at 2001 prices in INR

Table 5 Changes of revisited households

As regards mobility four important questions are relevant. Whether alongside income and expenditure mobility there have been occupational changes and whether the migrants registered greater mobility compared to the natives? Secondly, are the regional variations in mobility significant? Are the mobility patterns different across households with variation in the number of earners? The occupational distribution in the base and the terminal years carried out for the native and the migrant household heads separately does not unravel any noticeable change(Table 6 (a) and (b)). This would indicate that the income and consumption mobility have occurred within the same occupational category though the intra-occupational changes might have ensued on a large scale. Given the nature of jobs that the workers pursue within the informal economy with little possibility of skill diversification, occupational flexibility and mobility hold remote prospects. Particularly those within the informal services sector are less likely to shift to manufacturing. However, within a broad category a wide range of jobs exist to bring in improvements in income/consumption.

Table 6 Occupational changes (a)born in Delhi (b) migrants

Region wise not much difference is noted in the percentage of the households which registered an increase in the real per capita income over the study period. However, the highest number of sample observations came from South Delhi which is a high income region within the city. If we consider only the male workers' mean monthly income nearly 71 per cent of the sample registered an increase in South Delhi vis a vis a figure of 67 per cent among the rest of sample (Table 7). It will be worth experimenting if south Delhi samples on an average recorded a higher income compared to the rest and secondly, whether south Delhi slum households registered a faster increase in income over time compared to the others.

Table 7 Slum workers who improved income over the decade

The incidence of migration in terms of birth place seems to be very high as only one-fourth of the household heads were born within Delhi. Further, among the native household heads the occupational change has not been significant while the migrants recorded it more frequently. Hence, the occupational change among the migrant households could be an important source of income variations and mobility. In the econometric analysis we need to explore if the migrants are more dynamic vis-à-vis the natives.

There has been a significant increase in the number of earners over time (Table 8). Almost half of the sample had only one earner in 2007-08 whereas in 2018 it fell to 68 only. Further, only 44 households are common in both the years which had only one earner. While some of the multi-earner households lost the number of earners and became single earner, many single earners, however, graduated to the multi-earner households. With an increase in the number of earners, the income per capita is expected to rise, though not necessarily. Hence, more

experimentation will be required on these lines to understand the process of income variations and upward mobility.

Table 8 No. of working persons in sample households in 2007/08 and 2018

4. Econometric Analysis

The next issue relates to the determinants of income mobility. However, before doing so it may important to identify the determinants of income for the base and the terminal years. Whether the same set of determinants appear to be significant or there are changes in this respect over time are some of the concerns. Besides the magnitude of impact of different variables in the base and the terminal years will have to be compared. The OLS estimates of the income function for the base year and the terminal year are taken as the bench mark results. Subsequently the pooled OLS vis-à-vis RE vis-à-vis FE models based on the household panel data are presented. LM and BP or Hausman statistic indicate the appropriateness of the model.

The OLS estimates for the per capita income in the year 2018 are indicative of the significance of most of the variables included in the income function. The household head's education and the proportion of males in the household raise the per capita income. Though the household size may reduce it, our findings confirm a positive impact. This could be because of more number of earners in large households or the earning members of the large households might have been putting in greater effort to augment their income. However, the employment ratio defined as the proportion of earning members in the household does not turn out to be significant. Hence, the earners of large households are possibly engaged in relatively higher income jobs. The age of the household head which is taken to be a proxy for job market experience does not turn out to be significant. However, the natives tend to earn higher incomes compared to the migrants the phenomenon which we capture in terms of the dummy taking a value of 1 if the household head was born in Delhi (and 0 otherwise). The awareness of the household and the motivation for development drive which we measure in terms of the proportion of school going children turns out to be significant. Besides, the importance of region gets confirmed as the dummy representing the location of households in South Delhi shows a positive impact on per capita income. This is indicative of the fact that activities are not equi- proportionately distributed across space, even within a given city. Some of the relatively better paying jobs are located in certain pockets. Also, the richer households among the general population are often seen to be residing in specific localities. The low income households associated with these households through occupational linkages are naturally expected to earn more in those areas. This argument we present under the assumption that the low income households avoid travelling long distances and prefer to engage themselves in the neighbourhood of their residence. Or to put it differently, they prefer to live in the vicinity of the work place in order to minimise the time and cost in commuting.

