

## UPWARD AND DOWNWARD RESIDENTIAL MOBILITY BETWEEN NEIGHBOURHOODS IN KARACHI

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Upward and downward residential mobility behaviour of households between different income level neighbourhoods in Karachi is analysed in this research. A multinomial logit technique is used to analyse the data of 6275 households in the city. Results of the analysis indicates that mobility between different income level neighbourhoods in a developing country is driven by considerations than are different as compared with the developed countries. The analysis shows that upward and downward moves are sensitive to disequilibrium in housing consumption. There is still premium to independent housing as upward mobility is not associated with moves to apartment housing, and downward moves are more sensitive to a declining permanent income relative to current income. Moreover, upward residential mobility is associated more with a move to peaceful areas and downward mobility means moving to worst serviced areas.

### I. Introduction

Most of the existing literature on intra-urban residential mobility deals with the determinants of the decision to move [Hanushek and Quigley (1978), Goodman Jr. (1976), Onaka (1983), Weinberg (1979), Coupe and Morgan (1981)]. Relatively little attention has been paid to factors that effects choice of location of households and their movement between different neighbourhoods [Shefer and Primo (1986), Edwards (1983), Verady (1974), Jud and Bennett (1985)]. But a study of choice of neighbourhoods is important, as it has a direct impact upon the urban structure and land use patterns in an area; it determines the distribution of socioeconomic groups and the composition and character of neighbourhoods in it. Planning decisions concerning housing and transportation often rely on notions of mobility within the city. A study of mobility between different neighbourhoods is, therefore, essential to planning in any city.

The rapid growth in population of most large cities in developing countries have caused severe problems as the cities are ill-equipped to deal with the increase.

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Karachi is the largest metropolis of Pakistan, and one of the fastest growing cities in the world. As a consequence the city faces problems of housing shortage; lack of infrastructure and a low level of provision of services; expansion of unauthorised settlements; overcrowding and congestion. Recently the level of ethnic violence in the city has increased considerably, with segregation of households by their ethnic backgrounds. A considerable proportion of the population of the metropolis prefers to live near its place of employment, and with decentralisation of economic activity the city is continuously expanding and stretching outward.

A study of movement of households between different neighbourhoods within the city is essential to understanding the above problems and crucial to the planning process in the rapidly growing metropolis. Such a study also has a particular association with the planning of residential schemes; investments in infrastructure, service provision and their distribution points and location of economic activity in the city. A study of mobility can also help in understanding the continuing decentralisation of the city of Karachi.

Patterns of mobility in Karachi show that approximately 48 percent of the households that change their area of residence move to neighbourhoods of the same status or income levels; 21 percent move to relatively higher income neighbourhoods reflecting upward residential mobility. 31 percent move to lower income areas. This research analyses one aspect of residential mobility that is upward and downward mobility between different income level neighbourhoods given the household's decision to move. The analysis is limited to those families who have already moved out of one neighbourhood to another.

The paper is organized in the following way. The next section gives a brief review of the relevant literature. Section III outlines the methodology and the data used. Section IV reports the results of the empirical analysis and discusses their implications. A summary of the conclusions is given in the last section.

## II. Review of Findings

Most of the theoretical and empirical literature which forms the basis for studying residential mobility links moving behavior to levels of 'dissatisfaction' and 'stresses' of particular locations. Rossi's (1955) formulation was based on adjustment process through which households adjusted their housing consumption to their housing 'needs'. Many economists have also linked short distance moving behaviour to dissatisfaction with housing. They regarded mobility as the process through which households adjusted their consumption of housing to the utility maximising bundles of housing characteristics. The gap between desired and actual housing consumption was eliminated by residential mobility [Hanushek and Quigley (1978), Goodman Jr. (1976), Muth (1974), Weinberg (1979), Cronin (1979), Onaka (1983), Coupe and Morgan (1981), Clark and Onaka (1983)]. The above model was vigorously tested

by authors in the U.S.A. Fewer studies have analysed intra-urban residential mobility in developing countries [Ahmad (1991), Shefer and Primo (1985), Lindert (1991)].

