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Increasing Compulsion to Work for Wages: Old Age Labor Participation and Supply in India over the Past Two Decades

Ashish Singh[1] · **Upasak Das**[2]

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Abstract Against the backdrop of the general absence of social benefits (for the elderly) and growing nuclearization of families, we examine the changes in determinants of wage labor participation and supply of the elderly (60 years and above) over the last two decades in India. We use national level Employment-Unemployment Surveys (1993–94 and 2009–10) and Probit as well as Heckman sample selection models for the estimation. Findings show that the negative association between wage labor participation and the age of the elderly has weakened during the study period indicating that the extent of decrease in wage labor participation due to increase in age of the elderly has come down during 1993–2010. Findings also indicate that the elders from poorer and weaker sections have higher compulsion for labor participation in both rural and urban areas and more so in 2009–10. Further, we find that the elders from smaller households (with 4 or less members) are more likely to participate in wage labor in rural as well as urban areas. Moreover, we find that the elders from the poorer sections in rural areas are compelled to work for higher number of days in a week in comparison to the richer elders and this relationship has become stronger in 2009–10. The findings call for a universal pension scheme for improved welfare of the elderly population in India.

Keywords Old age · Labor participation · Labor supply · India

✉ Ashish Singh
singhmb.ashish@gmail.com

Upasak Das
Upasak.das@gmail.com

[1] SJM School of Management, Indian Institute of Technology Bombay, Powai, Mumbai 400076, India

[2] Centre for Development Studies, Thiruvananthapuram, India

Introduction

India has experienced high and sustained economic growth since the advent of economic reforms in the early 1990s. Researchers and policy makers often consider India as a major growth engine for the global economy along with China. However, there are serious concerns about the inclusiveness of Indian growth process (Dev 2008). Studies have pointed out that these concerns are arising mainly due to the persistence of substantial socioeconomic inequalities in various economic as well as non-economic outcomes including income, health and education in India (Singh 2011, 2012). The groups of individuals that lag behind and have been unable to enjoy the fruits of the economic growth are especially the disadvantaged and vulnerable sections like the Scheduled Groups (Singh et al. 2013).

Another among these vulnerable groups is the group of elder individuals. The issue becomes more important because improved health facilities and policies have made the elderly population among one of the fastest growing demographic groups in the world today. In India the elderly population has grown from about 19.8 million in 1951 to 76 million in 2001 and the projections indicate that the number of persons aged more than 60 years is likely to increase to 100 million by 2013 and to 198 million by the year 2030 (Government of India 2008). The number of individuals, above 70 ears of age was 9 million in 1961, which has increased to 29 million in 2001 and is expected to be 131 million by 2051 (Rajan and Aliyar 2008). The implications of this growing elderly population may have severe consequence, especially when credit and financial markets are less developed; a situation prevalent in India (Pal 2007).

The traditions and norms of the Indian society and the age-old joint family system have been instrumental in safeguarding the social and economic security of the elderly people. The adult children play the role of supporting the parents financially as well as emotionally. However, with the advent of rapid changes in socio-economic scenario, fast urbanization (with limited and costly housing in urban areas) and higher aspirations among the youth, the roots of traditional joint family system have been eroding very fast (Government of India 2008). Small households (with 4 or less members) have increased from 41 % in 1981 Census to 43 % in the 2001 Census. Also, the average household size has decreased from 5.5 to 5.3 from 1981 to 2001. These findings lay emphasis on the increasing trend of nuclearization of the Indian families (Motiram and Singh 2012). In fact, there are studies which point to increased fragmentation of the traditional family network and migration of younger generations after the introduction of economic liberalization measures in the country in 1991 (Pias 2006). Under this scenario, the elderly population might not get the required care and support from their younger generation. As a result, they are vulnerable and likely to be exposed to emotional, physical and financial insecurity.

Social Safety Net and Labor Market Participation of Elderly in India

Taking financial insecurity into concern, there have been limited efforts by the governments (central and state) to provide social safety net exclusively for the older aged people when compared to social schemes for other sections of the

Table 1 Proportion of elderly individuals, engaged in begging or prostitution by gender: rural and urban areas, 2009–10

	Male	Female
Rural	14.67%	21.16%
Urban	16.24%	21.75%

Source Authors' computations based upon national employment and unemployment surveys (1993–94 and 2009–10)

society, for example, the "Mahatma Gandhi National Rural Employment Guarantee Act" (MGNREGA), "Swarnjayanti Gram Swarozagar Yojana" (SGSY) and others. Even, a report by the Government of India says that focus in India has been mainly on children and youth and achievement of their needs for proper development has remained a priority area (Government of India 2011a). Despite of the United Nations World Assembly on ageing held in 2002 (at Madrid), envisaging recommendations of high priority for the developmental and ethical aspects of ageing, the single scheme dedicated towards the elder population in India is the "Indira Gandhi Old Age National Pension Scheme" (IGOANPS).[1] The scheme only covers the "Below Poverty Line (BPL)" population above 65 years of age. However, Patnaik (2012) identifies some basic problems with this scheme – first, the scheme is not universal and covers only the BPL population, whose size is arbitrarily fixed by the Planning Commission at a very low level; and second, the very low amount of pension money given to the beneficiaries, which is Rs. 200 per person per month.[2]

Since in India, no universal social security welfare scheme exists for the older population, they may be devoid of the much needed financial support. On top of it, consider the fact that the workers in the informal sector, which employs more than 70 % of the total work force, receive no pension benefits. Regular salaried individuals receive one time gratuity based on the final salary and provident fund contributions that are made while working (Rajan 2010). This may result in increased wage labor force participation, even in the older ages, out of adversity. The situation can be more serious for those older individuals from the poorer households, who do not receive financial support from their children. Moreover, employment of the elder working individuals can be terminated either due to retrenchment, sickness or under performance.

Another point worth noting is the fact that more than 18 % of the older individuals worked as beggars or engaged in prostitution in India in 2009–10. Table 1 presents the proportion of elderly individuals, who beg or work as prostitute separately for males and females for both- rural as well as urban sector. Here the activity status of begging/prostitution pertains to the "Usual Principal Activity Status" as recorded by NSSO survey.[3] This activity status is considered to be the activity on which the individual has spent relatively longer time during the 365 days preceding the date of survey. It is found

[1] For details, please refer United Nations (2002).
[2] About 3.3 USD at an exchange rate of 1USD=Rs. 60
[3] The details of the survey are presented in section 3.