Similar patterns are however, not observable from our earlier data set for the year 2007-08. The south Delhi dummy did not turn out to be significant nor the household size. Rather the employment ratio along with the proportion of male members both show a positive effect.

The natives were not better off compared to the migrants and more importantly, the proportion of school going children shows a negative impact on the per capita income. It may however, be rationalised in terms of the greater efforts and motivation of the households with lower incomes (compared to their better counterparts) for making the future of their children better. On the whole, except the household head's educational level and the proportion of males within the households the significance and the sign of the other variables are not common across the same sample over two points. This may be taken to question the robustness of the results though in defence, we may suggest that two crucial variables are able to bear the test of time: one relates to the relevance of educational attainment in raising the income levels and the other reflects on the gender discrimination in the labour market, resulting in higher incomes for males compared to the females.

Table 9 OLS estimations of household incomes

Looking at the pooled OLS results we notice the significance of most of the variables: the natives show an edge over the migrant households in having higher levels of income, age and education level of the household head matters, the households with a larger number of male members are better off compared to others and the regional aspect within the city is important in explaining the income variations. Household size shows a negative impact on income per capita and so also the proportion of more schooling going children. The latter finding may suggest that the households with lower incomes are more keen to send their children to schools or alternately, households by not sending their children to schools are able to raise their income from child labour. On the whole, some of the key findings relating to the role of education of the household head and the discriminatory practices followed in the labour market are quite robust.

We must acknowledge the fact that that OLS or the pooled OLS regressions explain only the variations in income taking each observation as an independent unit. Though from these findings the determinants of income mobility in a dynamic sense may be inferred broadly, these estimates do not present any direct evidence on mobility. As we consider the fact that the pooled data set is actually household level panel information, and the observations are not independent of each other, we may notice two important components in the variations: within group variation and the between group variation, i.e., to what extent income per capita of the individual households have changed and what is the variation in the income across households. The former reflects on the inter-temporal mobility. Hence, by treating the dataset as panel information and by applying the panel estimation technique we are able to capture the mobility aspect partially, if not fully. The RE estimates are quite in line with the pooled regression results though the Breusch and Pagan Lagrangian multiplier test for random effects does not accept the RE model. However, we have reported the RE model in order to indicate the robustness of the results, and more importantly, the mobility aspect, as mentioned above, gets partly capture through the panel data estimation. Unfortunately, the FE modelcould not be estimated due to the problem of singularity of the matrix.

Table 10 Estimations of household incomes

Since the per capita income rises in response to the increase in the proportion of the number of male members in the household, it is suggestive that with more male members the probability of having more than one earner increases. Hence, a major line of demarcation can be made in terms of single earners versus multiple earners. The income variation and the issue of mobility can be projected in the framework of control group versus treatment group. Households with one earner can be seen as the control group and those with more than one earner, the treatment group (Diagram 1). Further, for each group we have the base year information and the terminal year information. Whether the treatment group in the terminal year earned higher levels of income per capita is an important line of enquiry. Both in the base year and the terminal year (wave 1 and wave 2) the average per capita income has been greater for the treatment group in comparison to the control group though both the groups witnessed a substantial increase in the average income (Table 11). However, in terms of regression analysis (Table 12) we are not able to perceive any statistically significant difference between the treatment group income and the control group income though the time dummy capturing the wave 2 effect over the wave 1 turns to be significant. Further, if we try to assess the difference between the terminal year versus the base year income of the treatment group only, it is again statistically insignificant. Hence, after considering the effect of other variables the change in the per capita income of the treatment group over time is not found to be statistically significant though in terms of the averages values the treatment group witnessed a much greater increase than the control group. Similarly in spite of the average income of the treatment group being higher than that of the control group in both the years, the statistical significance of the difference could not be established in the regression equation. Among the determinants the role of education of the principal earner and the impact of wage differences along the lines of gender are pertinent, conforming to the findings from other equations.

