

Social Pension and Labor Participation among Elderly Urban Residents in China

Ning Yang

South China Agricultural University, Guangzhou 510000, Guangdong, China

Abstract: China is facing the problem of an aging population. So, the impact of social pension income on labor supply is of great importance for the development of the society's economy. This article uses data from the 2017 China Household Finance Survey (CHFS) and employs probit regression to investigate the effect of pension income on the labor force participation decision of urban elderly people. The regression analysis results indicate that social security pension income has a significant negative effect on the labor force participation decision.

Keywords: Social pension, Labor participation, China.

1. Introduction

China is facing the problem of an aging population. On the one hand, aging increases the burden of supporting the elderly on society; on the other hand, aging and declining fertility rates lead to a decrease in the population of working-age individuals, resulting in a decline in the size of the working-age population. However, the impact of these issues on society is largely dependent on when elderly individuals stop working. Against the backdrop of aging, the importance of social pension insurance is highlighted, as it can alleviate the economic pressure on the elderly and improve their quality of life. So, the impact of social pension insurance on labor supply is of great importance for the development of the society's economy.

After 2014, China's social pension insurance has multiple parallel systems, which can be mainly divided into three types: the Public Employee Pension insurance for civil servants and employees in non-profit government institutions, the basic pension insurance for employees (Also so call as Enterprise Employee Basic Pension, EEBP)[1], and the social pension for urban and rural residents.

There is a close relationship between pension insurance and the labor supply of the elderly. The labor-leisure model is a basic theoretical model commonly used to analyze the relationship between income and labor supply. As income changes, income and substitution effects will affect an individual's decision regarding labor supply. For elderly individuals who have started receiving social pension insurance benefits, pension income is a major source of non-labor income, and its impact on labor supply will also be reflected through income and substitution effects.

2. Previous Literature

As a form of non-labor income, how social pension insurance benefits affect labor decisions has been the subject of research, but there is no consensus on the findings so far.

On one hand, some argue that social pension insurance has an inhibitory effect on labor participation, where the income effect of pension benefits dominates labor supply. For example, Boskin and Hurd (1978) used historical retirement data from the US Social Security Administration and concluded that social pension benefits would lead workers to

exit the labor market earlier[2]. Danzer (2013) used difference-in-differences, instrumental variables, and regression discontinuity to conclude that increasing basic pension income would reduce labor supply among the elderly[3].

On the other hand, some research results suggest that social pension insurance is not related to labor supply. Burtless (1986), based on historical retirement survey data from the US Social Security Administration, found that elderly retirement decisions are determined by factors such as current unemployment rates and income levels, while pension income has little correlation with elderly retirement decisions [4].

3. Data and Methodology

This article uses statistical data from the China Household Finance Survey (CHFS) in 2017. CHFS is a sampling survey project conducted by the China Household Finance Survey and Research Center nationwide, collecting micro information on household finance, including housing assets and financial wealth, liabilities and credit constraints, income and consumption, social security and insurance, intergenerational transfer payments, demographic characteristics and employment, and payment habits. It provides high-quality micro-level household finance data for academic research and government policy, and comprehensively describes household economic and financial behaviors.

Based on the definition of elderly people in China's "Law on the Protection of the Rights and Interests of the Elderly", this study selected samples of individuals aged 60 and above residing in urban areas. After excluding samples with missing key information, a total of 15,282 samples from the 2017 dataset were used for analysis in this article.

The focus of this article is on the impact of social pension on labor participation decisions. In addition to this, various control factors are considered, including personal and household characteristics. Personal characteristics include gender, age, education level, and health status, while household characteristics include marital status, household size, per capita household income, household registration status, proportion of minors in the household, and proportion of elderly people in the household. Furthermore, as China has a large land area and there are regional differences in the level of social security, regional variables are also included as

control variables in the model.

The specific variable names and their definitions are listed

in the following table 1:

Table 1. Descriptive statistics

variables	explanation	mean	SD.
pen_inc	Monthly pension income	1886.43	1806.81
labor_part	Whether or not participate in labor, 1 for yes, 0 for no	.16	.37
male	Gender, 1 for male, 0 for female	.47	.5
age	Age	69.69	7.66
edu	Years of education	7.86	4.34
health	Self-rated health status, on a scale of 1 to 5, with 5 being the healthiest	3.16	1
hhsiz	Family size	2.99	1.58
hukou_farmer	Household registration status, 1 for rural household registration, 0 for non-agricultural household registration	.33	.47
married	Marital status, 1 for married, 0 otherwise	.82	.38
hhincpp	Annual per capita household income	31495.89	35237.38
old_rate	The proportion of family members aged 60 and above to the total family members	.73	.31
min_rate	The proportion of family members aged 18 and below to the total family members	.07	.13
pen1	Not participating in social pension insurance	.11	.31
pen2	Participating in social pension for urban and rural residents	.37	.48
pen3	Participating in basic pension for employees	.31	.46
pen4	Participating in pension for civil servants and employees in non-profit government institutions	.22	.41
east	Eastern region	.53	.5
west	Western region	.21	.41
mid	Central region	.26	.44

Descriptive statistics of each variable are shown in the table1 above. Descriptive statistics reveal that the average monthly pension income in the sample of this study is 1868.71 yuan. The proportion of the sample participating in labor is 16%, with an average monthly working time of 13.09 hours. In terms of individual characteristics, males account for 47% of the sample, with an average education level of 7.75 years. Regarding household characteristics, the average proportion of family members aged 60 and above is as high as 0.73, which reflects to some extent the aging level of Chinese families and the significant pressure of supporting elderly family members.

