PRINT: ISSN 0971-8923 ONLINE: ISSN 2456-6756
J. Soc. Sci., 13(1): 43-51 (2006)
DOI: 10.31901/24566756.2006/13.01.06

# Utilisation of Health Care in North Bengal: A Study of Health Seeking Patterns in an Interdisciplinary Framework[1]

**Amlan Majumder**

*Department of Economics, Dinhata College, Dinhata, Cooch Behar 736 135, West Bengal, India*
*E-mail: brinda95@sancharnet.in*

**KEYWORDS** Health care; perceived morbidity; system of medicine; type of care; utilisation of health facilities

**ABSTRACT** Utilisation of health facilities varies sharply across cultures and societies in India. The present study applies econometric tools in an interdisciplinary framework to investigate how pattern of utilisation of care is affected by different socio-economic, demographic, and other relevant factors in the rural and urban areas of Cooch Behar and Jalpaiguri districts of North Bengal.

## INTRODUCTION

Over the years infrastructure of health services and pattern of utilisation of care have changed radically in the region of North Bengal with all other parts of India. An enquiry into the fact would unveil some of the important alterations like introduction of user fees or more specifically hike in fees structure in the public health facilities, emergence of numerous private sources of care, and revealed preference for alternative systems of medicine among rural and urban mass. Important research questions at this point are that whether demand for public health facilities has decreased or whether preference for alternative systems of medicine has increased over Allopathy or whether patient's preference for a care is purely rigid in response to socio-economic, demographic and other characteristics. The present study will investigate such research questions empirically by evaluating contribution of different socio-economic, demographic, geographic, and other factors towards utilisation of different health care in the rural and urban areas of Cooch Behar and Jalpaiguri districts of North Bengal, India.

### Health Care System and Systems of Medicine in India

The public health care delivery system in India at present has a three-tier structure. The primary tier has been developed to provide health and family welfare related services to the vast majority of rural people. It comprises three types of health care institutions: Sub-Centre (with 3 health workers and 1 voluntary worker for 5000 population in plain area or 3000 population in hilly and tribal area), Primary Health Centre (for 30000 population in plain area or 20000 population in hilly and tribal area with 4-6 beds, 1 doctor, and 14 other paramedical and supporting stuff), and Community Health Centre (for 120000 population in plain area or 80000 population in hilly and tribal area with 30 beds, 4 medical specialists, and 21 other paramedical and supporting stuff). The secondary tier, which is primary to the urban mass, includes medical care provided by the specialists at the district and sub-divisional hospitals. Tertiary health care encompasses sophisticated services provided by the super-specialists at medical colleges and specialised hospitals (GOI, 1997; VHAI, 1997).

Private sources of care may be divided into two broad groups: institutional and non-institutional. Institutional sources include private hospitals, private health care research institutes, nursing homes, private clinics, etc. Non-institutional sources include doctors and medical specialists of public health care institutions who do private practice, indigenous practitioners of Allopathy or traditional healers of alternative or even unrecognised systems of medicine, chemists, druggists, etc. However, private sources of care are very uneven in both quantity and quality and their presence is parallel to the public health care system.

At present with the mainstream system of Allopathy five other systems of medicine such as Ayurveda, Unani, Siddha, Naturopathy and Yoga, and Homoeopathy are practiced officially (GOI, 2002).

### Review of literature

Though economists began to turn their

attention to the matters concerning the efficiency in the health service sector around the end of the 1950s, empirical studies in the supply-side economics of health care began with the work of Feldstein (1967a). He estimated Cobb-Douglas type production function of hospitals for the British National Health Service with a set of availability factors like availability of doctors, nurses, beds, etc. Studies in the demand-side of health care economics also follow a similar framework, which considers a set of non-economic factors such as age, gender, education, culture, etc. with the economic ones (see Feldstein, 1967b; Feldstein, 1979).

However, the problem of health services utilisation has been dealt with not only by the economists but also by the anthropologists, demographers, doctors, geographers, sociologists and others. Among the geographers, Lefever (1926) was probably the first person to apply mechanical and mathematical tools to solve social problems regarding geographic location of some kind. Contemporary medical geographers have systematically studied how geographical accessibility to a health facility affect utilisation of health care. Since 1950s demographers have also started focusing on acceptance of different family planning methods and utilisation of maternal and child health care in connection with the so-called population explosion in the developing countries. Since 1970s, social and medical anthropologists also applied their mind to patients' perspectives and conceptions about illness and medicine to study how patients comply with the sick role – how they perceive the causes of their condition and make choices regarding the use or non-use of different kinds of health care (Herzlich and Pierret, 1985). Within this sphere of research, conceptual frameworks have been developed to put some order into the mass of possible interacting variables, which affect health services utilisation.