Diagram 1No. of earners in 2007/08 and 2018

Table 11Mean per capitamean income at 2001 prices in INR

Table 12 Effect of increases in the number of earners

Difference-in-difference

The most appropriate way of capturing the mobility aspect is to convert the dependent variable as the change in per capita income over time. The variations in the change across households can then be explained in terms of certain variables and this sort of specification will exactly focus on the mobility question. From Table 12though the role of educational attainment in experiencing mobility could not be established, households located in certain specific regions (south Delhi) within the city, and those with a larger number of male members were able to undergo larger increase in income over time. Hence, mobility was not definitely uniform across the households. Households with more number of male members could participate in relatively high income jobs compared to the female dominated households and thus, even in per capita terms they could realise greater magnitude of income.

The female dominated households either could not participate in the labour market as effectively as their male counterparts or even when they did, they could not access high income jobs like the male workers. Even within the informal economy and for almost similar jobs there is ample evidence to indicate substantial wage differences along the lines of gender (Mitra, 2005).The most important aspect of the labour market is the physical segmentation, which means heterogeneity across space, holding significant differences in terms of income mobility.

5. Wellbeing Index

Wellbeing will have to be conceptualised in terms of more variables rather than income. Usually, the consumption poverty is taken to reflect on living standards. However, an enormous amount of literature has appeared in the past to indicate that sufficient overlaps do not exist between various aspects of wellbeing. Several households above the poverty line can still be poor in terms of housing or access to health and education. It may be, therefore, useful to construct an index which can encompass a large number of indicators (see Mitra and Tsujita, 2008). Since these variables are heterogeneous, it is not easy to combine all of them into a wellbeing index. For this, the factor analysis more specifically, the maximum likelihood factor analysis, was conducted. In this process, some variables were discarded in order to avoid the Heywood cases. Only select variables were thus combined to generate a composite index of wellbeing:

$$WELLINDEX(i) = \Sigma \, FL_j(i)X_j$$

Where FL is the factor loading j=1…n corresponding to the number of variables, and i represents the ith significant factor. In the second stage the composite indices generated on the basis of factor loadings for each of the significant factors are combined using the proportion of eigenvalues as weights:

$$WELLINDEX = \Sigma \, (EV \, i/ \, \Sigma \, EV \, i) \, WELLINDEX \, (i); \, k < n$$

where, i ranges from 1 to k, the number of significant factors.

Variables are combined through a factorial analysis to form the wellbeing index at the household level. Using varimax rotation we obtain statistically independent factors and from the significant factors, indices are generated using the factor loadings as the weights. Factor analysis has been conducted on the following variables:

i. Slum development: Unweighted sum of the following: water (households lives in slum where water is available round the clock=1, + household lives in slum where water is not available round the clock=0), street lighting (household lives in slum where at least one street light functions=1, no streetlight functions=0) + spraying (household lives in slum where vector-control spraying has been provided during previous 12 months=1; no spraying during previous 12 months=0), refuse collection (household lives in slum where refuse is collected=1, household lives in slum where refuse is not collected=0), electricity (household lives in slum with legal electricity connection=1, household lives in slum with no legal electricity connection=0), mobile health clinic (household lives in slum where government or private mobile health clinic has been available during previous 12 months=1, no such health clinic=0), public toilet (household lives in slum where a public toilet is functional within or adjacent to community=1, no functional toilet=0)

ii. Ill health: Proportion of household members debilitated by sickness or injury for more than 7 days during previous 12 months

iii. Education: Proportion of household members who completed at least 8 years of education (current compulsory education level)

iv. Access and Participation: Unweighted sum of the following: Token (households own=1, otherwise=0), Voter Identification Card (households own=1, otherwise=0), Bank account (households own=1, otherwise=0),Ration Card (households own=1, otherwise=0), Permanent Account Number (PAN) card (households own=1, otherwise=0), passport (households own=1, otherwise=0), medical/health insurance (households own=1, otherwise=0), provident fund (households own=1, otherwise=0), driving license (households own=1, otherwise=0).

v. Asset: Weighted sum of the following items: car multiplied by 100, washing machine multiplied by 75, motor cycle multiplied by 50, refrigerator multiplied by 25, mobile phone multiplied by 10, bicycle multiplied by 5, bed multiplied by 5 and pressure cooker multiplied by 5,and TV (colour or black and white) multiplied by 5.

