

INFORMAL SECTOR, NETWORKS AND INTRA-CITY VARIATIONS IN ACTIVITIES: FINDINGS FROM DELHI SLUMS

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Based on a micro-survey of around 800 slum households in Delhi this paper highlights the role of networks in accessing jobs in the urban labor market. Primarily three types of networks have been identified, which operate through kinship bonds, caste and ethnicity bonds, and formal channels like NGOs and employment exchanges. The type of networks used seems to vary across occupations. Based on a multinomial logit model the paper notes that given the differences in the nature of economic activities performed in different parts of the city, factors like networks and the urge to reside near the contact person and the work place make the urban labor market highly segmented. Hence, certain pockets within the city tend to get crowded by the growth of slums, and secondly inter-spatial variations in terms of activities/occupations make slum population in the city a heterogeneous set, and thus their problems and need vary substantially. Hence, any uniform policy for clusters located in different zones may not be able to tackle effectively the problems of slum dwellers in the city.

I. Introduction

Notwithstanding the difficulties involved in defining the urban informal sector, the term has been used extensively, particularly in the empirical literature. Its relative size in India is quite large, and it is highly heterogeneous in nature, rendering it more difficult to suggest any uniform policy for improving the living standards of the workers located in this sector (Mitra, 1994). By and large the informal sector is seen to absorb residually in low productivity activities the surplus labor relative to the demand in high productivity activities, and those who cannot afford to remain unemployed for long. In other words, there are considerable overlaps among informal sector employment, poverty and slum dwelling. However, these informal sector workers form their own strategies to cope with poverty and overcome uncertainties relating to employment, consumption, health and housing. Informal institutions and networks have been developed over the decades to access information pertaining to the job market, enhance earnings and help experience upward occupational mobility overtime. Based on a micro

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survey of slum households in Delhi, this paper highlights the role of networks in the context of occupational choice and earnings. The organization of the paper is as follows. Section 2 presents the analytical framework, Section 3 describes briefly the methodology and Section 4 focuses on the empirical analysis. The major findings are summarized with policy implications in Section 5.

The database of the study is drawn from the survey carried out for 802 households in 30 slum clusters in Delhi, in the year 1999-2000, over a period of six months. The slums considered in our study are only of a particular type: the "jhuggi-jhoppdi" colonies given in the list prepared by Delhi Development Authority (DDA). It may be noted that the list provided by DDA is neither comprehensive nor exhaustive. Various illegal/squatter settlements and marginal settlements located in different parts of the cities are not necessarily covered by this list; primarily the registered slums have been included in the list. Structures constructed temporarily by the short duration migrants are less likely to be covered in this survey; rather slums, which are stable in nature and have received recognition by the city development authorities are the center of focus. A brief description of the sampling procedure followed to select 802 sample households is given below.

In order to select the 802 sample households we have used a three-stage stratified random sampling framework. Based on the DDA list of 456 slum clusters each with at least 200 households, we decided to select 30 clusters:

- (i) In stage 1, clusters each with a population of 200 households were considered and distributed across seven zones in Delhi.
- (ii) The proportion of the number of clusters in each zone to the total number of clusters across all the seven zones, was taken as the weight to arrive at the distribution of 27 sample clusters in each of the zones.
- (iii) The next step concerns drawing of specific sample clusters from the total number of clusters located actually in a zone. For this, all the clusters in each zone with their detailed addresses were codified and put in a box from which draws were made. The process was repeated for all the seven zones, separately.
- (iv) Once the specific clusters from each zone were identified, 754 sample households were distributed across these clusters, using the proportion of the number of households in each cluster to the total number of households in all 27 clusters as weights. To this we added 48 households selected from the three clusters, 16 each, where the qualitative survey was carried out.
- (v) In each of these clusters investigators prepared a listing of households with some identifiable characteristics. Based on this we drew a lottery to pick up the specific households for the detailed interviews.

2. Analytical framework

Studies on urban labor market have confirmed extensively the role of contact in accessing information pertaining to jobs in both formal and informal sectors. Banerjee's work (1986) on urban labor market and migrant households in Delhi brings out the importance of rural based search for urban jobs through contacts. These contacts operate through relatives, friends, members of own caste groups and co-villagers. About half of his sample of migrants seems to have migrated only after prearranging a job or after receiving assurance of employment from

an urban-based contact. As job expectations were guided by information received from urban-based contacts, migrants were in general successful in obtaining their desired employment in the first instance. And informal non-wage workers were no more likely than formal sector entrants to keep searching for jobs (Banerjee and Bucci, 1994). It is interesting to note that migrants whose contact persons were engaged in unskilled manual occupations were informed about the same job more frequently than those whose contacts worked in non-manual and in skilled manual occupations (Banerjee, 1986).

Another major feature of these studies on labor market is that caste, income from first job, land ownership and sector of ownership are quite important in explaining the job search by rural migrants though among urban migrants they are not so important (Banerjee and Bucci, 1994). Scheduled caste migrants displayed a greater propensity than non-scheduled caste migrants for on the job search in the formal sector but not in the informal sector. This is primarily due to the reservation policy applicable to the scheduled castes in the formal sector.