Though the problem of health services utilisation, as mentioned above, has been addressed by scholars from many different fields, social and medical anthropologists provided a very detailed and systematic framework for a comprehensive analysis with wide scope for applying econometric or other statistical tools (Andersen, 1968; Kroeger 1983; Andersen 1995). According to them these variables include characteristics of the disorder (need factors), characteristics of the subject (predisposing factors), and characteristics of the service (enabling factors).

**Characteristics of Disorder**

Intensity of illness and number of spells significantly affect utilisation of health care services. Higher the severity or number of spells the higher the degree of utilisation of services (Pathak et al., 1981; Sauerborn et al., 1989). Study by Dunlop et al. (2000) on Canada's universal health care system also demonstrated positive relationship among health need (measured by perceived health status and number of health problems) and the use of primary care services.

**Characteristics of the Subject**

Predisposing factors are those, which are supposed to make an individual susceptible towards a specific action or behaviour or experience. Different factors in this category are: family characteristics (age, gender, household size, marital status), social structure (education, employment, ethnicity), and assets / affordability (land, livestock, cash income).

***Family Characteristics:*** Though illness is a random event, it has a fair degree of predictability with respect to demographic factors like age, gender, family size, marital status, etc. As the need for health care changes with age, gender, and marital status utilisation of services also conforms accordingly (Feldstein, 1979). Studies in general found U-shaped relationship between age of patients and utilisation of health care services (Faizi, 1997). Size of a household may work positively or negatively. In a large family per capita income may be less and so also ability to pay for health care. It may reduce chances of utilising a care from modern source. On the contrary in larger families interaction among the members or with the neighbours may be more intensive and which may increase chances of utilising a care (Feldstein, 1979; Pathak et al., 1981; Yesudian, 1989).

***Social Structure:*** Impact of education, employment and ethnicity towards utilisation of services is universally acceptable. Though volume of studies in this category is quite large, among the important ones, Abu-Zeid and Dann (1985), Amin et al. (1989) Elo (1992), Gobindasamy and Ramesh (1997), Kavitha and Audinarayana (1997), and Matsumura and Gubhaju (2001) found

significant positive relationship between education and utilisation of maternal and child health care services. Employment status or occupation and ethnicity have also been found important determinants of utilisation of care in some of the above-mentioned studies and especially in studies done by Trakroo (1993) and Celik and Hotchkiss (2000).

***Affordability:*** The relationship between family income or wealth and utilisation of health care is quite unexplored in India. Significant studies on health services utilisation in India considered maternal and child health care services, which are very basic, and utilisation of those are thought independent of household income. Studies in general found positive relationship between household income and utilisation of services (Abu-Zeid and Dann, 1985; Dunlop et al., 2000). Celik and Hotchkiss (2000) found having a car, flush toilet and modern floor are positively associated with utilisation.

**Enabling Factors**

Important factors in this category are: availability of health facilities, accessibility to health care, quality of care, and costs.

***Availability of Health Facilities:*** Feldstein (1967a) explained variations in utilisation of services by availability factors estimating Cobb-Douglas production functions of hospitals under British National Health Service. For all the production functions he found that elasticity coefficients of medical inputs, beds, drugs and dressings are positive. It means that hospital output increases with the inputs. Sauerborn et al. (1989) and Vogel and Stephens (1989) also found that availability of drugs, pharmaceuticals are important service related determinants.

***Accessibility to Health Care:*** Increased distance between residents and health care providers decreases the utilisation of health care. Empirical studies by geographers in Africa established a distance-decay relationship between remoteness of a health facilities and utilisation of services (Freeman et al., 1983; Francis, 1984; Airey, 1989; Mooney et al., 2000).