vi. Water: Average available hours of water multiplied by 1 if main source of water is public source or 2 if main source of water is own/private source

vii. Electricity: Average available hours of electricity per day multiplied by 0 if there is no connection, 1 if connection is illegal or connection is through neighbours or others, and 2 if connection is legal

viii. PCMI: Per capita monthly mean income at 2001 prices

For 2018 only one factor is statistically significant but for 2007-08 there are two (Table 13). The final index for 2007-08 is based on both factor 1 and factor 2 though for 2018 only factor 1 is considered. Education, asset, access and per capita income are the four variables which take positive and non-zero coefficients while ill-health tends to reduce the wellbeing index for 2018. For the year 2007/08 education, asset and per capita income from factor 1 and education, access and asset from factor 2 show positive and non-zero factor loadings while ill health affects wellbeing adversely.

Finally, based on the wellbeing index of the households for the base and the terminal years,the transition matrix has been prepared and the findings are indicative of time

independent mobility (Table 14). Hence, at the lower echelons such as slum dwellers, the phenomenon of mobility is prevalent which is envisaged not only in terms of income but also a number of indicators, all consolidated to generate the wellbeing index. As the transition matrix verifies none of the households remained in the bottom size class of the wellbeing index in 2018. In fact, the elements below the leading diagonal are mostly zero, indicating no sign of downward mobility over time. Much larger issues can actually be addressed in the light of these findings. Since the incidence of migration in slums is usually high, it is usually argued that migrants transfer their poverty and other social ills from the rural to the urban areas, thus, urging in favor of policies which hinder population movement to the cities. However, our results are supportive of upward mobility in terms of many indicators. Hence, there is no reason why the potential migrants must not be allowed to access the opportunities that the urban areas are able to offer and facilitate the process of upward mobility. Educational attainments, access to certain facilities, asset base of the households and income are the main channels through which upward mobility is envisaged. Future policies need to be directed in this direction for greater empowerment of the urban low income households.

Table 13 Factor analysis (a) 2018

        Factor analysis (b) 2007/08

Table 14 Wellbeing index in 2007/08 and 2018

6. Conclusion

In a dynamic city the households are expected to be experiencing upward mobility because opportunities are more and, as the agglomeration and NEG literature predicts, the relatively more efficient firms and workers are better matched. To verify its truth this paper based on the household panel data collected from the slum surveys in the national capital of India notes that the extent of mobility is not uniform across slum households, which in the literature is interpreted as time independent mobility. In other words, different individuals coming from almost a homogeneous set (slums) in terms of living conditions are able to utilise the opportunities within the same city space, very differently. This triggers a greater interest to explore the factors which make the success story quite varied across households. However, the income variations across households may not in a strict sense capture the mobility aspect, for which the panel data estimation has been pursued. The model also makes a distinction between a single earner versus multiple earners type of households, interpreting one as control group and another as treatment group. Finally, the difference-in-difference equation is estimated to capture the mobility aspect very specifically.

Given the city environment, the individual specific factors such as educational attainments are important in determining mobility. Even within the city, activities and labour market vary widely across regions, and the outcomes in terms of mobility are different, reflecting on physical segmentation, the mobility constraints and the variations in individual motivational drive. Access to information also differs depending on the migration status of the population: those born in the city are supposedly better equipped with job market information which helps them undergo greater mobility compared to the migrants from the rural areas. In the

labour market gender discriminatory factors are at place for which the wages diverge between females and males. Hence, households with demographic characteristics favouring the male-female ratio, appear to get better-off faster than the rest. Some of these broad findings are retrievable from various econometric exercises pursued to reflect on mobility. The policy implications may be envisaged in terms of educational and skill imparting programmes, effective dissemination of job market information, provision of inexpensive commuting facilities within the city and reduction in gendered outcomes in the labour market.

References

Chetty, Raj (2018), "Big Findings on Opportunity and Mobility We Should All Know," https://www.brookings.edu/blog/social-mobility-memos/2018/01/11/raj-chetty-in-14-charts-big-findings-on-opportunity-and-mobility-we-should-know/

Fields, Gary S. (2000), "Income Mobility: Concepts and Measures," Cornell University ILR School, ILR Collection.