Table 2 Labor force characteristics of the elderly population in India: 1993–94 and 2009–10

	Rural				Urban			
	Elder individuals		Working age individuals		Elder individuals		Working age individuals	
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)
Panel A: 1993–94								
Worked in household enterprise	52.74	10.51	50.35	19.01	31.41	4.99	33.67	6.84
Worked as regular salaried/ wage employee	1.39	0.23	8.95	1.46	6.03	1.65	38.25	7.36
Worked as casual labor in public works	0.05	0.00	0.33	0.18	0.00	0.00	0.15	0.02
Worked as casual labor in other works	14.11	6.43	32.35	17.33	5.42	2.48	13.05	5.17
Did not work but was seeking or available for work	0.02	0.04	1.94	0.55	0.13	0.03	3.91	1.87
Attended educational institutes	0.13	0.12	4.16	1.11	0.2	0.34	8.2	5.29
Attended domestic duties	1.04	42.93	0.39	58.98	1.36	45.82	0.36	71.62
Rentiers, pensioners, remittance recipients	4.24	2.51	0.17	0.19	24.35	4.46	0.64	0.39
Could not work due to disability	4.54	4.13	0.56	0.36	3.98	3.33	0.59	0.3
Begging/ Prostitution and others	21.74	33.09	0.79	0.82	27.1	36.91	1.17	1.14
Panel B: 2009–10								
Worked in household enterprise	47.06	11.56	44.26	17.92	23.49	3.21	33.1	7.43
Worked as regular salaried/ wage employee	1.27	0.31	7.32	1.74	5.41	1.33	35.4	8.47
Worked as casual labor in public works	0.34	0.2	0.66	0.43	0.19	0.02	0.36	0.06
Worked as casual labor in other works	14.9	6.95	39.29	17.74	4.41	1.58	17.26	4.89
Did not work but was seeking or available for work	0.02	0.11	1.4	0.77	0.1	0.01	2.33	1.44
Attended educational institutes	0.3	0.11	5.45	2.79	0.1	0.02	9.13	7.72
Attended domestic duties	1.15	44.24	0.34	57.51	1.47	51.92	0.44	68.49
Rentiers, pensioners, remittance recipients	11	6.82	0.22	0.35	40.38	11.22	0.62	0.64
Could not work due to disability	9.27	8.55	0.67	0.37	8.21	8.96	0.78	0.42
Begging/Prostitution and others	14.67	21.16	0.38	0.39	16.24	21.75	0.57	0.42

Source Authors' computations based upon National Employment and Unemployment Surveys (1993–94 and 2009–10)

that higher proportion of males engage in these activities in urban areas compared to rural areas, whereas the proportion of females is similar in both the areas. Nevertheless,

Table 3 Number of households surveyed from each GPs of the two blocks

Block	Gram Panchayat	Number of households surveyed
Haldibari	Devanganj	136
	Dakhin Bara Haldibari	141
Cooch Behar-I	Dawaguri	137
	Falimari	142

Source Based on the survey in two blocks of Cooch Behar district in the Indian state of West Bengal

the figures are alarmingly high, especially, since begging or prostitution may be the last resort left to the poor elderly given the absence of labor demand for them coupled with minimal social and financial security net.

Also, Table 2 (Panel A and Panel B) gives the proportion of elders and working age individuals engaged in various types of works (under the "Usual Principal Status") separated by gender and sector. It is worth noting that the proportion of elderly individuals who were unable to work due to disability has increased substantially from 1993–94 to 2009–10 for both the genders across both the sectors – rural and urban. The proportion of elderly engaged in casual labor has increased for both male and female individuals in the rural areas over this time period but has decreased for urban individuals. The share of elderly engaged in regular or salaried wage works has shown a decrease for both males and females in urban sector and also for rural males. However, the share of rural females engaged in regular wage work has increased during 1993–94 to 2009–10. [4]

Ethnographic Insights – Existing Welfare Schemes and Elders

As we have discussed about a few welfare schemes above, it might be important to document some firsthand information about how the elders feel about these schemes. Therefore, we list some anecdotal insights from a survey, conducted from January to April 2012 in the "Haldibari" and "Cooch Behar-I" blocks of the "Cooch Behar" district, situated in the north-eastern parts of the Indian state of West Bengal. The main aim of the survey was to evaluate the implementation of MGNREGA.[5] However, discussions and problems related to other welfare schemes like the IGOANPS and SGSY were also carried out.[6]

From each of the chosen blocks, two "Gram Panchayats (GP)" were randomly selected.[7] From Haldibari block, "Devanganj Panchayat" and "Dakhin Bara Haldibari Panchayat" were chosen. From Cooch Behar-I block, "Dawaguri Panchayat" and "Falimari Panchayat" were selected. From these panchayats, 556 households were randomly selected and surveyed with the number from each panchayat proportional to the household population of the GPs. Table 3 shows the number of households

[4] The labor force characteristics of the elderly for 1999–2000 and 2004–05 have been presented in Appendices Tables 8 and 9, respectively.

[5] MGNREGA is a public works program that has been running in rural India from 2006. For more on the program, please refer Dey et al. (2006).

[6] The survey was conducted as a part of the thesis work of one of the authors.

[7] Gram Panchayat is the governing body at the village (one village or a cluster of villages) level and its officials are elected by the villagers.

surveyed from each GP. Around 31 % of these households chosen have at least one member who is aged 60 years and above.

Some ethnographic insights (while interviewing the elder members of these households) which are important for the present study are as follows: An elderly woman aged 69 years was interviewed. She lives in the Dawaguri GP of the Cooch Behar-I block with her husband. Both of them are BPL card holders and have to work as agricultural laborers to make ends meet since their two sons have left them and migrated to Jaipur and never returned back. The elder woman points out "we have to work as agricultural laborer, however, due to our ailing health conditions we cannot work for more number of days." She also tried to participate in MGNREGA works, but the unskilled laborious nature of the work makes her incapable to perform the jobs. Hence, she was not able to work for more than 10 days last year. This has been a complaint against the program by the elders, who are unable to carry out the laborious works under the ambit of the program.

An older male, who is of age of more than 75 years lives in the Devanganj GP of the Haldibari block. As, in the earlier case, he lives with his wife, who is aged about 65 years. The couple stays in a mudded dilapidated house, but somehow they have been missed out from the list of BPL card holders. As a result, they do not receive any benefit from the IGOANPS. Hence, the wife has to carry out local agricultural labor work and the man has to beg to earn their living since his health does not permit him to work as a casual labor.

Among all the elder individuals, who receive benefits from the IGOANPS, the common complaint was about the meager amount of assistance (the paltry sum of Rs. 200) received by them per month. Also, the problem gets aggravated because the sum is not received every month. After every 3 or 4 months, they get a lump sum amount for the 3 or 4 months (whichever is applicable). Irregular supply of pension, coupled with the poverty laden conditions, compel them to participate in wage labor.

The above insights highlight the need to study the labor force participation of elderly in India on a larger scale as well as how the labor force participation of the elderly has changed over time. Surprisingly, the issue of old age labor participation has not attracted enough attention in the literature and to the best of our knowledge, there has been no study which has systematically analyzed the wage labor participation and wage labor supply of the elderly population in India. Given this context, we investigate the determinants of wage labor participation of the elderly population in India and also analyze the changes in the determinants during the period 1993–94 to 2009–10. Further, we analyze the weekly labor supply of the working elderly individuals during the same period.