The major determinants of residential mobility identified in the literature are : life-cycle changes like age of the head, household size, composition of household, marital status of the head [Ahmad (1991), Clark and Onaka (1983), Brown (1975), Simmons (1988), Goodman Jr. (1976), Onaka (1983), Weinberg (1979), Kain and Quigley (1975), Galligham and Hagemann (1983),]; moving and search costs [Ahmad (1991), Clark and Onaka (1982), Goodman Jr. (1976), Hanushek and Quigley (1978), Weinberg et al. (1981)]; workplace location [Ahmad (1991), Simmons (1988) Goodman Jr. (1976),]. Other factors influencing mobility include occupation of the head (Grootaert and Dubois (1988), education [Weinberg (1979), Speare et al. (1972)]; tenure [Goodman Jr. (1976)]; and past mobility history [Grootaert and Dubois (1988), Goodman Jr. (1976). A recent work on determinants of residential mobility in the city of Karachi [Ahmad (1991)], shows long-term rent discounts, workplace location, migrant status, and income earned in the neighbourhood of residence to be important determinants of mobility in developing countries.

Relatively little attention has been devoted in the literature to the influence of area characteristics on mobility and relocation behaviour of households. Studies that include neighbourhood characteristics in their analysis report only a limited effect on mobility behaviour. Wilkinson and Sigsworth (1963) found that households were concerned with physical features of a neighbourhood (cleanliness, appearance, noise, traffic etc.) and accessibility (shops, parks and transport services) while making the decision to move.

Ozo (1986), in his analysis, considered the residential environment to be an important reason for people to move house. Shefer and Primo (1985) reported the quality of environment for raising children, as well its safety and the law and order situation to be important determinants of mobility in Jaffa, Israel. Coupe and Morgan (1981) dealt with the general environment and surroundings and accessibility to workplace, shops and schools. Jud and Bennett (1986) revealed that the quality of public education was important in shaping the pattern of intra-urban population change in the Charlotte and Los Angeles areas in the U.S.A.

Some authors have investigated the effect of crime rates and violence on household movement [Droettboom et al. (1972)]. The study reported that individual's perception of local violence or of deterioration of a neighbourhood had only a moderate influence on mobility and crime rates in the city centre and did not mean a major exodus to the suburbs. But Greenberg and Boswell (1972) asserted that perception of deterioration, especially as related to a fear of crime, was an important motivation for mobility in New York city. Ahmad (1991b) reported ethnic composition and the level of violence to be important determinants in the choice of location in a third world city. Recently a more sophisticated multinomial and nested logit approach has been adopted to analyse mobility, housing location and choice

[Van Lierop (1981), Onaka and Clark (1983)]. The mobility process is split into stages of choices and the decisions are made on a hierarchal basis with the decisions in one stage conditional on outcomes at higher levels.

Relatively less attention has been given in the literature to factors which influence household's choice among different neighbourhoods in the city. [Clark and Onaka (1985); Alperovich (1983), Shefer and Primo (1985); Jud and Bennett (1986)]. The majority of recent research on the subject still looks at mobility between the areas of central city and the periphery. In the developing countries recent research has concentrated on investigating the mobility patterns of recently arrived migrant households [Ozo (1986); Vaughan and Feindt (1973), Ahmad (1991b)] and compares them to residents [Lindert (19991)].

### III. Methodology and Data Collection

The analysis of locational choice between neighbourhoods is limited to households which have moved recently (within the last three years). The city of Karachi is divided into 26 zones or neighbourhoods for the analysis on the basis of socio-economic and neighbourhood characteristics. These zones represent homogeneous areas in terms of household incomes, plotsizes level of provision of services and distances from Central Business District. These neighbourhoods form the basic unit of analysis.

Maximum likelihood multinomial logit technique is used where the dependent variable is the probability to move between different income level neighbourhoods. Three discrete choices are considered in the multinomial analysis, a move within the same income neighbourhood, a move from a low income to a high income neighbourhood and a move from a high income to a low income neighbourhood. A move within the same neighbourhood is normalised to zero for the multinomial analysis. The following equation is estimated:

$$P_{ij} = (y_i = j) = \alpha_0 + \sum_{i=1}^n \beta_i Z_i + U_j^1 \quad (1)$$

$$j = 0, 1 \text{ and } 2$$

<sup>1</sup>The three probabilities are specified by:

$$P_{12} = \frac{e^{z \cdot i2^\beta}}{1 + e^{z \cdot i1^\beta} + e^{z \cdot i2^\beta}}$$

$$P_{11} = \frac{e^{z \cdot i1^\beta}}{1 + e^{z \cdot i1^\beta} + e^{z \cdot i2^\beta}}$$

$$P_{j0} = \frac{1}{1 + e^{z \cdot i1^\beta} + e^{z \cdot i2^\beta}}$$

where

$P$  = probability of moving between different income level neighbourhoods.