Ioannides, Y. M. and L.D. Loury, (2004), "Job Information Networks, Neighbourhood Effects, and Inequality," *Journal of Economic Literature*, Vol.42(4), pp. 1056-1093.

Mitra, Arup (2010), Migration, Livelihood and Well-being: Evidence from Indian City Slums, *Urban Studies*, Vol.47(7), pp.1371-1390.

Mitra, Arup and Yuko Tsujita, (2016), Issues in upward mobility: Study based on longitudinal data from Delhi slum, *Habitat International,*Vol.53, pp.320-330.

Woolard, I. and Klasen S. (2005) Determinants of income mobility and household poverty dynamics in South Africa,*Journal of Development Studies,*Vol.41, pp.865-897.

Table 1 Distribution of surveyed slum households

District	2007/08 survey			2018 survey			B/A (%)
	No of surveyed clusters	No of households (A)		No of surveyed clusters	No. of households (B)	%	
Central Delhi	1	3	0.72	1	1	0.47	33.33
East Delhi	5	42	10.07	3	13	6.13	30.95
New Delhi	2	14	3.36	2	9	4.25	64.29
North Delhi	3	14	3.36	3	9	4.25	64.29
North East Delhi	3	27	6.47	2	14	6.60	51.85
North West Delhi	12	103	24.70	12	61	28.77	59.22
South Delhi	11	119	28.54	10	63	29.72	52.94
South West Delhi	6	40	9.59	5	18	8.49	45.00
West Delhi	7	55	13.19	6	24	11.32	43.64
Total	50	417	100.00	44	212	100.00	50.84

Table 2 Comparison of revisited and dropped households

	Revisited households 212		Dropped households 205	
	Mean	Standard Deviation	Mean	Standard Deviation
Head's age	41.45	10.39	40.39	10.09
Head born in Delhi	0.14	0.35	0.17	0.38
Household Size	5.28	1.7	5.41	1.97
No of working persons	1.68	0.87	1.8	0.92
Female headed households	0.03	0.17	0.04	0.21
Head's education (years)	3.32	3.95	3.52	4.06
Household highest education	6.09	3.56	5.56	3.68
Hindu	0.77	0.42	0.79	0.41
Muslim	0.22	0.42	0.2	0.4
General castes	0.24	0.43	0.25	0.43
Other backward classes	0.29	0.46	0.32	0.47
SC/STs	0.46	0.5	0.43	0.5
Monthly per capita expenditures	667.93	380.11	649.17	492.42
Per capita monthly income (lowest month) at current prices	734.28	566.42	728.88	566.13
Per capita monthly income (highest month) at current prices	1020.43	886.75	1017.42	750.79
Pucca house	0.62	0.5	0.55	0.49
LPG	0.67	0.47	0.6	0.49
Mobile phones	0.41	0.49	0.43	0.48
TV	0.85	0.35	0.81	0.39

Table 3 Per capita household mean incomes in 2007/08 and 2018 at 2001 prices in INR

| | | | 2018 | | | |
| | | ≥500〜 | ≥1000〜 | ≥2000〜 | | |
	Less than 500	<1000	<2000	<4000	More than 4000	Total
	Less than 500	3	33	52	14	2	104
2007/08	≥500〜<1000	0	28	35	18	2	83
	≥1000〜<2000	0	6	7	7	1	21
	≥2000〜<4000	0	1	1	1	0	3
	More than 4000	0	0	1	0	0	1
	Total	3	68	96	40	5	212

Table 4 Monthly per capita expenditures in 2007/08 and 2018 at 2001 prices in INR

| | | | 2018 | | | |
| | | ≥300〜 | ≥500〜 | ≥1000〜 | | |
	Less than 300	<500	<1000	<4000	More than 4000	Total
	Less than 300	2	16	20	1	0	39
	≥300〜<500	6	48	41	11	1	107
2007/08	≥500〜<1000	1	20	30	3	1	55
	≥1000〜<4000	0	3	6	2	0	11
	More than 4000	0	0	0	0	0	0
	Total	9	87	97	17	2	212

