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The Impact of Intergenerational Care on Labor Supply for Children

-- Panel Regression Analysis based on Follow-up Survey Data

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Abstract

At present, the aging population in our country is becoming more severe. Helping elderly parents take care of their children can increase the employment rate of young children and promote the growth of labor supply. This article conducted panel regression analysis using data from CFPS2010, CFPS2012, and CFPS2014, and conducted scalability analysis by gender and village. The results showed that women had a higher promotion effect on intergenerational care than men, and the promotion effect on urban users was also higher than that in rural areas. This article addresses endogeneity issues based on the indicator of whether parents are still alive, and conducts robustness tests through annual robust regression and linear probability models. Finally, based on the research conclusions of the model, this article proposes targeted policy recommendations for elderly care and realizing the social value of the elderly: recognizing the value of the elderly, encouraging harmonious family relationships, improving the supply structure through policies that encourage intergenerational care, and promoting employment rates.

Keywords

Intergenerational Care; Labor Supply; Follow-up Survey; Panel Regression.

1. Introduction

1.1. Research Background

Employment is the foundation of people's livelihood, and sufficient and stable labor supply is the guarantee of the sustainable development of the national economy. On the one hand, with the continuous downturn of fertility rate and the general extension of life expectancy, the aging of population will become the norm of Chinese society; on the other hand, according to the "World Population Outlook 2022" report released by the United Nations, the supply of young labor force in the future is potentially insufficient, which will seriously restrict the improvement of sustainable and high-quality development level of our economy. How to guarantee the social labor supply has become an urgent problem to be solved.

Different from the independent family culture of European and American countries, many East Asian countries represented by China have close social ties and economic exchanges between multiple generations of direct family members, and the elderly parents play a pivotal role in the family [1].

Therefore, from the connotation of IC(Later referred to as IC) , using the 2010,2012 and 2012 in 2014 CFPS data, build a panel model and empirical analysis of the elderly IC care for adult married children labor supply mechanism, and on the basis of development of urban and rural

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and gender factors on the effect of heterogeneity, from the elderly value and perfect birth security system measures are proposed, in order to better promote the social labor supply and economic sustainable development [2].

1.2. Research Significance

1.2.1. Theoretical Significance

This paper analyzes the influence of IC on children's labor supply from the perspectives of labor participation and labor time, and carries out an expansion analysis on the two factors of urban and rural areas and gender. It not only comprehensively describes the internal influence mechanism of IC support on children's labor supply, but also enriches the existing theoretical achievements and research perspectives.

1.2.2. Practical Significance

By analyzing the typical fact that family IC care affects the labor supply of adult married children, this paper demonstrates the mechanism of IC care on children's labor supply from the perspectives of labor participation and labor time. Under the background of population aging and the liberalization of the comprehensive "two-child" policy, it provides beneficial policy support to ensure sufficient and stable labor supply, realize high-quality economic development and promote Chinese-style modernization.

2. Data and Model

2.1. Data Introduction

The empirical analysis of the present paper uses the survey data from CFPS2010,CFPS2012, and CFPS2014 [3].Considering the Household registration(Later referred to as HR) and gender differences on the impact of labor supply, in the use of total samples on measurement model analysis at the same time, also created the samples, respectively for agricultural household registration (rural residents) and non-agricultural HR (urban) adult children of labor supply and male labor and female labor extension analysis.

2.2. The Introduction and Treatment of the Variables

There are many factors affecting labor supply. Based on the relevant theories and the reality of China's labor market, the explanatory variables used in the empirical analysis in this paper can be divided into four categories: personal characteristics(age,gender,household registration ,schooling,marriage,healthy), family characteristics(asset,Paternal age,Maternal age ,colivep,childage6), work characteristics(enterprise nature,firm size,occupation nature), and macro factors(Per GPD(pgdp)).