$Z_i$  = vector of independent variables that influence the above choice and include, disequilibrium in housing consumption, type of house, level of services, level of violence, new household formation and the difference between permanent and current household income.

$\beta_i$  = parameters to be estimated.

$U_i$  = error term.

Data to estimate equation (1) was obtained through a primary survey of 6275 households in the city of Karachi. It was collected through a multi-stage stratified sampling technique. The sample of households was spatially distributed throughout the city of Karachi. The survey was undertaken by the Applied Economics Research Centre, University of Karachi in 1987-88. See Appendix for statement of the sampling methodology and details of data collection.

#### IV. Estimation of the Model

Results of the analysis are presented in Table 1. The first set of coefficients in the table refer to an upward move from low to high income neighbourhood, while the second set refers to a move from a high to low income locality. The major determinants of the choice are: (i) disequilibrium in housing consumption, (ii) type of house, (iii) level of services, (iv) level of violence, (v) new household formation and (vi) the difference between permanent and current income.

##### *Disequilibrium in Housing Consumption and Mobility between Neighbourhoods*

Difference between the desired level of housing consumptions and actual consumption (DIS) is used to measure disequilibrium. The coefficients on this variable is significant in the first set of coefficients (Table 1, Column 1), indicating that a higher disequilibrium in housing consumption may mean upward residential mobility from a low income neighbourhood to a higher income one. The variable is insignificant in the second set of coefficient, showing that downward moves from upper income areas to lower income ones are not sensitive to the disequilibrium in housing consumption.

Alternatively overconsumption (OVERDIS) and underconsumption (UNDDIS) in housing are used to measure the disequilibrium in housing. Results are reported in Table 1 column 2. Underconsumption in housing may warrant a move to a higher income neighbourhood, while overconsumption may lead to a move in the opposite

TABLE 1

Multinomial Logit Coefficients Probability of  
Moving Outside Neighbourhood  
(t-statistics in parenthesis)

	(1)	(2)
DIS	0.001 (3.35) <sup>c</sup>	-
OVERDIS	-	-0.02 (-1.70) <sup>a</sup>
UNDDIS	-	0.0008 (2.36) <sup>b</sup>
FLAT	0.141 (0.52)	0.149 (0.55)
VIOL1	0.619 (2.65) <sup>c</sup>	0.618 (2.64) <sup>c</sup>
WTR1	-0.075 (-0.28)	-0.094 (-0.34)
NEWHH	0.418 (1.27)	0.407 (1.23)
YREL	-0.0001 (-0.314)	-0.0002 (0.76)
CONSTANT	-1.283 (-5.24)	-1.179 (-4.32) <sup>c</sup>
DIS	-0.0001 (-0.31)	-
OVERDIS	-	-0.0002 (-0.23)
UNDDIS	-	-0.0002 (-0.48)
FLAT	0.606 (-2.16) <sup>b</sup>	-0.596 (-2.11) <sup>b</sup>
VIOL1	-1.086 (-4.13) <sup>c</sup>	-1.088 (-4.14) <sup>c</sup>
WTR1	0.388 (0.48)	-0.39 (-1.79) <sup>a</sup>
NEWHH	0.147 (0.48)	0.146 (0.48)
YREL	-0.0001 (1.90) <sup>a</sup>	-0.0001 (1.83) <sup>a</sup>
CONSTANT	0.173 (0.94)	0.213 (1.03)
LOG LIKLIHOOD	-550	-550
CHI SQUARE	75.74	76.48
NO. OF CASES	598	598

<sup>a</sup> Significant at the 90 percent level of significance.

<sup>b</sup> Significant at the 95 percent level of significance.