Table 5 Changes of revisited households

	2007/08		2018	
	No.	%	No.	%
House facilities				
Pucca house	80	37.74	150	70.75
Private toilet (shared or individual)	20	9.43	51	24.06
Consumer durables and other items				
LPG	141	66.51	206	97.17
Bicycle	65	30.66	58	27.36
Motorcycle	12	5.66	52	24.53
Car	2	0.94	4	1.89
Bed	149	70.28	172	81.13
Gold Silver Jewry	77	36.32	65	30.66
Mobile phone	87	41.04	201	94.81
Pressure cooker	12	5.66	190	89.62
Radio	111	52.36	20	9.43
Fridge	66	31.13	110	51.89
TV	182	85.85	182	85.85
Washing machine	5	2.36	16	7.55
Livestock	56	26.42	8	3.77
Others				
Token	94	44.34	104	49.06
Ration card	183	86.32	190	89.62
Permanent Account Number Card	2	0.94	61	28.77
Passport	1	0.47	2	0.94
Bank account	1	0.47	168	79.25
Medical insurance	4	1.89	11	5.19
Voter ID card	183	86.32	210	99.06

Table 6

(a) Born in Delhi

		Occupation in 2018									
		1	2	3	4	5	6	7	8	9	Total
Occupation in 2007/08	1	0	0	0	0	1	0	0	0	0	1
	2	0	0	0	0	0	0	0	0	0	0
	3	0	0	5	1	0	0	0	0	0	6
	4	0	0	0	2	0	0	0	0	0	2
	5	0	0	0	0	4	1	0	2	0	7
	6	0	0	0	0	0	5	0	1	0	6
	7	0	0	0	0	1	2	3	0	0	6
	8	0	0	1	0	1	2	2	12	0	18
	9	0	0	0	0	1	0	0	0	7	8
Total		0	0	6	3	8	10	5	15	7	54

(b) Migrants

		Occupation in 2018									
		1	2	3	4	5	6	7	8	9	Total
Occupation in 2007/08	1	2	0	0	0	1	0	0	0	0	3
	2	0	0	0	0	0	0	0	1	1	2
	3	0	0	5	0	0	0	0	1	2	8
	4	0	0	0	1	0	0	0	0	0	1
	5	0	0	0	0	35	4	0	2	3	44
	6	0	0	1	0	3	12	2	0	0	18
	7	1	0	0	0	6	1	10	1	0	19
	8	0	0	1	0	5	1	0	24	4	35
	9	0	0	0	0	3	0	1	0	18	22
Total		3	0	7	1	53	18	13	29	28	152

Notes: Notes: Occupations 1=semi-professional, 2=daily wage labourer, 3=technician and repairer, 4=entertainer, 5=sales worker, 6=service worker, 7=construction labourer, 8= manufacturing labourer, and 9=transport and storage labourer.

Table 7 Slum workers who improved income over the decade

	N	Those who improved income	%
Central	2	2	100.00
East	11	10	90.91
New	10	7	70.00
North	10	8	80.00
North East	11	8	72.73
North West	55	35	63.64
South	55	37	67.27
South West	18	14	77.78
West	25	14	56.00
Total	197	135	68.53

Table 8 No. of working persons

		No of working persons in 2018							
		0	1	2	3	4	5	6	Total
	0	0	0	1	0	0	0	0	1
No of owrking persons in 2007/08	1	0	44	36	20	7	1	0	108
	2	1	18	22	18	9	2	0	70
	3	0	5	8	7	4	0	1	25
	4	0	1	2	3	1	0	0	7
	5	0	0	0	0	0	0	0	0
	6	0	0	1	0	0	0	0	1
Total		1	68	70	48	21	3	1	212