***Quality of Care:*** The notion of quality of care, which has been characterised as a social construct, takes different meaning. These meanings vary across professionals, managers, governments, users, among others and in relation to the type of care under consideration as well as to the social and technological context in which the care is delivered. Among these approaches, the analysis of user perception of quality offers a useful complement to those evaluations conducted from the point of view of professionals or public health authorities (Haddad et al., 1998). Studies in this category are mostly exotic in nature, which focused on the art of medicine which is to be comprehended as doctor-patient information exchange, patient's perception on many factors like general cleanliness, etc. (Schoenbaum 1998, Qatari and Haran 1999). Boscarino (1996), however, put a note of caution that there might be positive and negative biases associated with patient's perceptions. The study concluded that researcher should use quality indicators with care. International Conference on Population and Development in Cairo in 1994 has recommended four factors, which appear to be the amalgamation of both subjective judgments and objectivity of the programme. These factors are: provider-client information exchange, provider competence, interpersonal relations, and mechanisms to encourage continuity of medical care (UNFPA, 1995).

***Costs of Care:*** The price of a service and use of that service are, according to economic theory, inversely related: as price is reduced, purchase or use of the service will increase. Knowledge of price elasticity of demand for medical services is, therefore, of great importance (Feldstein, 1979). However, the effect of price or costs towards utilisation of health services has not been explored so much in developed and in developing countries because of the complexity of the concept in health care. Moreover, presence of health insurance in developed countries and availability of services at free or nominal costs in developing countries made the task of researchers difficult. However, studies by Freeman et al. (1983), Sauerborn et al. (1989), and Yoder (1989) found that cost of travel, cost of drugs, and hike in fees structure are negatively related with utilisation.

## RESEARCH GAPS AND NEED FOR THE STUDY

Though the present review of literature may not be exhaustive, if we look at the volume of technical studies across regions, we can see that majority of them were conducted either in developed nations or in Africa. Technical studies gained importance in Africa, as many African

nations have adopted the recommendation of the World Bank on increased cost recovery for financing publicly provided health services and gradually introducing user fees (Shaw, 1995). As the developed and developing African nations have already gained experience from empirical studies, the question at this stage is that whether the results can readily be implemented in India. Peters et al. (2002) put a note of caution that experience gained from the latest policy changes in North America and Western Europe cannot be simply adopted in India whose demographic and institutional realities are so different from those of high-income countries. Moreover, if we closely look at the studies, we can see that by and large those have considered Allopathic system of medicine only. However, in India six different recognised systems of medicine with many other unrecognised ones and both public and private sectors run parallel. It leaves a scope for us to study how patients' preference for a system of medicine or a particular type (public or private) of care affects utilisation of services.

The framework developed by Feldstein (1967a, 1967b) is fully based on hospital records. As patient's illness does not coincide with the doctor's disease (Herzlich and Pierret, 1985), inferences of such studies are likely to lose credibility in mixed socio-economic and cultural set ups. The present study, therefore, plans to go for a self-perceived morbidity method based on the perception and reporting of symptoms and impairments by individuals (Murray and Chen, 1992) considering three broad categories of diseases as recommended by the Global Burden of Disease study 1990 (Murray and Lopez, 1996).

Nemet and Baily (2000) introduced a new concept of 'activity space' of a potential patient over the simple geographical accessibility to health care. The concept can hopefully be used in Indian context after appropriate localisation of it. Simple geographical distance may be meaning less for studies based on small sample size or small geographical area either because of respondent's inability to measure the distance or because of his or her ignorance about the availability of some facility or simply because of common sources or care for all. Incorporation of the concept of activity space or which may be termed as 'normal out-of-door trips' may however, minimise all these shortcomings. In addition to this, as this particular region is far away from the important Indian cities, and as people of this region are compelled to travel a lot, we can examine whether this traveling habit has any bearing on utilisation of health services.

For similar reasons, as mentioned above, studies based on primary data could not explore the relationship between availability of health facilities and utilisation of care. But one can consider place of residence as a proxy measure of availability (Elo, 1992) with the assumption that in the rural areas health facilities are not easily available but available in urban areas.

As cash income may always be not related to ability to pay health care, we plan to include some proxy measures of households' agricultural possessions and standard of living.

## DATA

The study utilises primary data collected through interview technique for a 5-month reference period and is based on self-perceived morbidity method. The survey has been conducted in Sadar sub-divisions of Cooch Behar and Jalpaiguri districts of North Bengal (West Bengal, India) taking 7 villages and 4 wards from rural and urban areas of each of the districts respectively. Twenty households have been selected from each village / ward leading to the total size of sample as 440 households or 2342 persons. However, there are 325, 158, and 483 illness episodes, which have been included in the analyses in the rural, urban, and combined categories respectively.