<sup>c</sup> Significant at the 99 percent level of significance.

direction. Results indicate that the overconsumption variable is negative and significant in the first set of coefficients, the probability of move from a low to high income is negatively associated with overconsumption in housing. The probability of such a move, therefore, declines when households are consuming more housing than they desire. The effect of the overconsumption variable is insignificant in the second set of coefficients, implying that the move from a high income neighbourhood to a low income one is not sensitive to such a disequilibrium in housing consumption.

Positive and highly significant coefficient on the underconsumption variable (at 95 per cent level) in the first set of coefficients in Table 1 suggests that households which are consuming housing below their desired level are more likely to move to a higher income area, given that they move out of one neighbourhood to another. The reverse move i.e., from a high income level neighbourhood to a low income one, is not very sensitive to underconsumption in housing.

#### *Type of House and Mobility between Neighbourhoods*

Recently, investment in apartment housing of high rise residential construction in the city of Karachi has increased considerably. This trend is reflected in the mobility behaviour of households with a corresponding increase in moves from independent houses to flats. Households are presumably leaving their old neighbourhoods and moving to flats in better and newer areas. This movement of households is, therefore, expected to be positively associated with moves from low to high income level neighbourhood and negatively to reverse moves. The FLAT variable (taking value of 1 if the move is from independent house to a flat, 0 otherwise) is included in the analysis to capture the effect.

Results show that the variable is positive but insignificant in the first set of coefficients. The association of the variable (second set of coefficients) is negative to the probability of a move from a high to a low income neighbourhood with the coefficient consistently significant at 95 percent level. The coefficient on the variable is large in magnitude (in absolute terms) and indicates a considerable impact on the probability of moving of around 60 per cent. The above results do not confirm the hypothesis that a move to a flat is preferred even if it means moving to a lower income level area; it indicates that there is still a premium to independent housing in Karachi, and that such accommodation is still preferred in spite of huge investments in high quality apartment housing in the city.

#### *Level of Services and Mobility between Neighbourhoods*

Level of services may be important in determining mobility between neighbourhoods because of the wide variation in standards of provision between different areas of the city. It is generally believed that when households move from a low income neighbourhood to a high income one, the move usually also corre-



sponds to a better serviced area. The service level variable was tried in the initial specifications, but was insignificant in both sets of coefficients. The availability of the water variable is used as an alternative to the service variable (WTR1 variable equals 1 if mobility is toward neighbourhood with a better provision of this service, 0 otherwise).<sup>2</sup> The variable is expected to be positive related to the first set of coefficients and negatively related to the second set. Results indicate that the variable is insignificant in the first set of coefficients (with a negative coefficient). It is significant at the 90 per cent level of significance, with a negative impact on the probability of move from a high income area to a low income one. The above means that a move to a lower income area also corresponds with a move to a worst serviced area.

#### *Level of Violence and Mobility between Neighbourhoods*

As stated earlier ethnic violence in the city of Karachi has increased recently, the variable may, therefore, significantly affect the choice between the neighbourhoods in the city. The VIOLI variable (taking the value of 1 if the move is from violent to non-violent neighbourhoods, 0 otherwise) is highly significant in both sets of coefficients in Table 1, implying that in Karachi the level of violence in an area is an important consideration in the choice of neighbourhoods. With the recent increase in violence in the city, the strong effect of the variable on neighbourhood choice is not surprising. The positive and very high coefficient of 0.6 in the first set of results shows that the move from a low income to a high income level neighbourhoods is associated with mobility to more peaceful surroundings.

The level of violence variable has a significant and negative impact (with coefficient of -1.07) on the probability of move from a high income area, as expected, since the more violent areas of the city are generally low income level ones as well. When households are forced to move to lower income areas, they simultaneously move to neighbourhoods with a higher incidence of violence.

#### *New Household Formation and Mobility between Neighbourhoods*

It is assumed that under an extended family system (more common in developing country cities) with higher combined family incomes, households are able to afford better accommodation in higher income neighbourhood. Therefore, when people decide to break away and form their own households, they are more likely to move to accommodation in lower income level areas. The new household formation variable (NEWHH) is expected to be negatively related to the probability of move from a low to a high income neighbourhood, and positively to a reverse move.

<sup>2</sup>There is a shortage of water in Karachi with only limited supplies available. Availability of water has particular significance for the city of Karachi and the variable is selected to represent the level of services in a locality.