As we also wanted to see how the labor supply and participation of the elderly has changed due to economic reforms which were initiated in 1991, we chose the years 1993–94 and 2009–10 for the analysis. The year 1993–94 is chosen because this is the closest year to the initialization of major economic liberalization (1991) for which details are available and gives a picture of the pre-economic reforms period scenario. Whereas, 2009–10 is the latest year after economic reforms for which we have nationally representative data.

The remainder of the paper is organized as follows. The next section presents the data, variables and the methodology used in the paper. It is followed by a section on the

results from the estimates of the empirical models and the final section provides our main conclusions along with some discussion.

Methods

Data

Having collected some ethnographic insights that the elderly have been forced to work in dearth of support from children and dedicated welfare programs, we now look to quantify the effects. For this purpose, we use the publicly available data from the 50th (1993–94) and the 66th (2009–10) rounds of the National Employment and Unemployment Surveys conducted by the "National Sample Survey Organization" (NSSO) of the Government of India. These surveys are micro unit recorded and nationally representative surveys and are widely used in the Indian context. They follow multi-stage stratified sampling design and estimates based on multiple rounds are comparable owing to the similarity between the sampling designs of the different rounds. The 1993–94 survey covered 1,00,957 households (59,129 in rural areas and 41,828 in urban areas) enumerating 4,59,784 individuals (2,81,327 in rural areas and 1,78,457 in urban areas). Whereas, the 2009–10 survey covered 115,409 households enumerating 564,740 persons, spread over 6983 villages and 4670 urban blocks. The details of 1993–94 and 2009–10 surveys are available in the respective survey reports (NSSO 1997; 2011). Both the surveys are unique in the sense that they are designed to gauge the employment-unemployment scenario of the country with data on socio-economic and demographic characteristics, employment details and household consumption along with other household and individual level details.

The individuals included in our analysis are of age 60 years or above. We have chosen this age group because in India, the active age-group identified for employment is often taken as 15–59 and accordingly the governmental reports consider individuals aged 60 years and above as a separate group while presenting the age-specific employment status of individuals (Government of India 2011b).

Outcome Measures –Wage Labor Participation and Weekly Days of Work

Since the main objective of our study is to examine the wage labor participation and labor supply of older population, information on the work participation and number of days worked under the current weekly status is used. The current weekly status informs about the activity of the individual on each of the 7 days in the week preceding the date of survey. The details of wages received on each of these 7 days are also available in the survey.

We categorize wage labor participation of the elders as "1" (elder is engaged in wage labor) if the elder has received wages on any of the 7 days in the week preceding the date of survey, otherwise "0" (not engaged in wage labor). Also, using information on the activity of elders on each of the 7 days of the preceding week, we construct the weekly days of work supplied for each elder in the sample. In the surveys, for each day

–if an elder has worked for the full day, it is taken as "1" day and if s/he has worked for only half the day then it is taken as "0.5" day. For the elders who have participated in wage labor, the weekly days of participation (or weekly days of labor supply) would vary from 0.5 to 7.

Weekly hours of work would have been preferable over weekly days of work but the surveys don't provide information on daily hours of work. A trichotomous categorization of work status (not worked, worked for half a day or worked for full day) for each day in the preceding week is provided, leaving us with no choice but to go with the weekly days of work as a measure for weekly labor supply.

Independent Variables - Determinants of Wage Labor Participation and Labor Supply

Drawing from the published literature on the determinants of individual work participation (Faridi et al. 2009; Ferber 1982; Powers 2003) and taking into account the Indian context, we include a number of independent variables. These can be broadly classified into two groups; first group relates to the individual level determinants, the second pertains to the household level and other determinants.

The variables related to individual level determinants include age and square of the age of the elder, a dummy each for marital status (unmarried as reference) and sex of the elder (male as reference) and education of the elder which is categorized into five levels – illiterate/no formal schooling, schooling below primary (5 years), primary and middle (between 5 and 10 years), secondary and higher secondary (10 to 12 years) and more than higher secondary.

To characterize the households (to which the elders belong) we use dummies for caste and religion, number of children (younger than 18 years) and number of adults (aged 18 years or above) in the households, amount of land cultivated in acres (for rural sector only) and quintiles of monthly per capita consumption expenditure (MPCE). The categorical variable for caste is coded into the categories of "Scheduled Caste" (SC), "Scheduled Tribes" (ST), and "Other Castes" (OC; taken as reference) which are meaningful representations of the Indian social fabric along caste lines.[8] Religion is also divided into three categories, namely, "Hindu" (the majority religious group in the Indian population; taken as the reference category), "Muslim" (largest group among religious minorities), and "Others".

The variables like number of adults (aged 18 years or above), number of children (younger than 18 years) and quintiles of MPCE (monthly per capita expenditure) to which a household belongs are included to account for the household demographic and economic conditions. Amount of land cultivated is included (in rural areas) because it is one of the best indicators of wealth status in rural areas. In addition, a dummy of whether the household is a small family is added. A small family is defined as a household, where the household size is less than or equal to four. Also, we have included daily wage rate in the modeling of weekly wage labor supply. Of note is the fact that the different states of India are at different levels of economic and demographic development, with the states of south and west generally better

[8] It may be noted that the SCs and STs have suffered from severe social exclusion and discrimination from historical times and lag behind the OCs in the different indicators of welfare. A much more meaningful categorization would have been to divide the other castes (OCs) into Other Backward Classes (OBCs) and Upper Castes but the 1993–94 survey includes the OBCs into Others and therefore making it impossible for us to have a detailed caste classification (Deshpande 2011).

than their other counterparts (Bhat and Zavier 1999; Bose 1991; Singh 2011). To control for the state effects, we cluster the standard errors at the state level in all the regression based analyses.

Empirical Estimation[9]

Model of Wage Labor Participation

Since we are able to categorize wage labor participation into dichotomous variable ("1" if the elderly individual participates in wage labor and "0" if s/he does not), we use probit model to determine the factors that affect the probability of wage labor participation of the older population. The model can be specified as below:

$$L_i = \alpha + \beta X_i + \varepsilon_i \tag{1}$$

where, L_i is the outcome variable which is nothing but the wage labor participation status (dichotomous) of the i^{th} elder. X_i is the vector of independent variables as discussed in the earlier section and ε_i is the error term.