On the whole, the assumptions of the probabilistic models that job search is entirely an urban based activity and that employment in free-entry activities is a means of financing the search for high income or high productivity jobs have been challenged, unfolding the importance of contact variables in rural-urban migration and rural based search for urban jobs, which could be largely in the informal sector also, instead of being confined to the formal sector alone. Below we deal with some of these points with greater details.

Ever since the advent of probabilistic models, issues of rural-urban migration in developing countries have invited both theoretical and empirical research. As mentioned above, it is by now widely acknowledged that rural migrants access information on the urban labor market through various informal channels, and tend to experience an upward income mobility by migrating to the urban areas. However, one missing area of research has been the segmented nature of the urban labor market due to specialization of activities in different areas (zones) within a city. Segmentation along the lines of caste, skill and education has of course drawn adequate attention of the scholars, but the physical segmentation of the labor market is an issue, which has received relatively less attention. By physical segmentation, we mean inaccessibility of certain kind of jobs by certain group of individuals, primarily because of the distance factor within a city (high income jobs may be available in a particular locality, but its physical distance from the place where one specific group of migrants reside in the city could be so enormous that such jobs may remain inaccessible to them). Even inexpensive (intra-city) transport for commutation need not eliminate these labor market barriers, especially in developing countries. Hence, occupational choice is greatly determined by the narrow spectrum of jobs available within the geographic area where the migrants reside, rather than by what they are capable of pursuing. Contact-based migration tends to end up in providing jobs in close neighborhoods of their residence: the early settlers help their relatives, friends, members of the same caste groups and co-villagers to migrate to the city, by providing information on job and space to settle down, which is often in the same gamut of space and activities that they themselves have access to.

As a result, occupational choice is more or less supply-driven, though from the macro point of view - keeping the entire city in the perspective - the equilibrium choice of occupation would be the outcome of both demand and supply side factors. It is also in sharp contrast to the popular interpretation of informal sector employment, namely the supply (of labor) push phenomenon. This perception gets further substantiated by the fact that intra-city differences (across space) in terms of development, infrastructure, and activities are too significant

to be ignored. The present paper aims at capturing part of this aspect while analyzing the occupational pattern of low-income households in the city of Delhi.

As already emphasized, the work of Banerjee and Bucci (1994) based on labor market in Delhi evidenced rural-based search for urban jobs. It confirmed that about one half of the rural migrants moved after fixing a job or after receiving assurances of employment from those with whom they have had a contact in the urban areas. This proportion was almost the same in both formal and informal sector entrants, indicating that informal sector jobs also act as pull factors for migration, rather than offering only a stopgap arrangement as the probabilistic models would hold. On the whole, the contact factor plays a crucial role in obtaining the desired employment within a short time span.

Further, we argue here that migrants in low income households prefer to reside near the work place and that the role of contact is not confined to merely information on jobs. It often provides shelter in the initial stages and helps in settling down. The co-villagers, relatives, kiths and friends have a strong tendency to live in the vicinity of the early settlers primarily because the jobs obtained through contacts are quite similar to those of the contact persons, particularly in the case of manual and unskilled jobs as also observed by Banerjee (1986).

The urge to reside near the work place is determined by a large number of factors, some of which could be traced to the very nature of activities the migrants perform. The self-employed workers in petty manufacturing and repairing activities often have their enterprises within the household premises (see Sethuraman, 1976). Similarly the self employed and wage laborers in trading activities are required to use their work place for residential purposes as well, from security point of view. Sometimes their encroachment on public land poses the threat of demolition, and their constant vigilance of the unit of operation may be essential. At other times they are engaged by their employers outside the working hours to check burglary. This enables them to reduce their expenditure on rent thus reducing their cost of living in the city. Besides, community latrine and provision of drinking water in the market place attract many of them to reside close to the work place.

Another reason to stay in the vicinity can be identified in terms of multi-jobs that the members of the low-income migrant households usually take up. Women, who combine their household activities with jobs outside home (for example, domestic maids) are engaged in similar kind of jobs but in a large number of households, and prefer to have the place of work and place of residence close to each other. Even if the total income earned from all jobs is less than the income which could have been earned from the job available at a distant place, the former would be preferred as long as the cost of commuting and the opportunity cost of the time spent on commuting are large enough to reduce the potential earnings than the actual earnings. Perhaps this could be a reason of why Banerjee (1986) observed in Delhi that even a majority of informal wage sector entrants, who are believed to be the vulnerable lot relatively speaking, did not continue search after joining the first job.

The reason to reside in the neighborhood of their relatives and friends or co-villagers deduces its roots from - other than economic factors - sociological and political factors also. With wide regional diversities in cultural background of the migrants in the face of their difficulties to adapt themselves to an urban cosmopolitan culture of the upper income groups, their urge to keep alive and enjoy in the city their cultural identity induces them to reside in close proximity to each other. In India, the multilingual and multiethnic identities of its citizens make such phenomenon even more important. Thus, the more heterogeneous culturally and ethnically an area/country is, the more likely it is that migrants would seek to settle in and

around the areas of their brethren. Besides, as mentioned above, activities of the contact persons (early entrants) and the late entrants being mostly similar, sharing of family or individual endowment in their pursuit of economic goals becomes almost inevitable. Efforts to delay demolition programs planned by the city administrators, and attainment of quasi-permanent residential rights in the city are realized only through collective efforts which help secure the political patronage in exchange of their promise to operate as vote banks.