## METHOD

### Conceptual Framework

The conceptual framework for the study is shown in figure 1. It has been modified after Kroeger (1983). The first node stands for perceived morbidity, which interacts with predisposing, need, and enabling factors. Nodes in the third panel display a set of possible explanatory variables, which are supposed to play significant roles in determining choice of a care. Though choice of a care has many dimensions, we have kept utilisation of a care from modern source in consultation with doctors and medical specialists in one category and utilisation from traditional source (including treatment from paramedical or supporting stuff and from any system of medicine except Allopathy and Homeopathy) or self-

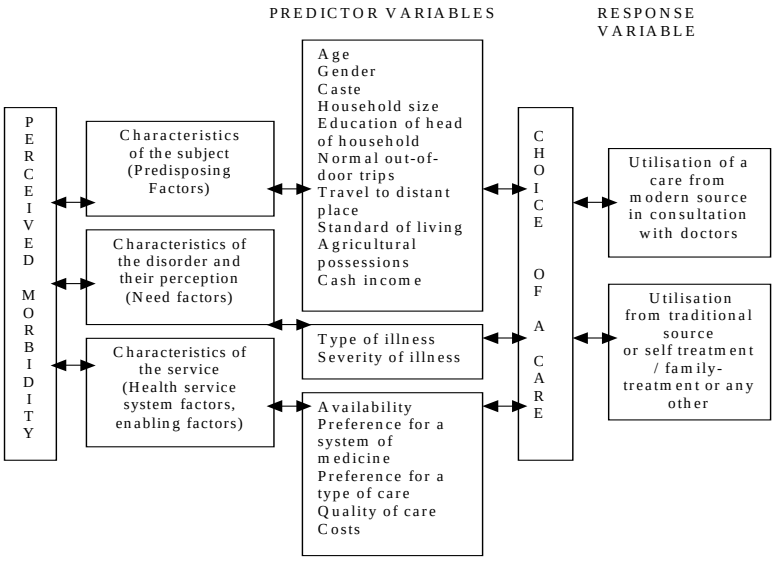


**Fig. 1. Conceptual framework**

**Table 1: Variables in the model and definitions**

| *Variable* | *Definition* | *Value* |
|---|---|---|
| Utilisation of care (from modern source) | Whether the household utilised care from any modern source (in consultation with doctor or medical specialist) (All remaining cases of treatment from any traditional source, or self treatment or family-treatment or any other will be considered as utilisation from traditional source) | 1 if the event has occurred 0 Otherwise |
| Age | Age of the morbid person | 1 if age 5-14 0 otherwise; 1 if age 15+ 0 otherwise |
| Gender | Gender of the morbid person | 1 if female 0 otherwise |
| Caste | Caste of the morbid person (General / Scheduled caste / Tribe) | 1 if general 0 otherwise |
| Family size | Number of persons in the household | 1 if size ≤ 5 0 otherwise |
| Education | Education of the head of the household and up to primary | 1 for illiterate 0 for middle and above |
| Normal out-of-door trips | Number of travels by the head of the household within 10 kms range in a month | 0 if number ≤ 4 1 otherwise |
| Travel to distant places | If the head of the household traveled beyond 500 kms range in past three years | 1 if the event has occurred 0 Otherwise |
| Standard of living | A composite index based on proportion of living rooms to persons (1 if proportion e" 0.5, 0 otherwise), type of house (1 if pucca or semi-pucca, 0 otherwise), type of toilet facility (1 if sanitary, 0 otherwise), audio system (1 if yes, 0 otherwise), TV (1 if yes, 0 otherwise) | 1 if score >3 0 otherwise |
| Agricultural possessions | If the household possesses cultivable land, milch animals, draft animals, birds, and fruit trees. For each item the score is 1 if the household possesses it, 0 otherwise | 1 if score >3 0 otherwise |
| Cash income (in Rupees) | Household monthly cash income from all sources | 1 if 2000 ≤ income ≤ 4999 0 otherwise; 1if income ≥ 5000 0 otherwise |