Results in Table 1 show that the variable is positive in both sets of coefficients indicating that new household formation influences both kinds of moves, and is not necessarily associated with a move from a high income to a low income area. The above means that households postpone shifting into their own homes until they can afford accommodation in equally good or better neighbourhoods. The coefficient, however, indicates that the above effect is not significant.

### *Permanent Income and Mobility between Neighbourhoods*

Moving is an infrequent event with high transaction costs and a long-term horizon, it is therefore assumed that the decision to move upwards to a better neighbourhood or downward to a lower income area is based on permanent income rather than current income. To measure this effect we use the difference between permanent and current household income. Contrary to expectations the variable is insignificant in the first set of coefficients, indicating that upward mobility is not sensitive to change in permanent relative to current income.

A negative and significant coefficient in the second set of coefficients shows that downward mobility to a lower income area takes place when permanent income relative to current income declines. Such mobility may therefore occur when an expanded family breaks up, household income declines and the new heads are forced to move downward to a lower income area. Downward mobility may also be associated with temporary jobs in the informal sector for extended periods of time, and subsequent expectations of low permanent incomes.

### **V. Summary of Results**

The above results show that locational choices and neighbourhood selection by mover households in a developing country, city are driven by considerations other than those found in the developing countries. The results of the analysis have some direct policy implications for planning of the city. Results of the analysis indicate that an upward residential movement from a high income area to a low income one is sensitive to disequilibrium (difference between desired and actual consumption of housing) in housing consumption. Such mobility is influenced more by underconsumption i.e., when desired consumption is more than actual consumption. Households already overconsuming do not wish to consume less and move to a better income neighbourhood. Housing characteristics are, therefore, not an overriding consideration for upward mobility between neighbourhoods.

A move to an apartment is not associated with a move to higher income level neighbourhoods, as there is still a premium to independent housing in the city. A downward move to lower income level neighbourhood takes place when permanent relative to current income declines, and also corresponds with a move to a lower

serviced area. A move from a low income to a high income area is associated with mobility to more peaceful areas. These results emphasise that results for the developed countries are not relevant or applicable in the developing countries.

The analysis of mobility and locational choice in this study represents research into an area which until recently did not receive much attention in the developing countries. Even in the developed countries only a few studies are available on the subject of mobility between neighbourhoods, but their results cannot be applied to countries where the whole concept of residential mobility and locational choice is different. In this sense, the present analysis may serve as the basis for further research on this subject for the developing countries.

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## Appendix

A survey of 6275 households was conducted by the Applied Economics Research Centre, University of Karachi in 1987-88. This research is based on the results of the above survey. Sampling strategy adopted for the survey is described below:

The sample for the survey was spatially distributed throughout the city of Karachi. It was allocated to the different areas (planning zones) of the city on the basis of their population. Sample within the zones was allocated to the different types of houses on the basis of net residential area under each type of use.

Sixty five per cent of the sample was allocated to the planned areas, and thirty five percent to the Katchi Abadis. The sample for Katchi Abadis was lower than their population share in the city due a considerable degree of homogeneity in terms of socioeconomic, neighbourhood and other characteristics in these areas.

In the planned areas, zones were divided into clusters on basis of plotsizes and the sample was distributed in proportion to the number of plots by size. This was done separately for each type of housing category within the zone. The  $n^{\text{th}}$  household to be surveyed was decided as follows:

$$n = P_{uz} / S_{uz}$$

where,

$P_{uz}$  = The total number of plots in type 'u' in the selected cluster in zone 'z'.

$S_{uz}$  = Sample size in housing type 'u' in zone 'z'.

In the case of flat sites, one household on each floor was selected from each block in a housing complex.

Since no information on the number of plots is available in the Katchi Abadis, the sample there was spatially distributed between clusters of predominant housing types. Within each cluster starting points for the selection of households were determined randomly. One starting point was selected for every thirty households. From each starting point the interviewing team moved in all the four directions. A Monte Carlo experiment was done which indicated that movement in all directions from the starting points was the best strategy. Whether to turn left or right at every intersection was decided by the toss of a coin, then every fifth house was chosen for interview. With houses on both sides of the street, the toss of a coin again decided whether to select the house on the right or the left.

In the case of subdivision of plots or different households living on separate floors all households living in the selected structure were interviewed.