After mentioning the importance of contact in securing jobs and the urge to reside in groups formed on the basis of caste-kinship-co-villager bonds, and the preference of the low-income migrant households to locate near the work place, we now turn to the development of various nodes (centers) within the city, each characterized by specialized activities. As the literature on agglomeration (particularly the localization) economies suggests, firms conducting similar activities tend to locate close to each other so as to reap the economies of scale (Henderson, 1988). Extending this argument - usually made at the inter-city level to explain the differences in activities that cities specialize in - to the intra-city level, the heterogeneity across space even within a specific city can be noted. In other words, not all areas would conduct all activities - each would be responsible for the growth of a predominant activity depending upon the availability of resources required for its generation. Thus different centers within a city would have specialized activities, though from the overall city point of view all activities would appear to exist within its territory, thus creating the myth of a vast labor market. Empirically also, the heterogeneity of the city structure across space has been documented: the study by Dupont and Mitra (1995) divided the city of Delhi into several small units - census charges - and observed wide inter-spatial variations of socio-economic characteristics and activities. Further, they also found an incidental matching of these socio-economic variables with geographic zones of the city: while certain attributes were more conspicuously present in certain zones, others were absent in other zones.

3. Methodology

In this paper we examine specifically the role of informal networks used in accessing employment, and the geographical disparity within a city in terms of the availability and nature of employment propounded by the workers' choice factor as well. The methodology adopted for this is as follows. First, we have tried to bring out certain characteristics like the level of education, duration of migration, zone-wise location of the workers in different occupations based on bivariate tables. This is followed by a multinomial logit model, which relates variations in occupations to the differences in the nature of accessing information and their geographic presence, other than several household/ individual specific variables.

As explained below we have considered 11 occupational groups, $j = 0, \dots, 10$. The multinomial logit model for occupational choice is

$$\text{Prob} (Y = j) = \frac{e^{\beta_j' x}}{\sum_{k=0}^{10} e^{\beta_k' x}} \quad (1)$$

The set of parameters β reflect the impact of changes in x on the probability.

However, there is an indeterminacy problem in the multinomial logit model and to overcome this problem the parameters of one group ($j=0$ for example) are set equal to zero. The probabilities are, therefore,

$$\text{Prob} (Y = j) = \frac{e^{\beta_j' x}}{1 + \sum_{k=0}^{10} e^{\beta_k' x}} \quad (2)$$

$$\text{Prob.}(y = 0) = \frac{1}{1 + \sum_{k=0}^{10} e^{\beta_k' x}} \quad (3)$$

As the parameters of one group are set equal to zero, the coefficients for all other groups are difficult to interpret. Since the coefficients are conditional upon the fact that for one group they are zero, they reveal the relative impact rather than the absolute effect. Therefore, we need to calculate the marginal effects of the regressors on the probabilities:

$$\frac{\partial P_j}{\partial X_j} = P_j (1 - P_j) \beta \quad (4)$$

$$\frac{\partial P_j}{\partial X_k} = -P_j P_k \beta \quad (5)$$

4. Empirical analysis

The questionnaire contained information pertaining to the nature of employment such as self-employment, casual employment and regular salaried employment, and also the exact description of occupations that they are engaged in. Based on this detailed description about eleven categories of occupations have been formed: (i) specialized jobs in which workers are somewhat educated, (ii) sales, (iii) trading, (iv) personal service, (v) manufacturing, (vi) commercial service, (vii) transport, (viii) tailoring, knitting etc., (ix) construction, (x) security workers and (xi) repair workers. These groups are formed keeping in view some of the important categories that population census of India follow. Needless to add that during the survey the detailed occupational description was recorded, which ran into nearly 200 varieties. From this detailed listing 11 broad categories were formed keeping in view certain commonalities that they shared (details given in Mitra, 2003). Activities are so diverse in nature that they cease to be meaningful if we try to collapse the categories further.

It may be noted from Table 1 that construction and manufacturing account for more than 30% of the total workers from slum households. Next to these are trade, sales and services (both personal and commercial) which together account for around 50% of the total workers (Table 1). About 40% of the workers are found to be illiterate, and a large majority of them are engaged in construction, personal services, sales and trade (Table 1). Next to the illiterates the second largest group is formed by those who studied between class 6 to 9. The occupational structure of these workers does not seem to be much different from that of illiterates except the fact that commercial services engaged a little larger percentage of workers in this group than the illiterate workers. Though only 7% of the workers seem to have acquired an education of more than secondary level, their occupational pattern appears to be very different from those of the illiterates. Specialized jobs, sales and trade activities account for more than 80% of the workers who attained an education of more than secondary level.