2.3. Descriptive Statistical Analysis

Table 1. Descriptive statistics

Variable	Mean	SE	Min	Max	N
gender	0.44	0.50	0	1	13,173
HR	0.18	0.38	0	1	13,077
workif	0.68	0.47	0	1	12,970
workhourw	47.05	23.64	0.1	186	4,325
intergencare	0.35	0.48	0	1	13,173

According to the data in the Table1, there are 21 valid variables in this paper, and the sample size of the most variables is 13173, and the least number is 4257. Among them, the sample size of the core explanatory variables and the explained variables is sufficient, generally meeting the basic sample size required for regression. (Limited to space, only the key indicators are shown here.)

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2.4. Measurement Model

In the study of labor supply, we should not only carry out theoretical analysis and analyze the causes of the phenomenon, but also carry out empirical analysis through data to provide a strong practical basis for theoretical analysis. Socioeconomic phenomena are often affected by many factors. In order to better analyze and predict the changes of economic indicators, so fixed effect models will be selected for measurement analysis in this paper. The specific measurement model is as follows.

$$workif_{it} = \beta_0 + \beta_1 * intergencare_{it} + \beta_2 * W_{it}^{j} + \gamma_{it} + \tau_{it} + \varepsilon \quad (1)$$

$$work\textit{hour}w_{it} = \beta_0 + \beta_1 * intergencare_{it} + \beta_2 * W_{it} + \gamma_{it} + \tau_{it} + \varepsilon \quad (2)$$

3. Analysis of Estimation Results

3.1. The Benchmark Regression Results

Table 2 reports the fixed effects panel model regression results for the effects of family care behavior on child labor participation in older adults. From Y2 and model Y4, we can find that under the premise that other variables remain the same, IC significantly increased the labor participation rate of children and increased the probability of 4%. However, in the model where both time and individual are fixed (Y4) did not significantly improve the time of children participating in labor. The reason may be as follows: for working hours, individual differences and time differences are relatively obvious, but if the differences are ignored (especially individual differences), the model is not thoroughly studied, so the extended analysis needs to be carried out later.

From an economic point of view, IC is actually a free service provided by elderly parents for their adult children, and the economic cost of buying these services from the market or the cost paid by their own care is the opportunity cost of IC. If the parents are unable to provide IC care services, the children will weigh the cost of market purchases against their own provision and decide whether to continue to work [6].

Table 2. Results of the benchmark regression of IC care and children's labor participation

variable	Y1	Y2	Y3	Y4
intergencare	0.0270***	0.0410***	1.0000***	-0.0407***
	(-0.0104)	(-0.00991)	(-0.072)	(-0.008)
gender	0.154***	0.161***	8.691***	7.254***
	(-0.0109)	(-0.0104)	(-0.813)	(-0.803)
HR	-0.149***	-0.123***	1.696*	-0.609
	(-0.0137)	(-0.013)	(-1.004)	(-0.996)
other controlled variable	control			
Individual fixation effect	N	Y	N	Y
Year fixed effect	N	Y	N	Y
N	7977	7977	3882	3882
R2	0.2921	0.2846	0.2946	0.2363

3.2. Scalability Analysis

In the scalability analysis, this paper tries to analyze the heterogeneity of IC on child labor supply from the perspective of gender and urban-rural differences.

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Table 3 reports the difference between sexes in the effect of IC activities of older parents on labor supply for adult children. Considering the difference in gender, the regression results showed that the effect of IC activities on women was much greater than men, women were 5.33% more likely to participate in work, while men only increased by 2.87%, with women working hours significantly increased by 2.008 hours.

From the perspective of economics and sociology, the physical restrictions of women and the female discrimination in the job market make the employment rate and salary level of women generally lower than that of men, and the losses caused by women giving up their jobs are relatively low. Therefore, once older parents are able to care for their children or help with the housework, women's labor participation rate and working hours must increase more than men.