Model of Weekly Wage Labor Supply

As the weekly days of wage work are not observed for the elders who did not participate in the wage labor market, considering only the sample of working population (which may be non-random) might lead to a classic case of "sample selection" (Heckman 1979). Therefore the estimation is sensitive to the idea that elders might decide not to work for wages when their reservation wage is higher than that offered in the market. To address this issue we use the readily acceptable and widely used Heckman's sample selection approach and model the weekly labor supply of the working elders (Heckman 1979). The model is formulated in terms of two equations:

(a) a selection or participation equation – a probit regression (binary dependent variable taking a value of "1" if individual works, "0" otherwise) to explain the decision of whether to participate in the wage labor and;
(b) an outcome equation to explain weekly days of wage labor supplied, observable only for those who participate in the wage labor market with the inverse mills ratio calculated from the selection equation as one of the independent variables.[10]

If the inverse mills ratio comes out to be significant in the outcome regression, there is sample selection bias. If it turns out to be insignificant, there is no significant sample selection bias and the outcome equation for the weekly number of days of labor supply can be estimated simply by ordinary least squares taking only the elders who have participated in wage labor.

[9] A basic theoretical framework underlying our empirical estimations is presented in Appendix 1.
[10] For more details on sample selection, please refer Greene (2008).

Table 4 Descriptive statistics

Variables	Mean/Percentages							
	Rural				Urban			
	Working		Not working		Working		Not working	
	1993–94	2009–10	1993–94	2009–10	1993–94	2009–10	1993–94	2009–10
Outcome variables								
Wage labor participation (%)	9.66	11.35			7.45	6.01		
Weekly days worked (mean)	6.22	5.80			6.42	6.42		
Explanatory variables								
Age (mean; years)	63.41	63.48	67.19	67.21	63.96	63.56	67.57	67.71
Caste (%)								
Other castes	56.70	59.32	77.24	75.52	80.05	74.84	88.93	87.59
ST	7.96	12.10	8.85	7.17	5.22	2.52	3.65	1.94
SC	35.34	28.58	13.91	17.31	14.74	22.64	7.43	10.46
Religion (%)								
Hindu	86.12	87.20	83.25	85.81	81.75	81.76	78.13	81.38
Muslim	8.19	7.62	7.34	8.52	13.22	10.41	12.26	11.20
Other religions	5.69	5.17	9.41	5.67	5.03	7.83	9.62	7.43
Married (%)	99.22	99.61	98.41	99.19	98.76	99.42	97.91	98.92
Female (%)	29.13	31.29	50.01	52.14	27.01	23.87	53.70	53.45
Household type - Rural (%)								
Agri. & other labor	83.60	86.80	16.61	22.62				
Self employed in agriculture	8.88	4.84	59.51	45.56				
Self employed in non agriculture	6.33	3.07	11.76	15.35				
Others	1.05	5.29	12.12	16.47				
Household type - Urban (%)								
Regular wage					43.59	44.97	30.94	28.92
Casual labor					37.88	41.07	7.38	8.27
Self employed					16.15	11.12	45.79	40.07
Others					2.37	2.84	15.90	22.74
Education level (%)								
Illiterate	83.6	74.55	75.39	69.24	51.92	44.53	47.49	37.94
Below primary	8.88	9.55	11.02	8.93	13.57	11.38	13.95	8.47
Primary & middle	6.33	13.07	10.64	15.42	21.46	22.55	20.51	20.84
Secondary & higher secondary	1.05	2.28	2.43	4.75	7.53	12.12	11.68	18.44
Above higher secondary	0.14	0.55	0.52	1.66	5.52	9.42	6.37	14.3
MPCE Quintiles								
Q1 (poorest)	38.09	30.05	20.86	23.29	15.57	13.87	8.41	8.07
Q2	25.36	26.52	20.9	24.03	19.82	21.53	12.75	11.22
Q3	19.66	22.54	21.79	22.08	20.7	15.5	16.94	13.5
Q4	11.84	15.92	20.73	19.77	19.44	23.26	23.3	21.59

Table 4 (continued)

Variables	Mean/Percentages							
	Rural				Urban			
	Working		Not working		Working		Not working	
	1993–94	2009–10	1993–94	2009–10	1993–94	2009–10	1993–94	2009–10
Q5 (richest)	5.05	4.97	15.72	10.83	24.47	25.84	38.59	45.62
Land cultivated (mean; acres)	0.70	0.53	5.33	2.45				
Number of children (mean; <18 years)	1.50	1.01	2.48	1.60	1.54	1.01	1.82	1.21
Number of adults (mean; >17 years)	6.37	3.99	7.22	4.24	6.54	3.96	6.25	4.03
Small family (%; <= 4 members)	59.41	60.26	30.18	39.42	49.98	55.30	34.88	43.06
Number of observations	1,898	1,598	22,680	20,889	934	823	11,959	13,454

Source Authors' computations based upon national employment and unemployment surveys (1993–94 and 2009–10)

Results

Descriptive Statistics

Table 4 lists the variables used in the regressions as well as the descriptive statistics of working and non-working sample separated by the place of residence (rural/ urban). The statistics are presented for two time points, that is, 1993–94 and 2009–10. Some important observations from the table are described below.

First, the proportion of elders engaged in wage labor participation has decreased in urban areas and has increased in rural areas. But, the average weekly days of work supplied by the working elders has decreased in rural areas but has remained same in urban areas. Also, the average number of days worked (for those who are participating in the wage labor) has remained higher than 6 days per week in both the survey years except for rural areas in 2009–10; this might show that a large proportion of elderly people who have participated in wage labor are working due to compulsion to meet the needs of the household. Second, the average age of older population involved in wage labor has almost remained similar during the two survey years. Third, in rural areas, the proportion of elderly Hindus participating in wage labor has increased over the past two decades whereas the proportion of elderly Muslims (participating in wage labor) has decreased during the same period in both the areas. Fourth and one of the major observations is that the proportion of the working elders, who are from households with primary occupation type of "casual or agriculture labor" has increased substantially over the study period. In rural areas, we find that the proportion of elders from household type of "agriculture and other labor" has increased from 84 to 87 % during 1993–94 to 2009–10. In urban areas, the proportion from "casual labor" household type has increased from 38 to 41 %. Incidentally, this is the group which has the least

Table 5 Estimations from probit regressions: determinants of wage labor participation of the elderly in India