Table 2 gives the distribution of non-migrants and migrants by duration of residence across various occupational categories. It is noted that the incidence of all-duration migration in the total number of workers in our sample is more than 70%. Around 55% of the workers are reported to be long duration migrants, that is, more than 10 years of duration, and short duration migrants (that is, up to 3 years) comprise only 3% of the workers. Employment in certain activities seems to change significantly with duration of residence. Manufacturing, for example, does not employ any of those who migrated in last one year or so. Its share shoots up to around 14 percent among those who migrated in last 2 to 3 years; thereafter it varies more or less between 7 to 9%. This is indicative of the fact that jobs in activities such as manufacturing are available only when migrants develop access to information after they continue to reside in the urban areas. On the other hand, trading attracts both very short and very long duration migrants (20 years and above), because of different reasons though. Those who

Table 1. Occupational distribution and educational background of slum workers

Occupation Group	Illiterate	Literate	Studied up to Class 3	Class 4 and 5	Class 6 and 9	Secondary	Above Secondary	Total
Professional	2.8	0.0	6.3	3.4	5.5	8.6	21.3	5.5
Sales	14.5	12.0	10.9	12.9	12.5	9.3	11.2	12.8
Trade	11.7	28.0	14.1	14.3	15.1	16.4	21.3	14.7
Personal Service	19.9	14.0	23.4	10.2	9.6	2.1	4.5	13.4
Manufacturing	8.0	8.0	9.4	15.6	8.7	12.9	4.5	9.3
Commercial Service	9.9	6.0	9.8	9.5	13.3	13.6	12.4	10.9
Transport	2.4		1.6	2.7	4.1	5.0	2.2	3.2
Tailoring, Knitting	1.0	6.0	3.1	2.7	3.0	7.9	1.1	2.7
Construction	27.6	12.0	20.3	25.2	20.7	19.3	13.5	22.9
Security	0.0	2.0	0.0	0.7	1.5	0.7	3.4	0.8
Repairing	2.2	6.0	3.1	2.7	6.6	4.3	4.5	3.8
Total	100 (39.5)	100 (4.00)	100 (5.11)	100 (11.7)	100 (21.5)	100 (11.1)	100 (7.1)	100

Note: Figures along the column add up to 100%. Figures within the parentheses along the last row add up to 100%.

migrated in last one year or so are employed in this activity possibly due to the lack of entry barrier and low skill requirement. On the other hand, those who have worked in this sector for a considerably long period of time have possibly moved up the ladder by operating and expanding their own enterprises or so. Hence in understanding the occupational choice of the slum workers duration of migration needs to be considered as an important variable. It is interesting to note that many of the long duration migrants have been residing in the city for more than 20 years or so. This is suggestive of strong rural-urban links, which are not merely of transitory type. Hence demolition of slums / or eradication of informal sector activities from the city must not be perceived as a solution to the problems of city growth. Not because that it involves the question of livelihood of a large number, several activities conducted by them are conducive to the economic growth of the cities. Mobility that has taken place over the years as a natural response to economic opportunities, cannot be scrapped unless development disparities between the place of origin and the place of destination are eliminated.

Distribution of workers by employment categories reveal that more than 40% of them are engaged as casual labor; and the share of self-employment is also quite high (more than 27%). This implies that a large number of slum households are susceptible to uncertainties in the job market and hence fluctuations in incomes. Those who are self-employed may not face labor market uncertainties but in terms of earnings they experience instability due to climatic, seasonal and other kinds of variations in the demand for their products.

For a better understanding of the distribution of slum households across the city we divided all the 30 sample clusters into seven zones in Delhi: (i) South, (ii) central, (iii) north west, (iv) west, (v) east, (vi) north east, and (vii) north. It may be noted that different regions seem to specialize in different activities. For example, in east and north east Delhi commercial

Table 2. Migration status and occupational distribution

Occupation Groups	Non Mig.	Mig. up to 1 Year	2-3 Years	4-5 Years	6-7 Years	8-10 Years	11-15 Years	16-20 Years	20 Years & above
Specialized Jobs	8.1	18.2	3.4	9.8	5.8	4.9	4.9	4.2	2.5
Sales	13.1	0.0	10.3	34.1	11.5	17.6	12.0	11.5	9.4
Trade	9.6	27.3	10.3	12.2	17.3	12.7	19.1	13.0	21.3
Personal Service	16.7	9.1	17.2	7.3	13.5	9.8	10.7	14.9	11.9
Manufacturing	8.7	0.0	13.8	7.3	9.6	9.8	11.6	9.6	7.4
Commercial Service	15.2	9.1	10.3	0.0	7.7	4.9	5.8	12.6	13.4
Transport	4.2	0.0	0.0	2.4	5.8	2.9	3.1	3.1	2.0
Tailoring, Knitting	0.6	0.0	10.3	2.4	5.8	2.0	3.1	3.8	3.0
Construction	18.2	27.3	24.1	24.4	15.4	29.4	26.7	21.5	26.2
Security	0.3	0.0	0.0	0.0	1.9	2.0	1.3	1.1	0.0
Repairing	5.4	9.1	0.0	0.0	5.8	3.9	1.8	4.6	3.0
Total	100 (26.6)	100 (0.87)	100 (2.3)	100 (3.3)	100 (4.1)	100 (8.1)	100 (17.9)	100 (20.7)	100 (16.10)

Note: See Table 1.

services account for about 23 and 24% of the workers in these zones. Manufacturing is significant in north and northwest Delhi. South zone shows a larger share of personal services than all other zones. Trade is of course almost uniformly spread out in all zones. The percentage of workers engaged in this activity is mostly between 15 and 18% except in south and north zones. The share of construction is highest in west Delhi (31%) followed by central, south and north-west zones. Some of these patterns provide us insight to model the occupational choice.

4.1 Econometric modeling of occupational choice

We noted large variations in occupations across zones, age groups, sexes, levels of education attained and migration status. These variables are, therefore, included in specifying the model for occupational choice. The appropriate specification in this context is multinomial logit model as the dependent variable is qualitative. As parameters for all the sub-groups cannot be estimated, the occupation group 8 has been used as the reference category, that is, parameters for this group have been set to 0.