Table 9 OLS estimation of household incomes

| | Eq (1) 2018 | | | Eq (2) 2007/08 | | |
| | | Robust | | | Robust | |
	Coefficient	Std. Err.		Coefficient	Std. Err.	
Head's age	0.2569	2.4187		0.2569	2.4187	
Head born in Delhi	-80.6121	58.8184		-80.6121	58.8184	
Head's education (years)	39.6067	16.1851	**	39.6067	16.1851	***
Female headed household	-37.6704	103.6510		-37.6704	103.6510	
Household size	-32.4185	21.8018		-32.4185	21.8018	
Male ratio	408.8715	162.6554	**	408.8715	162.6554	**
Employment ratio	900.3543	144.3173	***	900.3543	144.3173	***
Schooling children ratio	-227.8421	97.4966	**	-227.8421	97.4966	**
Southern Delhi	27.2601	64.5612		27.2601	64.5612	
Constant	183.6993	125.1926		183.6993	125.1926	
No of observations	212			212		
R^2	0.3352			0.3594		

Note: *** and ** indicate significance at 1% and 5%, respectively.

Table 10 Estimations of household incomes

| | Eq (3) | | | Eq (4) | | |
| | | Robust | | | Robust | |
	Coefficient	Std. Err.		Coefficient	Std. Err.	
Head's age	15.6586	6.3881	**	16.0833	6.4725	**
Head born in Delhi	289.1978	75.5560	***	298.6261	75.3839	***
Head's education (years)	54.4976	12.1021	***	55.2276	11.9197	***
Female headed household	285.7702	179.1765		286.3611	187.4860	
Household size	-110.9430	53.2950	**	-113.2496	53.9056	**
Male ratio	1292.101	422.4558	***	1296.7330	426.5997	**
Employment ratio	692.5016	381.0518	*	698.3512	379.5390	*
Schooling children ratio	-643.9848	167.0996	***	-639.2244	162.2584	**
Southern Delhi	208.2687	88.2892	**	208.9524	88.3043	**
Constant	-283.0367	215.8598		-301.1554	212.3053	
Estimation method	Pooled OLS			Random effect		
No of observations	424			424		
R^2	0.3519			0.3519		

Note: *** and ** indicate significance at 1% and 5%, respectively.

Table 11 Mean per capita income at 2001 prices in INR

	Wave 1 2007/08	Wave 2 2018
Control	534.79	1386.85
	(187.87)	(1810.67)
Treatment	569.95	1656.71
	(666.49)	(846.92)

Note: Figures in parentheses are standard deviation.

Table 12 Effect of increases in the number of earners

	Eq (1) Per capita monthly income			Eq (2) Changes in per capita monthly income		
	Coefficient	Robust Std. Err.		Coefficient	Robust Std. Err.	
DT	211.8480	128.3810		138.7759	355.0823	
D2	733.2598	194.5884	***	-243.3535	362.2545	
DT*D2	119.5333	252.1643		-64.0923	412.4636	
Head's age	8.4311	8.4327		20.2254	12.7216	
Head born in Delhi	36.3014	92.9313		210.3188	137.7253	
Head's education (years)	63.4231	20.9931	***	14.6436	29.4015	
Female headed household	184.4635	279.3722		162.5380	455.8382	
Household size	-242.2009	134.4809	*	-34.9118	151.5614	
Male ratio	1411.0690	701.8894	**	1408.4760	804.0538	*
Employment ratio	-150.9030	830.6881	***	23.1001	889.7615	
Schooling children ratio	-256.6070	256.7554		-190.3897	358.9378	
Southern Delhi	277.3665	129.6252	**	725.1986	188.3417	***
Constant	210.9144	293.3533		-878.5497	558.7187	
No of observations	216			216		
R^2	0.4186			0.1321		

Note: ***, **and * indicate significance at 1%, 5% and 10%, respectively.

Table 13 (a) Factor analysis 2018

2018

Variable	Factor1	Factor2	Factor3	Uniqueness
Education	0.3382	0.081	0.2526	0.8152
Ill Health	-0.1673	-0.1614	-0.3608	0.8157
Water	0.0823	0.5991	-0.0294	0.6334
Electricity	0.0948	0.2792	0.1698	0.8842
Access and participation	0.7789	0.0876	-0.0201	0.3852
Slum Development	0.005	-0.2053	0.4182	0.783
Asset	0.6549	-0.0264	0.144	0.5497
PCMI	0.3311	-0.1152	-0.0429	0.8753
Eigenvalue	1.30336	0.53322	0.42156	
Variance explanation	0.5772	0.2361	0.1867	
Cumulative variance	0.5772	0.8133	1	