	Rural		Urban	
	1993–94	2009–10	1993–94	2009–10
Age	−0.11*	−0.07	−0.21***	−0.19***
	(0.06)	(0.09)	(0.05)	(0.05)
Square of age	0.00	0.00	0.00***	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Caste (Ref. Other castes)				
ST	0.02	0.10*	0.12	−0.21
	(0.06)	(0.06)	(0.11)	(0.11)
SC	0.15**	0.09**	−0.04	0.18***
	(0.06)	(0.05)	(0.09)	(0.06)
Religion (Ref. Hindus)				
Muslim	0.07	−0.04	−0.01	−0.07
	(0.08)	(0.07)	(0.07)	(0.08)
Others	−0.06*	−0.10*	0.02	0.10
	(0.06)	(0.06)	(0.05)	(0.10)
Married	0.19	−0.46*	−0.02	0.10
	(0.17)	(0.25)	(0.14)	(0.24)
Female	−0.71***	−0.73***	−0.78***	−0.90***
	(0.10)	(0.09)	(0.05)	(0.06)
Household type for rural (Ref. Agriculture and other labor)				
Self employed in agriculture	−1.53***	−1.77***		
	(0.07)	(0.09)		
Self employed in non agriculture	−1.23***	−1.39***		
	(0.07)	(0.08)		
Others	−0.81***	−1.14***		
	(0.13)	(0.07)		
Household type for urban (Ref. Regular wage)				
Casual labor			0.44***	0.40***
			(0.07)	(0.08)
Self employed			−0.85***	−1.14***
			(0.07)	(0.06)
Others			−1.11***	−1.44***
			(0.12)	(0.16)
Education (Ref. Illiterate)				
Below primary	−0.09*	−0.01	−0.11	−0.03
	(0.05)	(0.07)	(0.07)	(0.06)
Primary and middle	−0.01	−0.04	−0.08	0.02
	(0.06)	(0.05)	(0.06)	(0.07)
Secondary and higher secondary	0.06	−0.27***	−0.23***	−0.27***

Table 5 (continued)

	Rural		Urban	
	1993–94	2009–10	1993–94	2009–10
	(0.11)	(0.10)	(0.09)	(0.10)
Above higher secondary	0.12	−0.19	−0.01	−0.20
	(0.25)	(0.14)	(0.09)	(0.14)
Per capita consumption quintiles (Ref. Q5)				
Q1 (poorest)	0.23***	0.13*	0.27**	0.51***
	(0.08)	(0.07)	(0.12)	(0.08)
Q2	0.16**	0.16**	0.28***	0.43***
	(0.08)	(0.08)	(0.10)	(0.08)
Q3	0.14*	0.16*	0.23***	0.24***
	(0.08)	(0.08)	(0.09)	(0.06)
Q4	0.10	0.10	0.06	0.16***
	(0.09)	(0.07)	(0.09)	(0.05)
Land cultivated in acres	−0.02**	−0.02*		
	(0.01)	(0.01)		
Number of children (Age: below 18 years)	−0.02**	−0.04*	−0.02*	−0.04**
	(0.01)	(0.02)	(0.01)	(0.02)
Number of adults (Age: 18 years and above)	0.04***	0.03	0.04***	−0.04***
	(0.01)	(0.02)	(0.01)	(0.01)
Small family (Household size<= 4; ref. large family)	0.47***	0.38***	0.54***	0.38***
	(0.05)	(0.07)	(0.06)	(0.06)

Figures in the parenthesis are the robust standard errors and clustered at the state level. Significance level: *$p<0.1$; **$p<0.05$; ***$p<0.01$

Source Authors' computations based upon national employment and unemployment surveys (1993–94 and 2009–10)

financial security, whether it is pension, gratuity or provident fund. Once again, it signifies that high proportion of working elders are participating in labor due to the necessity out of the poverty laden conditions.

Finally, the statistics related to the number of adults in the households and proportion of small families shows that the nuclearization is increasing in India and elders from small families are more likely to work for wages. A direct possible implication for the elderly population of this increasing nuclearization and higher participation from smaller families could be in terms of the decreasing social/joint family support available to them, a concern we raised earlier while motivating the need for the present study.

Determinants of the Wage Labor Participation of the Elderly

Next, we present the estimates of the determinants of the wage labor participation of the elderly. Table 5 reports these estimates which are the results from the probit regression of wage labor participation on the identified independent variables. In urban areas, the

probability of wage labor participation shows a significant (at the 1 % level of significance) negative relationship with age.[11] The same is true for rural areas also but the significance holds only for the year 1993–94 (at the 10 % level of significance). Also, the magnitude of the negative association between wage labor participation and the age of the elderly has come down slightly during the study period. This might show that the extent of decrease in wage labor participation due to increase in age of the elderly has come down slightly during the above period.

Coming to the social affiliations like caste and religion, elder SCs and STs in the rural areas have higher probability of participating in wage labor than the elders belonging to the other castes in 2009–10. However, in 1993–94, only the elders belonging to the SC category had a higher chance of participating in the wage labor market. STs in India have typically resided in physically isolated forests and mountainous regions with their livelihoods depending on the produce from the forests and therefore their significantly higher chance of wage labor participation in 2009–10 (a departure from 1993 to 94) might be due to deforestation and other changes due to economic development. The significantly higher probability of SC elders to participate in the wage labor (in both survey years) compared to the other castes elders is not surprising given the fact that SCs in India constitute the major part of the agricultural laborers and the landless laborers class in the rural areas. In the urban areas caste affiliation doesn't seem to contribute any significant difference in 1993–94 but elder SCs are significantly more likely to participate in the wage labor than the OC elders in 2009–10. There is no significant difference between the Hindu and the Muslim elders as far as wage labor participation is concerned.

In the rural areas older individuals from "agricultural and other laborer" households are significantly more likely to participate in wage labor than the "self-employed" in agriculture, "self-employed in non-agriculture" and "other households". Also, the difference has increased during the last two decades. This finding indicates that the older individuals from poorer households (agricultural and other laborer households) have more compulsion to work than the other households and the situation has worsened during the period 1993–94 to 2009–10. Similar results are obtained for urban areas, where elders from "casual labor" household type are significantly more likely to participate in the wage labor than the relatively better off households.

Somehow, education doesn't play a systematic role in wage labor participation. In urban areas, for both the years, elders with schooling from secondary to higher secondary have a significant different (lower) probability of participation in wage labor than the illiterate (no formal schooling) elders. The chances of wage labor participation of elders in all other schooling categories are not significantly different from those who are illiterate (no formal schooling).

Another variable of interest is the wealth of the households (to which the elders belong) captured by the monthly per capita consumption expenditure (MPCE) quintiles to which the households belong. It is found that in rural areas, the older individuals from households with lower MPCE quintiles (Q1, Q2, and Q3) have significantly higher chance of working in wage labor compared to the elders from the richest quintile (Q5). This finding has remain consistent and has not changed from 1993–94 to 2009–10. The findings remain

[11] The coefficient of the square of age term is positive and significant but its magnitude is almost zero resulting in our interpretation based on the linear term (age) only.