Table 3. Results of the extended analysis (different gender)

variable	workif	workif	workhourw	workhourw
	the male	the female	the male	the female
intergencare	0.0287**	0.0533***	-0.654**	2.008***
	(-0.0134)	(-0.0142)	(-0.14)	(-0.135)
controlled variable	control	control	control	control
Individual fixation effect	Y	Y	N	N
Year fixed effect	Y	Y	N	N
N	3549	4428	2001	1881
R2	0.274	0.269	0.289	0.229

Table 4 reports the difference between urban and rural areas in the effect of IC activities of older parents on labor supply for adult children [4]. As can be seen from the Table, the labor participation rate of urban children is more significantly (7.27%), which is greater than the labor participation rate of rural children (3.19%). At the same time, we found that IC care was less effective in rural areas as in urban areas.

The reason may be that, first, the rural area is mainly farming, lacks industrial base and thus lacks necessary jobs; Secondly, in the rural traditional custom of having daughters and parents to take care of children, only men work outside and do odd jobs, which has less influence on social labor participation rate than in cities [5].

Table 4. Results of the extension analysis (different household registration)

variable	workif	workif	workhourw	workhourw
	rural area	town	rural area	town
intergencare	0.0319***	0.0727***	0.245***	0.6000**
	(-0.019)	(-0.0213)	(-0.097)	(-0.254)
controlled variable	control	control	control	control
Individual fixation effect	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y
N	6523	1454	3055	827
R2	0.277	0.349	0.197	0.189

3.3. Dealing with Endogenous Problems

In fact, labor situation will also lead to the phenomenon of IC care, so there is a two-way causal relationship in the model. Therefore, this index of whether parents are alive was chosen as the instrumental variable. According to Table 5, the data is obviously much normal, so the endogeneity problem is solved.

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Table 5. The endogeneity test

variable	Y1	Y2	Y3	Y4
	workif	workif	workhourw	workhourw
intergencare	0.1354***	0.1927**	2.4326***	2.3270**
	(0.0093)	(0.0083)	(0.8243)	(0.8908)
controlled variable	Uncontrolled	control	Uncontrolled	control
N	7,232	5,110	2,263	2,023
R2	0.3929	0.3520	0.3838	0.3217
Individual fixation effect	Y	Y	Y	Y
Time fixed effect	Y	Y	Y	Y

3.4. Robustness Test

3.4.1. Time-wise Robustness Test

The following are the robustness regression results for the subannual cross-section regression. Table 6 and Table 7 report the results of the subannual cross-sectional regression. As can be seen from Table 6, the annual regression analysis on a sample basis while other variables remained unchanged, found that the labor participation rate of adult children of IC care families increased by 6.17%, 10.51% and 4.11%, respectively.

Table 6. Results of the annual robustness regression of IC care on child labor participation rate

variable	a particular year		
	2010	2012	2014
intergencare	0.0617***	0.0551**	0.0411***
	(-0.01671)	(-0.02838)	(-0.0099)
controlled variable	control	control	control
N	3458	1063	7477
R2	0.0738	0.2533	0.1846

According to the results shown in the data in Table 7, we can see that the weekly working hours of children increased by 0.7699 hours, 2.1054 hours and 0.907 hours respectively, and the improvement effect was good. In addition, through the significance test, the results of the three years (working hours and working hours) were significant at 5%. Therefore, the conclusion of base regression is robust.

Table 7. Results of annual robustness regression of IC care on children

variable	a particular year		
	2010	2012	2014
intergencare	0.7699**	2.1054**	0.907**
	(0.3658)	(0.5172)	(0.5584)
controlled variable	control	control	control
N	698	539	3582
R2	0.0813	0.2917	0.1363

3.4.2. Robustness Test of the Work-related Participation Rate

A binary logit model was built for the validation of the results. The heteroscedastic test was performed with the White test, and the overall p-value of 0.0000 was significant, rejecting the assumption of homogeneity of variance of the residuals, so the model index was heteroscedastic. At the same time, the previous chi-square test confirmed whether there is a significant difference between working (Y) and IC care (X), so the use of cluster robust standard error is required.

