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Institutional Pension Insurance in Sustainable Development of Urban–Rural Intergenerational Support

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Abstract: Parental downward support plays an important role in urban and rural sustainable development. It is of great significance to study parental downward transfers and their motivation. However, there is no consensus on the motivation behind parental downward transfers in China. This study examines the timing and monetary impacts of social pensions on parental downward transfers and assesses the motivations behind them. We found that pension insurance encouraged rural parents to provide time and monetary support to their children. Unlike rural parents, pension insurance increased the monetary support of urban parents but inhibited their time support. Because of the higher income level of urban parents and the better organization of the domestic service market, parents have the motivation and conditions to reduce their time support and increase monetary support. Our findings highlight the importance of parental downward transfers in urban and rural sustainable development.

Keywords: rural–urban relationship; social pension; downward transfers; intergenerational support; sustainable development

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1. Introduction

The issue of rural sustainable development has captured the world's attention. In many developing countries, it is common for families and even clan families to provide mutual support. In Chinese rural families, parents often provide temporal and economic support for their children [1,2]. Families exhibit two types of intergenerational support behaviors: upward intergenerational support, whereby children support their parents; and downward intergenerational support, whereby parents support their children. Most of the existing literature analyzes the intergenerational support behaviors of children and their impact on the physical and mental health of parents in coping with the problem of aging in rural elderly populations [3–6]. However, it is also important to consider the downward intergenerational support that parents provide to their children, as it can impact the labor supply of their children's families [7–9]. In the context of population aging, ensuring a sufficient labor supply for young adults is crucial for high-quality economic development. Therefore, it is important to focus on the intergenerational support behaviors and motivations of urban and rural parents. This has great theoretical and practical significance.

Social pension insurance is state-mandated institutional pension insurance, designed to secure the basic subsistence of the retired elderly population by mobilizing social wealth. It is a typical public intergenerational transfer of support and, theoretically, it has an important impact on the informal institutional supply of intergenerational family support. On the one hand, social pension insurance provides a stable, nonlabor income for parents, which can effectively alleviate their liquidity constraints and will also affect their leisure demand and labor supply; this, in turn, will affect their ability to offer time support and financial support to their children [10,11]. On the other hand, social pension insurance, as a kind of institutional pension security, is a type of substitute for the informal children's

pension; thus, it will "crowd out" children's upward intergenerational support [12], lower paternal expectations of their children's pensions [13], and further affect parental downward support behavior.

To correctly and comprehensively understand the general rules and characteristics of parental downward transfers in urban and rural areas in China, it is necessary to first understand the decision making behind downward intergenerational transfers by parents. However, the existing literature has not reached a consistent conclusion on the decision making behind parental downward transfers. Regarding the motivation for intergenerational support, there are mainly two hypotheses in the existing literature: the altruistic motivation hypothesis and the intergenerational exchange motivation hypothesis [14,15]. In the altruistic motivation hypothesis, parents provide intergenerational support for their children only out of concern for their children's living conditions [14,16]; in the intergenerational exchange motivation hypothesis, parents provide intergenerational support for their children mainly in the hope of exchanging it with their children's current or future support [15,17,18]. Although many studies have discussed the decisive motivation of parents' intergenerational support behavior, existing studies have not reached a consistent conclusion on the role of altruistic motivation and intergenerational exchange motivation in parents' intergenerational support behavior [19–23]. The divergent research findings may be due to the fact that most existing studies analyze the relationship between children's income or parents' willingness to care for the elderly and parents' intergenerational support behavior to infer whether it is consistent with the altruistic motivation hypothesis or the intergenerational exchange motivation hypothesis. However, parents' intergenerational support significantly impacts their children's labor supply and income. Parents' willingness to care for the elderly and their willingness to provide intergenerational support can also influence each other. Therefore, these two methods will face serious endogenous problems. In recent years, the establishment and improvement in the social endowment insurance system have provided a good empirical context to study the causality of Chinese parents' motivations for providing intergenerational support.

This study examines the impact and mechanism of institutional pension security on parents' temporal and economic support for their children from the perspective of intergenerational support. The analysis is based on the assumption of altruistic motivation and intergenerational exchange motivation, and is supported by empirical evidence from the social pension insurance system. This article examines the intergenerational support behavior of urban and rural parents, specifically testing the motivations guiding their decision making. It also aims to understand the changing trends and differences between urban and rural areas in the intergenerational support behaviors of parents with improved institutional pension security. Additionally, it explores the changing trends in the intergenerational support behavior of parents and the differences between urban and rural areas.

This study has significant policy implications for the comprehensive consideration of urban and rural sustainable development and the social pension security system. The establishment and improvement of a stable social pension security system can help parents provide better intergenerational support for their children. However, as social pension security and living income improve, parents may prioritize their quality of life and health, spending less time supporting their children. Such a trend is not conducive to promoting gender equality or encouraging young women's participation in the labor market. Social pension insurance can help balance the development between rural and urban areas and mitigate the negative effects of rural depopulation by impacting intergenerational support.