As mentioned above eleven occupational groups have been formed from a detailed list of around 200 occupational descriptions. These broad groups are broadly consistent with the categories followed by the population census of India. Further collapsing of groups does not seem to be justified on analytical grounds. However, even if we pursue it the estimated values of the parameters in terms of significance do not improve adequately to provide any justification to the exercise.

Other variables introduced in the model are caste, household size, asset and network. Variables like age (AGE), household size (HHSZ) and duration of migration (DMIG) are taken in terms of their actual values. The rest of the variables are taken mostly in the form of dummies. GEND is the gender dummy, representing 0 for males and 1 for females. There are seven zones for which six zone dummies (zone 1 to zone 6) have been introduced. CAST1 takes a value of 1 for scheduled caste and tribes, and for the rest of the population it is represented by 0. The dummy for education (EDUC1) makes a distinction between illiterates (0) and literates (1) including those who have attained higher levels of education. The dummy, ASSET represents if households have cultivable land and/or house, with a value of 1, 0 otherwise.

In accessing jobs, as noted both in our survey as well as the surveys done by other researchers (Banerjee, 1986), networks are of great importance. These networks operate through various channels such as relatives, co-villagers, neighbors, friends, members of the same caste groups and so on. In order to capture the impact of networks we have introduced three dummies. NETWORK1 takes a value of 1 for individuals who got help from relatives (immediate relatives, spouse's relatives and general relatives) and 0 for the rest; NETWORK2 captures the impact of help received from co-villagers, members of the same caste groups, community fellows and friends, taking a value of 1 for them and 0 for the rest; NETWORK3 makes a distinction between individuals who received help from employers, NGOs, private companies and leaders and the rest, with values of 1 and 0 respectively. Those who did not receive any help from anyone and mostly depended on their personal efforts to find a job are taken as the reference category in specifying these network dummies.

It may be noted from Table 3, that for specialized jobs (OCCPO) both household size and duration of migration have a negative effect. Workers from larger household size (HHSZ) are

perhaps less endowed with skills to graduate to better jobs. The coefficient of EDUC is positive and highly significant implying that literates and educated ones are more likely to get these jobs. Besides, women have a higher probability of getting these jobs. NETWORK1 and NETWORK3 representing the impact of relatives and NGOs etc. respectively are highly significant indicating the existence of both informal and formal flow of information pertaining to the job market. Interestingly scheduled caste/tribes are not found to show a higher probability of being located in these jobs. Zones 2, 3 and 4 are less likely to conduct such activities, or in other words these zones are less likely to have slum dwellers working as employees in specialized jobs.

Table 3. Occupational choice function (estimate: MLE) multinomial logit model

	OCCP0	OCCP1	OCCP2	OCCP3	OCCP4
EDUC1	1.37 (4.02)*	0.05 (0.25)	0.85 (4.00)*	0.62 (2.29)**	0.72 (2.88)*
HHSZ	-0.14 (-1.87)**	0.08 (1.47)***	0.07 (1.33)***	-0.18 (-2.67)*	0.02 (0.39)
DMIG	-0.13 (-2.58)*	-0.05 (-1.36)***	0.02 (0.58)	-0.08 (-1.84)**	-0.01 (-0.24)
CAST	-0.50 (-1.76)**	-0.94 (-4.41)*	-0.76 (-3.74)*	-0.12 (-0.46)	-0.37 (-1.58)**
GEND	1.34 (2.78)*	0.17 (0.39)	0.73 (1.90)**	4.40 (12.77)*	1.40 (3.68)*
AGE	0.005 (0.28)	-0.01 (-0.83)	0.03 (2.96)*	0.03 (2.57)*	0.003 (0.23)
ASSET	0.68 (1.60)***	0.23 (0.79)	0.15 (0.55)	0.04 (0.13)	-0.13 (-0.43)
NETWORK1	1.31 (3.59)*	1.19 (4.34)*	1.32 (5.05)*	1.61 (4.68)*	1.45 (4.60)*
NETWORK2	-1.13 (-1.47)***	0.29 (0.92)	-0.18 (-0.54)	0.89 (2.44)*	0.69 (1.97)*
NETWORK3	1.20 (3.19)*	0.04 (0.11)	-0.27 (-0.76)	0.61 (1.59)***	1.26 (3.87)*
ZONE1	-0.75 (-1.38)***	-0.67 (-1.64)***	-0.53 (-1.24)	0.89 (1.48)***	-1.66 (-3.81)*
ZONE2	-2.01 (-2.54)*	-0.95 (-1.90)**	-0.73 (-1.43)***	-0.05 (-0.07)	-1.84 (-3.32)*
ZONE3	-1.11 (-1.81)**	-0.59 (-1.34)***	-0.45 (-1.00)	0.08 (0.12)	-0.74 (-1.71)***
ZONE4	-1.53 (-2.49)*	-1.04 (-2.41)*	-0.85 (-1.88)**	0.16 (0.25)	-1.95 (-4.08)*
ZONE5	0.03 (0.06)	-0.88 (-1.79)**	-0.16 (-0.33)	0.70 (1.04)	-1.37 (-2.71)*
ZONE6	-0.34 (-0.43)	-0.35 (-0.58)	0.05 (0.09)	-0.001 (-0.001)	-1.06 (-1.65)***
CONSTANT	-1.25 (-1.34)***	0.22 (0.34)	-2.02 (-3.09)*	-3.20 (-3.55)*	-0.64 (-0.89)