**Table 1: Contd.....**

| *Variable* | *Definition* | *Value* |
|---|---|---|
| Type of illness | Morbidity<br>(Group I: Communicable, Maternal,<br>Perinatal, and Nutritional diseases.<br>Group II: Non-communicable diseases.<br>Group III: Unintentional injuries, Intentional injuries) | 1 for Group II<br>0 otherwise;<br>1 for Group III<br>0 otherwise |
| Severity | How sever the attack is | 1 for medium0<br>otherwise;<br>1 for high<br>0 otherwise |
| Type of facility | Public / private / other | 1 for public<br>0 otherwise |
| System of medicine | Allopathy / Homeopathy / Traditional<br>(Traditional: Ayurvedic, Kabiraji, etc.) | 1 for Allopathy<br>0 otherwise;<br>1 for Homeo<br>pathy<br>0 Otherwise |
| Quality of care | Composite index on households opinion on cleanliness (yes/no), whether privacy is maintained (yes/no), service provider listen to the patient/other (yes/no), service provider talk to the patient/other (yes/no), and the household is satisfied (yes/no). For each item the score is 1 if the answer is yes, 0 otherwise | 1 if score >3<br>0 otherwise |
| Costs(in Rupees) | Total direct cost per episode | 1 if 100<br>≤ cost ≤ 499<br>0 otherwise;<br>1 if cost<br>≥ 5000 otherwise |

treatment or family-treatment, etc. in another as shown in the nodes in the fifth panel.

### Definition of the Variables

Definitions of the response and predictor variables are shown in table 1 all of which are categorical.

### The Model

If P be the estimated probability of utilising health care from modern sources, in log odds form the model is

$$\text{logit } P = \left( \beta_0 + \sum \beta_{1i} X_{1i} + \sum \beta_{2i} X_{2i} + \sum \beta_{3i} X_{3i} \right) \quad \ldots\ldots \text{(i)}$$

The equations include characteristics of the disorder ($X_{1i}$), characteristics of the subject ($X_{2i}$), and characteristics of the service ($X_{3i}$).

## RESULTS

### Characteristics of the subject

Table 2 shows results of logistic regression analyses. The columns display log odds (logit P) of utilisation of care from modern source (henceforth utilisation only). When age group changes from 0-4 to 15+ in the rural category, effect of other variables remain controlled (henceforth we will not mention it), logit P increases by 1.430. It conveys that morbid persons in the older age group have higher probability of utilising a care than that of morbid children. This effect is statistically significant below 1 per cent level. Similarly, the effect of being general caste, relative to scheduled caste and tribe, is to increase logit P by 0.795 in the rural category. Logit P decreases by 1.071 when family size changes from small to large. It means that morbid persons in large families are less likely to utilise care. More 'normal out-of-door trips', relative to less, increase the logit P by 1.911 in the rural category.

Gender, education, travel to long distant place, and standard of living index are not found significant enough to explain health seeking pattern in the region of North Bengal.

***Characteristics of the Disorder:*** Among the characteristics of the disorder, high 'severity of illness' when compared with the low, increases logit P by 1.458 in the rural category.

Type of illness has no significant impact on utilisation of health care.

***Characteristics of the Service:*** In response

**Table 2: Log odds ($\beta$) of utilisation of health care from modern source in North Bengal**

| *Independent variables* | *Rural* | *Urban* | *Combined* |
|---|---|---|---|
| *Characteristics of the Subject* | | | |
| Age group (rc: 0-4, under 5 age group) | | | |
| Young age group (5-14) | - 0. 790 | -0.146 | -0.42 |
| Older age group (15 +) | 1.430*** | 0.511 | 0.954** |
| Gender (rc: Male) | | | |
| Female | -0.308 | -0.467 | -0.29 |
| Caste (rc: Scheduled Caste & Tribe) | | | |
| General | 0.795* | 0.281 | 0.460* |
| Family size (rc: small) | | | |
| Large | - 1.071*** | -0.317 | -0.751 |
| Education of the head of the household (rc: illiterate & primary) | | | |
| Secondary & higher | -0.024 | 0.676 | 0.305 |
| Normal out-of-door trips (rc: less) | | | |
| More | 1.911*** | 0.389 | 1.029*** |
| Travel to distant place (rc: no travel) | | | |
| Travel (Yes) | 0.271 | 0.241 | 0.341 |
| Standard of living index (rc: low) | | | |
| High | 0.482 | -0.431 | 0.217 |
| Agricultural possessions (rc: low) | | | |
| High | -0.182 | -0.868** | -0.396 |
| Cash income (rc: low) | | | |
| Medium | 0.038 | 0.161 | -0.153 |
| High | -0.659 | 1.192 | 0.181* |
| *Characteristics of the Disorder* | | | |
| Type of illness (rc: Group I) | | | |
| Group II | -0.464 | -0.194 | -0.289 |
| Group III | -0.306 | -0.354 | -0.327 |
| Severity of illness (rc: low) | | | |
| Medium | 0.16 | 0.065 | 0.336 |
| High | 1.458*** | -0.037 | 0.932*** |
| *Characteristics of the Service* | | | |
| Availability (rc: no) | | | |
| Yes | - | - | -0.803** |
| System of medicine (rc: traditional & other) | | | |
| Allopathy | 0.739 | 0.502 | 0.786** |
| Homeopathy | 2.325*** | 0.164 | 1.449*** |
| Type of facility (rc: private & other) | | | |
| Public | 3.673*** | -0.27 | 2.024*** |
| Quality of care (rc: low) | | | |
| High | -0.298 | 0.424 | 0.186 |
| Cost per episode (rc: low) | | | |
| Medium | 0.747 | 1.461*** | 0.975*** |
| High | 1.747*** | 1.216*** | 1.208*** |