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Table 8. Binary logit results

workif	dy/dx	Coef	SE	t	p
intergencare	0.027	0.157	.011	14.27	0
controlled variable	control				

As can be seen from Table 8, the coefficient of intergencare is 0.157, that is, in the presence of IC care (the value of IC care is 1), the proportion of participation / nonparticipation (1 / 0) of children's labor participation increases by 0.157, which has an obvious curve trend.

The mean marginal contribution of the explanatory variables was calculated as 0.027.

3.4.3. The Robustness Test of the Weekly Working Hours

A multi-value logit model was used on the virtual variable "A" generated by workhourw classification in the previous column cross-analysis, and the "relative risk ratio" (RRR) was used to report the results [6].

This display is a multi-value logit model with "A=3" as the reference group (as shown in Table 9). Other models have the same principle and will not be displayed limited to space.

Table 9. Multi-value logit model results

workhourw	Coef.	St.Err.	t	p	
0~20h					
intergencare	.906	.049	12.396	0	
gender	.447	.048	-7.53	0	
HR	.418	.067	-5.47	0	
other control variables	control				
21~40h					
intergencare	.675	.003	4.24	0	
gender	.687	.065	-3.94	0	
HR	1.148	.005	7.75	0	
other control variables	control				
From 41 to 72 h is the reference group					
More than 72h					
intergencare	.961	.016	5.33	.043	
gender	1.514	.196	3.21	.041	
HR	.829	.007	4.01	0	
other control variables	control				

IC care tendency: When choosing any group as the reference group, families with IC care will choose the highest weekly working hours for work (more than 72h).

Female selection: When either group is selected as the reference group, all women (with IC care) will choose the highest weekly working hours for work (above 72h).

Selection of non-agricultural HR: when "A=1", "A=3" and "A=4" are used as reference groups, the respondents (with IC care) will tend to choose 21 h to 40 h to work; when "A=2" is used as the control group, the respondents (with IC care) will tend to choose 41 h to 72 h to work.

All the models were tested, the results were not significant, and the IIA assumption was accepted, so the model is reasonable.

4. Summary

The rapid changes of economy and society are gradually tearing apart the connection within the family [8]. The decline of economic growth rate and the increase of fiscal expenditure pressure make it of great practical significance to explore the construction of "modern family"

that adapt to the trend of economic and social development. Identifying, affirming and attaching importance to the contribution and role of the elderly to the family and social economy is an important basis for realizing the mutual cooperation between home care and government care, and also the key factor of family harmony.

This paper uses the micro data from 2010,2012 and 2014 to construct a panel regression model and explore the impact of the elderly on the labor supply of adult children at different levels. The empirical results found that the IC care activities of elderly parents significantly increased the labor supply of their children. Moreover, the results also found that the influence of IC care activities of elderly parents on the labor participation rate and working hours of family women was much greater than that of men, and the influence of IC care was also different between urban and rural areas. Although the contribution of elderly parents to the family cannot be shown in the real economic statistics and accounting, it plays an important role in family harmony, economic development and social stability. In addition, the activities of elderly parents to take care of their families reduce the burden of young and middle-aged women to take care of children and housework, which provides conditions for adult children, especially women, to undertake the task of full-time work.

The rapid urbanization and the refinement of social division of labor are gradually tearing the connection between family members. The play and maintenance of the IC function of the family are affected to varying degrees, and the elderly parents have an important influence on their children's daily life and work [6]. The government should encourage family internal care,fully affirmed the elderly contribution to the family and society: on the basis of maintaining traditional excellent family ethics and culture, actively support and guide the construction of modern family with Chinese characteristics.

From the family and social values of the elderly, the follow-up research can further discuss the parents affecting the work efficiency and fertility decisions of adult children, and pay attention to the differences in the performance of children's education performance and health and their reasons. In addition, activities such as IC care have greatly released the rural labor force, especially the rural women. The influx of these populations has also changed the industrial structure of different regions, and the increase in the proportion of the elderly population has also had an important impact on the social consumption structure.

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