Table 13 (b) Factor analysis 2007/08

2007/08

Variable	Factor1	Factor2	Factor3	Uniqueness
Education	0.3776	0.4067	-0.0021	0.692
Ill Health	-0.0947	-0.1646	-0.0465	0.9618
Water	0.0194	0.0335	-0.2827	0.9186
Electricity	0.0002	0.0942	0.8182	0.3217
Access and participation	-0.0406	0.7456	0.129	0.4258
Slum Development	0.0038	0.0927	0.3208	0.8885
Asset	0.2759	0.4978	0.0405	0.6744
PCMI	0.8885	0.0153	-0.0013	0.2102
Eigenvalue	1.01921	1.01505	0.87273	
Variance explanation	0.3506	0.3492	0.3002	
Cumulative variance	0.3506	0.6998	1	

Table 14 Wellbeing index in 2007/08 and 2018

| | | 2018 | | | | | | | | |
		Less than 100	≥100 ~< 200	≥200 ~< 300	≥300 ~< 400	≥400 ~< 500	≥500 ~< 700	≥700 ~< 1000	More than 1000	Total
2007/08	Less than 100	0	0	2	8	5	6	1	0	22
	≥100~<200	0	3	18	26	16	23	15	8	109
	≥200~<300	0	0	10	12	7	12	8	3	52
	≥300~<400	0	0	2	2	1	2	4	1	12
	≥400~<500	0	0	0	6	1	0	0	1	8
	≥500~<700	0	0	1	0	0	2	3	1	7
	≥700~<1000	0	0	0	0	0	0	0	1	1
	More than 1000	0	0	0	0	0	0	0	1	1
	Total	0	3	33	54	30	45	31	16	212

Diagram 1 No. of earners in 2007/08 and 2018

<u>2007/08</u>

Wave 1

<u>2018</u>

Wave 2

No. of HH

| Only one earner | | Only one earner | 44 | A | Control group |
| 108 | | Multiple earners | 64 | B | Treated group |

More than two earners		Only one earner	24	C
103		Multiple earners	78	D
		No earner	1	E

| No earner | | |
| 1 | | Multiple earners | 1 | F |
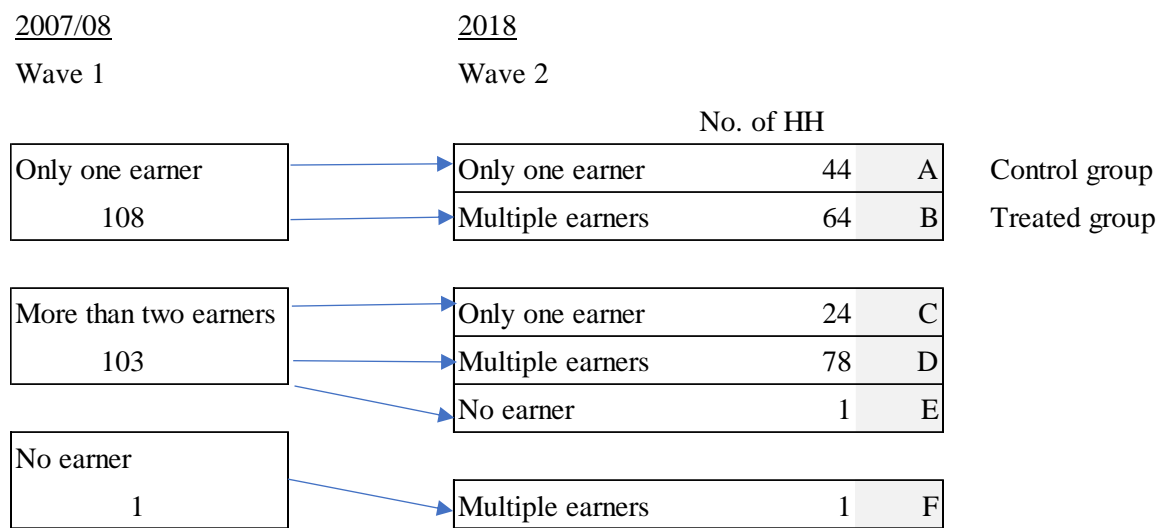
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