Table 3 (continued)

	OCCP5	OCCP6	OCCP7	OCCP8	OCCP9
EDUC1	0.80 (3.25)*	0.65 (1.69)***	1.82 (3.51)*	20.76 (0.004)	1.02 (2.70)*
HHSZ	-0.007 (-0.13)	0.14 (1.74)***	0.04 (0.39)	-0.01 (-0.44)	-0.06 (-0.70)
DMIG	-0.07 (-1.75)***	-0.06 (-0.90)	0.13 (1.65)***	0.004 (0.03)	-0.02 (-0.29)
CAST	0.55 (2.19)*	-1.16 (-3.14)*	1.24 (-3.14)*	0.16 (0.24)	-0.37 (-1.12)
GEND	1.70 (4.69)*	-0.65 (-0.62)	1.46 (2.34)*	-30.09 (0.001)	0.10 (0.13)
AGE	0.05 (3.93)*	0.004 (0.18)	0.001 (0.03)	0.06 (1.52)***	-0.02 (-1.20)
ASSET	-0.23 (-0.84)	-0.21 (-0.48)	1.07 (1.64)***	18.63 (0.003)	-0.70 (-1.72)***
NETWORK1	1.63 (5.28)*	0.90 (2.04)*	0.69 (1.42)***	1.19 (1.29)	1.87 (4.69)*
NETWORK2	0.72 (1.90)**	-0.03 (-0.05)	-32.09 (0.0001)	1.78 (2.28)	0.22 (0.39)
NETWORK3	1.56 (5.06)*	0.17 (0.32)	0.29 (0.51)	-30.55 (0.0001)	0.72 (1.38)***
ZONE1	0.73 (0.92)	-0.43 (-0.59)	-0.45 (-0.62)	0.85 (-0.68)	-1.73 (-2.83)*
ZONE2	0.82 (0.96)	0.06 (0.08)	-1.17 (-1.18)	-0.46 (-0.35)	-1.70 (-2.31)*
ZONE3	0.58 (0.69)	-0.87 (-1.04)	-32.57 (0.0001)	-1.52 (-1.02)	-1.18 (-1.89)**
ZONE4	0.60 (0.73)	-0.97 (-1.22)	-0.65 (-0.84)	-0.78 (-0.63)	-0.74 (-1.32)
ZONE5	1.89 (2.31)*	0.21 (0.28)	0.62 (0.79)	-31.53 (0.0001)	-1.62 (-2.20)*
ZONE6	1.92 (2.18)*	-0.88 (-0.71)	-0.03 (-0.03)	-31.53 (0.0001)	-2.04 (-1.76)**
CONSTANT	-4.56 (-4.60)*	-2.08 (-1.90)**	-4.32 (-3.24)*	-43.20 (0.0001)	-0.02 (-0.02)

Note: OCCP8 is the comparison group. Figures in parentheses are t-ratios. *, **, and *** represent significant at 5, 10 and 20% levels respectively. Chi-Square value is 905.38, which is significant at 1% level. Pseudo R-square is 0.17. No. of Observations = 1258.

Among sales workers (OCCP1), CAST shows a negative impact and only NETWORK1 plays a significant role in accessing jobs. Zones 2 and 4 show a lower probability of having sales workers. Women have a higher probability of joining trading activities (OCCP2). Age plays a negative role meaning that older workers are less expected to participate in these jobs. CAST again takes a negative coefficient and EDUC turns out to be positive and highly significant. Relatives again provide an important support in accessing jobs, i.e., (NETWORK1), and among various zones, zone 4 shows a lower probability of locating workers in these activities.

Table 4. Marginal effects: occupational choice model

Exp. Variables	P0	P1	P2	P3	P4	P5
EDUC	0.035886	-0.0852	0.0197	-0.0128	0.0002	0.0090
HHSZ	-0.007237	0.0110	0.0111	-0.0234	0.0029	0.0002
DMIG	-0.005652	-0.0027	0.0075	-0.0074	0.0018	-0.0045
CAST	-0.00939	-0.0770	-0.0624	0.0284	-0.0036	0.0962
GEND	0.076909	0.0296	0.1172	0.5982	0.1365	0.1927
AGE	-0.00047	-0.0030	0.0026	0.0028	-0.0010	0.0037
ASSET	0.026218	0.0037	-0.0075	-0.0212	-0.0307	-0.0470
NETWORK1	0.012734	0.0147	0.0367	0.0720	0.0352	0.0605
NETWORK2	-0.026897	0.1178	0.0667	0.2042	0.1230	0.1478
NETWORK3	0.054753	-0.0206	-0.0692	0.0547	0.0985	0.1485
ZONE1	-0.026978	-0.0531	-0.0400	0.1538	-0.1303	0.1084
ZONE2	-0.081616	-0.0543	-0.0295	0.0638	-0.1222	0.1464
ZONE3	0.002806	0.0737	0.1042	0.1663	0.0728	0.1898
ZONE4	-0.05571	-0.0670	-0.0482	0.0910	-0.1327	0.1216
ZONE5	0.015582	-0.0805	0.0136	0.1270	-0.1039	0.2325
ZONE6	-0.00241	-0.0064	0.0520	0.0400	-0.0711	0.2420
CONSTANT	0.032736	.2643	-0.0255	-0.1819	0.1124	-0.2956