The labor force participation of the elderly is a binary variable, with only two possible outcomes: a value of 1 when the sample participates in the labor force and a value of 0 when they do not. It is a discrete data type, not a continuous data type, and therefore, using the OLS model may result in biased estimates. Hence, this study uses the Probit model to investigate the effect of social pension income on the labor force participation of the elderly. The Probit model specification is as follow:

$$y_1^* = c_1 + \beta_1 pen_inc + \gamma_1 X + \mu$$

$$Y_1 = \begin{cases} 1, & y_1^* > 0 \\ 0, & y_1^* \leq 0 \end{cases}$$

In the above equation, pen_inc represents the pension income from social old-age insurance; X is a series of control variables, mainly including personal characteristics, household characteristics, and regional characteristics of the sample. Y₁ is the dependent variable, representing labor participation, with a value of 1 indicating labor participation and 0 indicating no participation. μ is the random disturbance term. c₁ is the constant term.

4. Result and Discussion

This section examines the impact of pension income from social endowment insurance on the labor supply of urban elderly people. Using a probit model as shown in Table 2, we analyze the effect of pension income from social endowment insurance on the labor participation decision of urban elderly people.

From the regression analysis results, it can be seen that pension income from social endowment insurance has a significant negative impact on the labor participation decision of urban elderly people. That is, the more pension income they receive, the more they tend to reduce their labor supply. Based on the marginal effects reported in the table, for every 1% increase in pension income from social endowment insurance, the probability of labor participation decreases by 2%.

Regarding personal factors, gender, age, education years, and health status all have significant impacts on labor supply. Men have a 10% higher probability of labor participation than women, which may be the result of gender-based division of labor within households. As for age, the older the person, the less likely they are to participate in labor. Education years have a significant negative impact on the labor participation decision, that is, the higher the education level of the elderly person, the more likely they are to not supply labor. For every one additional year of education, the probability of labor participation decreases by 0.4%. Health status also has a significant positive impact on labor decision. Based on the marginal effects, for every one-point increase in self-rated health, the probability of labor participation increases by

3.1%.

As for family factors, marital status, the proportion of elderly people and minors in the family do not have a significant impact on labor participation and labor time. Family size has a significant impact on whether urban elderly people participate in labor at a 10% significance level. From the marginal effects, for every additional family member, the probability of labor participation decreases by about 0.3%. It can be seen that the more people in the family, the smaller the labor pressure shared by each member. Regarding family income, the higher the per capita income, the more likely they are to participate in labor. Rural household registration is also

a significant factor. Individuals with rural household registration have an 18.1% higher probability of labor participation compared to non-agricultural household registration.

Finally, in this regression, the region where the sample is located and the type of social insurance participated in are controlled. In this regression analysis, individuals in the central and western regions have significant differences compared to those in the eastern region. There are also significant differences between different types of social pension insurance participation compared to not participating in any social endowment insurance.

Table 2. Result of regression analysis

variables	Coefficient	probit labor_part	Marginal Effect
pen_inc	-0.110*** (0.0115)		-0.020*** (0.002)
male	0.548*** (0.0302)		0.101*** (0.005)
age	-0.0676*** (0.00262)		-0.012*** (0.000)
edu	-0.0134*** (0.00418)		-0.002*** (0.000)
health	0.170*** (0.0144)		0.031*** (0.003)
hhsz	-0.006* (0.0180)		-0.003* (0.003)
married	0.012 (0.0480)		0.002 (0.009)
hukou_farmer	0.704*** (0.0408)		0.130*** (0.006)
ln(hhincpp)	0.0460*** (0.0118)		0.008*** (0.002)
old_rate	0.0931 (0.0904)		0.017 (0.017)
min_rate	0.116 (0.155)		0.021 (0.029)
mid	0.0618* (0.0346)		-0.011* (0.006)
west	0.124*** (0.0361)		0.023*** (0.007)
pen2	0.610*** (0.0741)		0.107*** (0.010)
pen3	0.271*** (0.0930)		0.041*** (0.013)
pen4	0.249*** (0.0967)		0.037*** (0.013)
Constant	2.305*** (0.237)		
Observations		15,282	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5. Conclusion

The monthly pension amount of social old-age insurance has a significant inhibitory effect on whether individuals participate in labor. That is, the higher the monthly pension amount, the more individuals tend to withdraw from the labor market and not participate in labor. Therefore, as the level of

social old-age security increases, the labor supply of the elderly will decrease.

It can be foreseen that with the increase of the coverage and level of China's social security system, the social security pension will inevitably reduce the labor supply of urban elderly people who have reached the retirement age and are eligible to receive the pension as non-labor income. Under the

income effect of pension income, they may invest more time in leisure activities, including providing family care or intergenerational care. On the one hand, urban elderly people can be liberated from labor for economic income and better enjoy their later life and develop personal interests; on the other hand, the time invested by the elderly in caring for their families can reduce the family burden on young people, indirectly releasing their labor force for society and enabling them to invest more energy into work.

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