Table 6 Heckman sample selection regression: determinants of weekly number of days of work of the elderly in India

	Rural		Urban	
	1993–94	2009–10	1993–94	2009–10
Age	−0.03	−0.13	0.19	−0.09
	(0.10)	(0.12)	(0.12)	(0.15)
Square of age	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Caste (ref. other castes)				
ST	0.12	0.21	−0.10	0.44*
	(0.10)	(0.14)	(0.20)	(0.22)
SC	0.04	0.17***	−0.18*	−0.32**
	(0.09)	(0.06)	(0.10)	(0.13)
Religion (Ref. Hindus)				
Muslim	−0.19	0.32*	0.03	0.19*
	(0.11)	(0.19)	(0.13)	(0.10)
Others	−0.11	0.25*	−0.08	−0.25
	(0.09)	(0.13)	(0.15)	(0.19)
Married	0.26	−0.51	−0.17	−0.20
	(0.37)	(0.35)	(0.18)	(0.40)
Female	−0.09	−0.33***	−0.16	−0.46***
	(0.10)	(0.09)	(0.14)	(0.09)
Household type for rural (Ref. Labor type)				
Self employed in agriculture	−0.23**	−0.60**		
	(0.10)	(0.26)		
Self employed in non agriculture	−0.01	−0.09		
	(0.10)	(0.16)		
Others	−0.01	0.04		
	(0.15)	(0.14)		
Household type for urban (Ref. Reg. wage)				
Casual labor			−0.27**	−0.88***
			(0.12)	(0.19)
Self employed			−0.14	−0.20
			(0.13)	(0.14)
Others			−0.01	−0.01
			(0.18)	(0.13)
Education (Ref. Illiterate)				
Below primary	−0.04	0.05	0.00	−0.01
	(0.10)	(0.12)	(0.09)	(0.12)
Primary and Middle	−0.10	0.10	−0.21**	−0.10
	(0.11)	(0.14)	(0.09)	(0.18)
Secondary and higher secondary	−0.29*	−0.18	−0.02	0.02

Table 6 (continued)

	Rural		Urban	
	1993–94	2009–10	1993–94	2009–10
	(0.17)	(0.23)	(0.13)	(0.10)
Above higher secondary	−0.97	−0.45	−0.28*	−0.06
	(0.59)	(0.43)	(0.15)	(0.19)
Per capita monthly consumption quintiles (Ref. Q5)				
Q1 (poorest)	0.27**	0.61***	0.17	−0.28*
	(0.12)	(0.18)	(0.22)	(0.14)
Q2	0.17	0.45**	0.27	−0.04
	(0.16)	(0.19)	(0.17)	(0.10)
Q3	0.00	0.56***	0.14	−0.29**
	(0.15)	(0.19)	(0.12)	(0.11)
Q4	−0.02	0.35*	0.11	−0.05
	(0.14)	(0.17)	(0.17)	(0.10)
Land cultivated in acres	0.04***	0.04***		
	(0.01)	(0.02)		
Number of adults (Age: 18 years and above)	−0.10***	−0.41***	−0.15***	−0.28***
	(0.01)	(0.02)	(0.02)	(0.03)
Small family (Household size<= 4)	−0.30***	−0.99***	−0.54***	−0.83***
	(0.10)	(0.07)	(0.08)	(0.17)
Daily wage rate (Rs) /1000	0.21***	4.78***	0.04***	0.24
	(0.03)	(1.14)	(0.01)	0.19
N	1898	1598	933	823

Figures in the parenthesis are the robust standard errors and clustered at the state level. Significance level: *$p<0.1$; **$p<0.05$; ***$p<001$

Source Authors' computations based upon national employment and unemployment surveys (1993–94 and 2009–10)

similar in urban areas as well. Poorer the household, higher is the chance of participating of the elders in the wage labor. However, this relationship is found to be weaker in 1993–94 reiterating once again the fact that the older individuals from poorer households are becoming more compelled to work for wages. Expectedly, the elders from smaller families, with 4 or less household members are more likely to participate in wage labor in both rural as well as urban areas.

Determinants of the Weekly Days of Work Supplied by the Elderly

We now present the estimates of the model of the weekly number of days of work of the elderly working population from the Heckman two step sample selection regression. It is worthwhile to note that the inverse mills ratio came out to be insignificant in all the cases indicating the absence of any significant sample selection bias. Therefore, Table 6 presents the estimates of the determinants of weekly work days obtained using

ordinary least squares method for only those elders, who participated in the wage labor market.

The results show that, in both urban as well as rural areas (in 2009–10), the weekly days of work supplied by the working population of the elderly doesn't have any significant relationship with their age. Though not significant, the nature of relationship as evident from the sign of the coefficient is negative.

As far as caste affiliation is concerned, elders belonging to ST category do not show any significant difference compared to the elders belonging to the "Other" castes category except for the urban areas in 2009–10, where a significant and positive relationship is found for ST elderly and their weekly labor supply. Urban elders, who belong to SC category show a significantly lower weekly number of days of labor supply in 2009–10, compared to the upper (other) caste elders. However, rural SC elders are found to work for significantly higher number of days in 2009–10. Interesting trends are also found for Muslim elders, who participated in wage labor. Their weekly number of days of work supplied did not show any significant difference in 1993–94 in comparison to the Hindu elders. Nevertheless, in 2009–10, Muslim elders are found to supply more labor than their Hindu counterparts. It is also found that female elders from both rural and urban areas worked for significantly lower number of days compared to male elders in 2009–10.

Coming to other determinants, it is found that the urban working elders from "casual labor" households worked for significantly (at 1 % level of significance) lower number of days than those from "regular wage" households (2009–10). The relationship, in 1993–94 was similar but holds true at the 5 % level of significance. There can be two possible reasons for this phenomenon – first, it might be possible that the casual laborers among the elders are maintaining some kind of labor-leisure schedule where they work for some days and once they achieve a threshold level of weekly earnings they stop working on the remaining days of the week; the second reason might be related to the availability of the work for the casual laborers where the work is available for lower number of days to the casual laborers compared to the individuals on regular wages.[12]

Education does not seem to have any major significant effect (at the 5 % level of significance or higher) on weekly days of work supplied in rural or urban areas in 1993–94 as well as 2009–10. This is true except for the urban elderly, educated just above the primary level who were found to work for lesser number of days in a week in comparison to the illiterate (no formal schooling) elders. Interestingly, the coefficients of the wealth status of the households (measured in terms of the MPCE quintiles) indicate that the working elders from the poorest households show a significant and positive association with the weekly days of work in 2009–10 and this relationship is found to be much stronger when compared to 1993–94. This suggest that the compulsion for work for the elderly poor population in rural areas in comparison to the richer counterparts is more in 2009–10 that that in 1993–94. Coming to urban sector, no significant relationship of MPCE quintiles with weekly days of labor supply is found in 1993–94. But, in 2009–10, working elders from the poorest households (those belonging to quintile Q1) and those from households in MPCE quintile Q3 are found to work for significantly less number of days compared to the elders from the richest

[12] As the data is a secondary data we don't have enough information to ascertain which reason is the dominant one.

households (belonging to the quintile Q5). This is an intriguing finding given the earlier result that the elders from the poorer households participate in wage labor (significantly) more than the relatively non poor households.

Another interesting finding is related to the elders in the smaller families (less than or equal to four members), where the working elders are found to supply significantly lesser number of days of weekly work compared to the larger families. This is again interesting because earlier we found that the probability of participation of elders from small families in wage labor was significantly higher than those from larger families.