Exp. Variables	P6	P7	P8	P9	P10
EDUC	-0.0022	0.0298	-0.1664	0.1603	0.0115
HHSZ	0.0049	0.0012	0.0020	-0.0007	-0.0020
DMIG	-0.0009	0.0044	0.0067	0.0003	0.0003
CAST	-0.0265	-0.0246	0.0762	0.0040	-0.0026
GEND	-0.0187	0.0411	0.0147	-0.2402	0.0062
AGE	-0.0003	-0.0003	-0.0031	0.0004	-0.0013
ASSET	-0.0129	0.0235	-0.0455	0.1474	-0.0342
NETWORK1	-0.0056	-0.0105	-0.2463	0.0009	0.0302
NETWORK2	0.0194	-0.8490	0.1456	0.0193	0.0325
NETWORK3	-0.0008	0.0024	-0.0453	-0.2460	0.0198
ZONE1	-0.0054	-0.0053	0.0593	-0.0047	-0.0559
ZONE2	0.0188	-0.0174	0.1204	0.0005	-0.0446
ZONE3	0.0093	-0.8480	0.2659	-0.0029	-0.0007
ZONE4	-0.0144	-0.0035	0.1189	-0.0021	-0.0084
ZONE5	0.0149	0.0234	0.0569	-0.2503	-0.0525
ZONE6	-0.0186	0.0073	0.0685	-0.2484	-0.0662
CONSTANT	-0.0075	-0.0670	0.4229	-0.3308	0.0694

Note: P0 to P 10 stand for probabilities for each of the occupations OCCP0 to OCCP10.

It is incorrect to believe that illiterates are more likely to be engaged in personal services (OCCP3). Similarly, it is not right to suggest that workers from larger households are hard pressed to find a job and hence they land up in personal services as entry barriers are mostly absent in these activities. Women, as expected, have a higher probability of being engaged in these jobs. Corresponding to manufacturing (OCCP4), literates relative to illiterates, and women workers show a higher probability. All the three network dummies are highly significant. Zones 1, 2 4 and 5 are less likely to have workers in manufacturing.

In the case of commercial services (OCCP5) EDUC, CAST and GEND and AGE all have a positive impact. Relatives and NGOs etc. represented by NETWORK1 and NETWORK3 respectively are highly significant. Zones 5 and 6 seem to have a higher probability of locating these workers. It is interesting to note that jobs in activities like personal services are usually not available to lower caste individuals whereas commercial services are less affected by such factors.

In transport (OCCP6) scheduled castes are less likely to be employed. The role of relatives in getting these jobs again turns out to be significant. Tailoring and knitting (OCCP7) have a higher probability of employing women than men. Scheduled castes/tribes are less likely to be engaged in these jobs too possibly because of the lack of skill. Literates have an edge over the illiterates in joining these occupations. Security workers (OCCP9) mostly access jobs through friends and co-villagers and repairing workers (OCCP10) through relatives. Being literate places with a higher probability to find a job in repairing activities. Zones 1, 2 and 5 are less likely to house the repairing workers.

As already mentioned above, the parameters in a multinomial logit model are estimated with reference to parameters of a particular category being set to 0. Hence, interpretation is not invariably unambiguous. Therefore, marginal effects have been calculated to confirm the interpretation made on the basis of the estimate of the parameters.

The marginal effects reported in Table 4 are more or less in conformity with what has been suggested above. For the construction activity (OCCP8) for which parameters were set to 0, observations can be made on the basis of the marginal effects. Illiterates seem to have a high probability of joining these occupations. NETWORK2 plays a positive role whereas help from relatives show a negative marginal effect. Zones 2 and 3 seem to be more concentrated by construction workers.

Apart from the eleven occupational groups, three employment categories have also been considered to run the multinomial logit model. Self-employment (EMP2) category is the comparison group. Corresponding to casual employment (EMP0) a large number of variables are found to be significant. With an increase in household size the probability of joining the casual employment falls. Long duration migrants are less likely to be in casual employment - with a rise in the duration of stay they manage to acquire more information on the job market, and hence move out of the domain of casual employment category. Scheduled castes show a larger probability of joining the casual employment as compared to the non-scheduled class category. Similarly women workers show a higher probability of taking up these jobs compared to men. Both NETWORK2 and NETWORK3 play a positive role in accessing this category of employment. All the six zone specific dummies have positive coefficients and they are significant (Table 5).