rc: Reference category
***p<0.01, **p<0.05, *p<0.1

to availability of health facilities, relative to unavailability of those, log odds of utilisation decreases by 0.803 in the combined category. When choice of a system of medicine is Homeopathy, relative to traditional and other, log odds increases by 2.325 in the rural category. Similarly when choice of a type of facility is public, relative to private, log odds increases by 3.673 in the same category. A change in the category of cost from low to medium increases logit P by 1.461 in the urban category and a similar change from low to high increases the same by 1.747 and 1.216 in the rural and urban categories respectively.

Quality of care has no significant impact on utilisation of care.

## SUMMARY AND CONCLUSION

Among the characteristics of the subject, demographic factors like age, and family size have been found important determinants of utilisation of care. The regression analyses indicate that children in the 5-14 age group are by and large neglected. Special care must be taken to raise the rate of utilisation of care for morbid children in the 5-14 age group.

Probability of utilisation is seen higher in small

families. Appropriate measure should be taken to regularise the habit of utilisation of health care in large families.

As of 'normal out-of-door trips', it has been found that those households whose heads make frequent trips, have a tendency to utilise care more. It carries a good message, as in the pace of development social mobility will increase which will always contribute to the probability of utilising a care.

The demand for public health facilities is tremendously high as compared to that of private health facilities in rural areas of the districts. The effect is too strong to hold well in the area as a whole (combined category) also. So, privatisation or plan of leasing out the primary health care system to private operators will not be justified. Policy makers should consider this fact with care.

Probability of utilisation is very high in rural areas when the preference for the system of medicine is Homeopathy. As the demand for Homeopathy is very high in rural areas, appropriate measures should be taken to introduce it in the primary health care system.

Availability of health facilities is seen to have negative impact towards utilisation of a care. The underlying assumption was that in the urban areas health facilities are available. However, the result indicates that as compared to the people of the rural areas, urban dwellers are likely to avoid utilising a care from modern source. This points out higher chances of self-treatment or family-treatment or other by the urban dwellers. On the contrary higher chances of utilisation of care are there from modern sources in towns by the rural people who generally experience unavailability of health facilities in their local areas.

Cost of treatment seems to affect utilisation of care positively. It tacitly indicates that people are compelled to pay more when they seek care from modern sources. Cost or price of care does not play usual role as it does in case of other economic goods. The question of financing of health care is, therefore, drawing our attention.

## ACKNOWLEDGEMENT

An initial version of the paper has been presented in an International Conference on *Research in Economics: Aims and Methodologies* at the Dipartimento Di Economia Politica E Methodi Quantitativi, Università di Pavia, Italy in September 23-25, 2004. Prof. Enrica Chiappero-Martinetti, of the Università di Pavia (Vice-President of the HDCA - Human Development and Capability Association), and Mariapia Mendola, Dottorato di Scienze Economiche, Università degli Studi di Milano, Italy have been senior and junior discussants of that paper respectively. I gratefully acknowledge the advice received from them on methodological issues.

## NOTES

1. Part of doctoral work which is supervised by Jeta Sankrityayana, Reader in Economics, University of North Bengal and funded by the University Grants Commission, ERO, Kolkata (Grant No. F. PHW-083 / 03-04).

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