Also, the weekly days of work supplied by working elders shows significant decrease with the increase in number of adults in the household. This supports our earlier argument that joint families, with higher number of individuals in the working age group offer some kind of social and financial security to the older population.

Robustness of Findings

Our findings on wage labor participation (based on probit regressions) indicate that the older individuals from poorer households are more likely to participate in wage labor. To strengthen our inference and as a robustness check exercise, we use local polynomial smoothing regressions and estimate the probability density function of participation in wage labor vis-à-vis the log of monthly per capita consumption expenditure (MPCE) which is a commonly accepted proxy indicator of household income status.[13] The probabilities of participation in wage labor of the rural and urban elders by their household income status (proxied by consumption expenditure) for 1993–94 and 2009–10 is presented in Fig. 1. From the figure it can be seen that, the older population in 2009–10 has a higher probability of participation in wage labor at the lower levels of MPCE compared to the older population of 1993–94 in the rural areas. The results are similar for urban areas. The simulations therefore support our findings that the older individuals from the poorer households are more compelled to participate in wage labor and more so in 2009–10 compared to 1993–94.

Discussion and Conclusions

In this paper, we analyze labor participation by older individuals in India and study the changes in determinants of their wage labor participation and weekly number of days of work supply. While doing so, we provide the estimates separately for the years, 1993–94 and 2009–10 and for rural and urban areas. This is done to observe the changes in response to labor participation and supply, if any, over the past two decades. Before beginning with the estimations, we presented some ethnographic insights collected from a field survey in some villages of India to show that with thin financial support from children and government, the elderly population is compelled to work for wage labor.

To model wage labor participation of the elderly, we use probit regressions and find that the elders from the poorer households and the weaker sections tend to

[13] For more on the methodology, please refer Fan and Gijbels (1996).

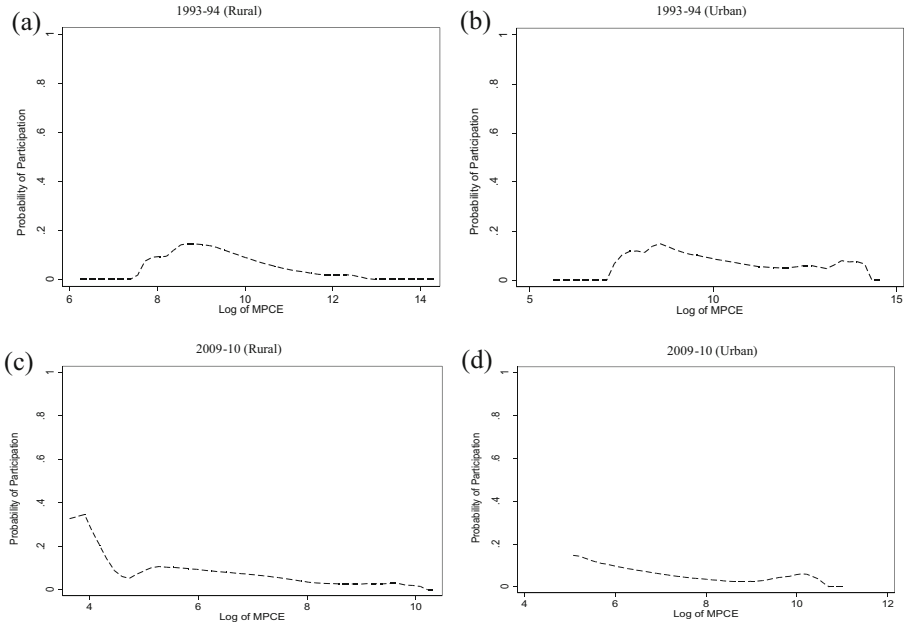

Fig. 1 Local polynomial smoothing plots of the probability of participation against consumption expenditure (as a proxy of income) status. **a** 1993–94 (Rural) **b** 1993–94 (Urban) **c** 2009–10 (Rural) **d** 2009–10 (Urban)

have higher probability of participation in wage labor and more so in 2009–10. For example, in rural areas the older individuals from agricultural and other laborer households are significantly more likely to participate in wage labor than the self-employed in agriculture, self-employed in non-agriculture and other households. Also, the difference has increased during the last two decades. Further, rural older individuals belonging to SCs and STs (historically disadvantaged castes) have higher probability of participating in wage labor than the elders belonging to the other castes in 2009–10, whereas, only the elders belonging to the SC category had higher chance of participating in the wage labor market in 1993–94.

The story is similar in urban areas too. The probability of wage labor participation of the elderly shows significant negative relationship with their age but the magnitude of this relationship itself has come down slightly during the period 1993–94 to 2009–10. Also, the elderly SCs are significantly more likely to participate in the wage labor than the OC elders in 2009–10 which was not the case in 1993–94. Further, the elders from casual labor household type are significantly more likely to participate in the wage labor than the relatively better off households. Moreover, the older individuals from households with lower MPCE quintiles (Q1, Q2, Q3 and Q4) are significantly more likely to participate in wage labor than the elders from the richest quintile (Q5). Poorer the household, higher is the chance of participating of the elders in the wage labor. This relationship is found to be stronger in 2009–10 than that in 1993–94.

Furthermore, we find that the elders from smaller families (with 4 or less household members) are more likely to participate in wage labor in both rural as well as urban areas. It implies that, as children leave their parents and the family becomes smaller, older population becomes compelled to work to cope up with the financial needs.

To model the weekly number of days that the working older individuals supply for wage labor, we apply Heckman two stage selection model. For rural areas, we find that the poor elderly are compelled to work for higher number of days in a week in comparison to the richer individuals and this relationship has become stronger in 2009–10. Surprisingly, either negative or no major significant association is found between the weekly days of labor supply and the poverty correlates like lower caste affiliation, casual or agriculture labor household types and lower income status. This is unlike the earlier case, where significant and positive relationship was found between the poverty correlates and probability of participation in wage labor.

The above unexpected but intriguing finding may be explained by Table 7, which presents the percentage of older individuals engaged in manual labor work (agriculture, casual and other laborers) and regular salary works (salaried workers) as a proportion of the total older individuals who have participated in wage labor. The table shows that a majority of the working older individuals are among the two types: first, agricultural and other casual laborers and second, regular wage or salaried workers. The former type, especially predominate in the rural sector (typically involve the poor with lower skills) and involves manually challenging work and the older individuals have to supply more labor for sustaining. However, in urban areas the dominant category is regular wage/salaried class where the number of weekly days of work is regulated by the rules of the public/private enterprise (usually 6 days) where an individual works and may not vary by the desire or compulsion of an individual to work more or less. Also, the second dominant group is that of casual laborers, in which case, the arguments presented in the case of rural sector will apply.