Table 5. Employment choice function (estimate: MLE)

Exp. Variables	EMP0	EMP1
EDUC	0.03 (0.16)	-0.83 (-4.98)*
HHSZ	-0.09 (-2.41)*	0.05 (-1.23)
DMIG	-0.12 (-4.40)*	-0.04 (-1.43)***
CAST	0.68 (4.37)*	0.33 (2.00)*
GEND	1.53 (6.71)*	-0.37 (-1.35)***
AGE	-0.009 (-0.11)	-0.02 (-2.45)*
ASSET	0.34 (1.68)***	0.10 (0.45)
NETWORK1	0.14 (0.77)	-1.18 (-5.74)*
NETWORK2	0.96 (3.71)*	0.25 (0.96)
NETWORK3	1.91 (6.78)*	0.43 (1.40)***
ZONE1	1.63 (4.74)*	0.45 (1.57)***
ZONE2	1.59 (3.90)*	0.53 (1.42)***
ZONE3	1.46 (4.01)*	0.37 (1.20)
ZONE4	1.04 (2.89)*	0.27 (0.91)
ZONE5	1.20 (3.29)*	-0.19 (-0.57)
ZONE6	1.82 (3.98) *	0.05 (0.11)
CONSTANT	-1.13 (-2.19)*	1.48 (3.11)*

Note: EMP2 is the comparison group. N=1258. Figures in parentheses are t-ratios. *, **, *** are significant at 5, 10 and 20% levels, respectively. The Chi-Square value is 371.76 which is significant at 1% level. Pseudo R-square is 0.14. No. of Observations = 1258.

In the case of regular wage/salaried employment (EMP1), it is surprising to note that literates have a lower probability of getting such employment. This is possibly because of the fact that these jobs are in the lower spectrum of the income ladder, and hence literates/educated ones have a lower preference for these jobs. Women are less likely to get regular wage employment. The age factor also reduces its probability. Scheduled castes show a greater possibility of getting into regular jobs. NETWORK1 is highly significant but it is negatively related to EMP1. NETWORK3 takes a positive coefficient though it is significant only at 20% level. Across space Zone1 and Zone2 are indicative of a higher probability of holding these salaried or regular wage jobs.

Having asset in terms of cultivable land and/or own house is also an important determinant of occupational/employment choice. For example, in the equations for OCCP0 and OCCP7, ASSET takes a positive coefficient though it is not highly significant. However, in repairing work, people with asset are less likely to join. In the equation for EMP0 also it is positive and significant indicating that with asset people rather dare to take up employment of unstable type.

On the whole, findings tend to support our hypothesis that the urban labor market is highly segmented in nature and a great deal of information on the urban job market flows through informal channels. Different regions within the city offer different work opportunities,

and workers depending upon their location and information base access these jobs through various networks. In this sense a mismatch between supply of and demand for labor does exist across activities and across regions: though jobs at a higher wage may be available in a specific area, job seekers may not avail of them if their contact person(s) did not happen to be employed in these regions (and activities). However, the brighter side of the story is that outcomes in the absence of informal networks would have been much worse than the existing situation. The informal networks in the face of the diverse economic structure of the city are indeed the coping mechanisms for the low income households.

5. Conclusion and policy issues

In this paper we have focussed on questions relating to occupational choice, networks and physical segmentation of the labor market. Our analysis is indicative of associations among occupation categories (employment categories) and several individual attributes like education, migration status, asset, networks and the preference to reside near the work place. Certain occupations (or employment categories) are typically characterized by the presence of certain groups of individuals, indicating the significance of factors like gender and/or caste in the urban labor market. Two important findings relate to the significance of network dummies and the zone specific dummies in the equations for occupational choice.

The interconnections between network (and the nature of the network), and occupation type are noteworthy. While certain occupations are accessed through relatives (NETWORK1) certain others are acquired through co-villagers, friends etc. (NETWORK2) and certain others are secured through more formal contacts like NGOs etc. (NETWORK3), though more than one networks in certain occupations do operate simultaneously. On the whole, occupation, and network, are all in relationship governed by the factors like caste, gender, migration status, education depending on which the nature of contact and the access to information pertaining to the job market get determined. However, in our analysis the networks are treated as exogenously given. Although it is not uncommon to note that the informal networks play a major role in securing employment in the urban informal sector, the intricacies and the subtle forms of mechanism that operate in the urban labor market are of significant interest - without an understanding of these existing modes of operation policy suggestion for the betterment of the urban poor would be incomplete and may be misleading too. In suggesting policies for the urban poor or the informal sector workers the importance of the informal institutions need to be recognized which have been in operation as a matter of social and cultural practices. By recognizing these coping mechanisms policy interventions can be suggested which would be supportive in nature, and such policies are more cost effective compared to direct interventions.

The contours of associations as mentioned above, however, need to be understood in the perspective of the diverse nature of activities across space reflecting the heterogeneity of the socio-economic structure of the city. In other words, interconnections between individual endowment, preference for occupation type and its ultimate selection reflect themselves in the intra-city variation in population concentration, dwelling structure and congestion, given the spatial variation in the nature of economic activities conducted within the city. Our second finding relating to the zone specific dummies are suggestive of such tendencies. That workers only in certain activities are located in certain areas and not all, is indicative of strong

differences in the city's socio-economic structure across space, broad overlaps between the place of work and the place of residence of these low income households, and thus the physical segmentation of the urban labor market. That not all slums are of the same type, and hence the problems they face could be quite diverse in nature are borne out by such patterns. Policy measures for the improvement of the slum dwellers, however, do not seem to have considered these aspects.

The policy directives need to recognize efforts that are initiated and pursued by the slum dwellers themselves. This would not only reduce the burden on the public exchequer but also deal with the problems of slums, basic amenities and poverty more efficiently. Instead of the government being always directly involved in the process of employment generation in the informal sector on a large scale, measures, which are protective and supportive to the efforts made by the low-income households can be pursued to enable them to attain their goals (Mitra, 2003).

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