Our findings carry some important policy implications. India has been able to achieve unprecedented economic growth during the past two decades. However, as per United Nations, an estimated 29.8 % of Indians still live below poverty line (United Nations Development Program 2012). It is also worth noting that eight Indian states have higher number of poor than 26 poorest African nations combined (Alkire and Santos 2010). To address this problem and eradicate poverty, the Government of India has initiated a few public works programs; the most recent, highly focused and one of the much talked about among them is the MGNREGA. However, due to the nature of work demanded (unskilled and laborious) in MGNREGA, older population is often

Table 7 Proportion of older individuals engaged in manual labor (agriculture, casual and other laborers) and regular salary work out of the total older individuals who have participated in wage labor

		Agriculture and other manual labor (%)	Regular/salaried Worker (%)
Rural	1993–94	76.34	9.11
	2009–10	79.16	12.83
Urban	1993–94	37.15	48.72
	2009–10	51.40	46.66

Source Authors' computations based upon national employment and unemployment surveys (1993–94 and 2009-10)

unable to participate in the program. At present, perhaps the only governmental social welfare program for the older population is the IGOANPS. But it suffers from some serious shortcomings and limitations both in terms of coverage as well as the amount of pension that is provided. The eligible households are only those, with below poverty line (BPL) cards. There is enough evidence to show that there is high exclusion of poor households from the list of BPL card holders (Dreze and Khera 2010). Further, the amount of pension received by the beneficiary individuals is too meager. We in this paper show that the coping strategy for the older members from the poorer, weaker and smaller households has been to work for wage labor. The findings call for increased attention on the part of the government to provide adequate social security benefits to the needy older population. Clearly two policy decisions need to be taken: first, to increase the pension amount of those covered under the IGOANPS and synchronize it with some basic amount needed for sustenance and second, bring all those older people who are not covered under any pension scheme under the ambit of IGOANPS or any other financial assistance program.

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Appendix 1 Theoretical Framework

We use standard labor participation model based on household models of time allocation (Mincer 1962; Becker 1965; Smith 1994) and adopt the standard one time static labor supply model based on consumer theory. The utility function, U for an individual can be defined as

$$U = U(C, L; X) \tag{A1}$$

where C represents the consumption level, L represents the leisure and X indicates other

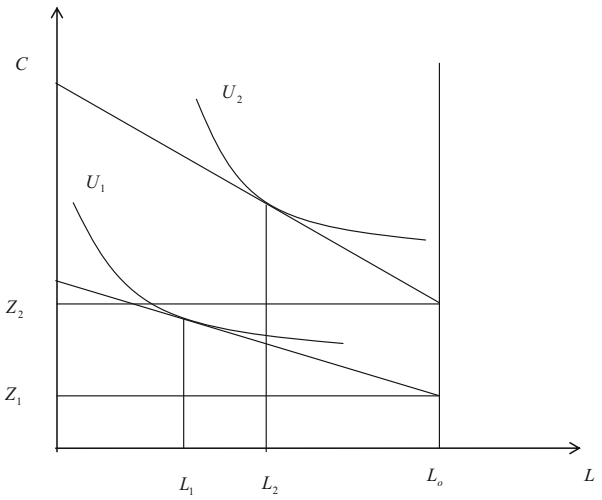

Fig. 2 Labor force participation with changes in transfer from children

Table 8 Labor force characteristics of the elderly (60 and above): 1999–2000

	Rural		Urban	
	Male	Female	Male	Female
Labor force participation rate (principal usual activity)/1000	640	218	402	94
Worker to population ratio (principal usual activity)/1000	622	174	386	82
Per thousand distribution of elderly by principal usual activity status				
Self employed as: own account worker+employer+unpaid family worker	477	104	279	51
Regular salary/wage employee	10	3	57	14
Casual wage laborer	135	67	51	17
Unemployed and sought work	1	0	0	0
Attended educational institution	1	1	1	2
Attended domestic duties	6	266	11	394
Attended domestic duties+engaged in other works	3	134	2	42
Rentiers, pensioners, remittance recipients	61	30	269	51
Not able to work due to disability	56	51	52	57
Beggars and prostitutes	3	3	2	1
Others	246	340	276	370

*Source*Authors' computations based upon national employment and unemployment survey (1999–00)

individual and household characteristics like age, caste, religion and others. The consumption and time constraints (budget constraints) may be expressed in the form of

$$C + WL = Z + WL_0 \tag{A2}$$

where W is the wage rate, Z is non-labor income and L_0 is the total time available. Assuming that the individual maximizes her/his utility function over the time constraint, we get the optimization solution (first order conditions)

$$U_C(C, L; X) = \lambda \, and \, U_L(C, L; X) \geq \lambda W \tag{A3}$$

Here λ is the marginal utility of income. If the Eq. 3 holds strictly, then the individual is not working and the total time available to her/him, L_0 becomes her/his leisure, L. Taking the equality case, we get $U_L(C,L,X)=\lambda W_R$ where W_R is the reservation wage below which the individual would not participate in labor market. So we get,

$$W_R = U_L(C, L) \Big/ U_C(C, L) \tag{A4}$$

Hence an individual would supply positive labor, only if her/his wage, $W > W_R$. For the elders in the household, the utility of leisure may be high, which raises their reservation wage, W_R, inducing them not to participate in labor force.

However from (2), we find that $C=W(L-L_0)+Z$, which suggest $L-L_0$ is the hours of wage labor supplied. In our case, Z can be conceived as the income transferred by the children to the older parents. So if Z increases, the consumption of the parents increases, which decreases $U_C(C,L)$ leading to a rise in W_R inducing the elders not to

Table 9 Labor force characteristics of the elderly (60 and above): 2004–05

	Rural		Urban	
	Male	Female	Male	Female
Labor force participation rate (principal usual activity)/1000	631	199	356	86
Worker to population ratio (principal usual activity)/1000	630	197	355	86
Per thousand distribution of elderly by principal usual activity status				
Self employed as: own account worker+employer+unpaid family worker	507	134	268	50
Regular salary/wage employee	12	9	55	19
Casual wage laborer	110	59	31	17
Unemployed and sought work	1	1	1	0
Attended educational institution	1	1	1	1
Attended domestic duties	7	242	10	404
Attended domestic duties+engaged in other works	5	155	1	64
Rentiers, pensioners, remittance recipients	89	51	355	80
Not able to work due to disability	65	55	52	46
Beggars and prostitutes	—	—	—	—
Others	202	296	224	319

Source Authors' computations based upon national employment and unemployment survey (2004–05)

participate in wage labor. But, at low levels of Z, the individuals might be induced to work. This has been represented graphically in the Fig. 2.

It can be seen from the figure that as we move from Z_2 to Z_1 (higher transfer from children to lower transfers), the leisure enjoyed by the elders decreases (from L_2 to L_1). In other words, labor participation of the individuals should increase.

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