The main contributions of this study are reflected in the following two aspects: Firstly, this study adds to the literature on the impacts of pension insurance, especially in developing countries. The previous literature has primarily focused on the impact of social old-age insurance on the labor supply of the elderly, land transfer, consumption, health, and the intergenerational support of children to the elderly; however, there has been no research on its impact on downward intergenerational support [24–28]. China's multitrack system

of pension insurance is utilized to examine the impact of social pension insurance on the economic and time support by urban and rural parents. This provides a new reference for assessing China's social pension insurance system comprehensively. Secondly, our study contributes to the expanding literature on the motivations of parental downward transfers. The existing literature has verified the motivation of intergenerational support from parents to children in terms of income levels, retirement expectations, and other aspects, but a consensus has not yet been reached [14,15,23]. We examine the social pension insurance system to understand how altruistic motivations influence intergenerational support behaviors among urban and rural parents in China. This contributes to a better understanding of the patterns and characteristics of such behaviors.

2. Materials and Methods

2.1. Research Framework

In the existing literature, two main types of motivations for intergenerational support among family members are identified: the altruism hypothesis and the intergenerational exchange hypothesis. According to Becker (1974) [14], altruistic motivations are prevalent in family life. Parents are concerned about their children's living conditions and provide intergenerational support based on their own and their children's economic status. According to Sun and Zhang (2013) [19], Chinese parents helping their adult children take care of their children is an example of altruism in family life. This intergenerational support is explained by the "internalization of responsibility" in traditional Chinese culture. In this culture, familialism is based on duty, and family members have the responsibility and obligation to care for and support each other. The act of parents providing intergenerational support to their children can be viewed as a responsible choice [21,29]. The internalization of responsibility highlights the altruistic motivation of family members to support each other without expecting reciprocation.

Another motivation for intergenerational support is intergenerational transfers, which means reciprocity. This motivation assumes that parents provide support to their children not only out of concern for their children's living conditions but also in the hope of influencing their children to provide them with upward support in the present or future [15,17,18,30]. According to Fei (1983) [31], the parent–child relationship in China follows a "feedback model" of bidirectional communication and balanced reciprocity. This model proposes a bidirectional exchange of economic and time support between parents and their children, in which parents provide various types of economic and time support to their children in exchange for current or future pension support from their children [19,32,33].

Regarding empirical tests of paternal downward intergenerational support motives, most existing studies validate the role of altruistic and intergenerational transfer motives. This has been performed by analyzing the relationship between a child's income or a parent's willingness to provide a pension and paternal intergenerational support behaviors. Cox's study (1987) [15] found that parents' monetary support for their children is positively correlated with their children's income level, supporting the intergenerational transfer motivation hypothesis that has been established in the US. Su (2019) [34] found that adult children's income levels are negatively associated with paternal downward intergenerational support, supporting the role of altruistic motives in intergenerational support behavior in Chinese families. Some studies in China have found that parents who provide time support, such as intergenerational care for their children, have significantly increased expectations for their children's upward support pensions. This result validates the intergenerational transfer motivation hypothesis [21,23].

As previous research has shown, there is no consensus on the motivation behind paternal downward intergenerational support. The disagreement may be due to the endogeneity problem faced by previous studies. According to Lu et al. (2017) [35], paternal intergenerational support, particularly time support, can have a significant impact on children's labor market performance and income. Additionally, there is a clear reciprocal

causal relationship between paternal downward intergenerational support behaviors and their expectations of their children's upward support pensions. This study empirically tests the decision-making motives of downward intergenerational support among urban and rural parents, using the social pension insurance system as a case study.

The Chinese social pension security system comprises the basic pension insurance system for urban and rural residents, the pension insurance system for urban enterprise employees, and the pension insurance system for institutions. These systems cover the rural population (and the urban unemployed population), the urban employed population, and the population of institutions, respectively [36]. In February 2014, the State Council merged the new rural social pension insurance system with the urban residents' Social Pension Insurance System, establishing a unified basic pension insurance system for urban and rural residents nationwide. This system is now referred to as the urban and rural residents' pension insurance. Residents of urban and rural areas who are 16 years or older (excluding schoolchildren), not employed by state organizations or institutions, and not covered by the basic pension insurance system for employees are eligible to participate in the urban and rural residents' pension insurance in their place of residence. They will receive the urban and rural residents' pension insurance when they reach the age of 60. The policy for urban and rural residents' pension insurance is based on the principles of "full coverage, basic protection, flexibility, and sustainability".

National legislation mandates the basic pension insurance system for urban enterprise workers. Both enterprise units and individuals are required to participate and pay pension insurance premiums as per the law. After reaching the state's legal retirement age or leaving the labor market due to the loss of labor capacity, individuals are entitled to receive pension payments from the social insurance agency. These payments enable them to maintain a basic standard of living. Currently, many of China's government agencies and institutions have not yet implemented a social pension insurance system and continue to practice a retirement pension system. This system does not require individuals to make pension contributions before retirement.

As of the end of 2021, 480.75 million urban workers were enrolled in basic pension insurance in China, with an additional 554.79 million urban and rural residents also enrolled. Furthermore, based on the data presented in the Outline of the Fourteenth Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Visionary Goals for 2035, China's participation rate in basic pension insurance reached 91% in 2020. This indicates that China's social security system for old-age pensions has achieved nearly universal coverage.

Under the multitrack pension insurance system, there is a significant disparity in social pension security between urban and rural areas in China. The average monthly pension for urban parents in the sample is CNY 2231, whereas for rural parents, it is only CNY 280. Table 1 compares the distribution of pension incomes between urban and rural parents. It is noteworthy that many urban parents' pension incomes have already surpassed or come close to their per capita consumption expenditures. Additionally, there is a significant disparity in the distribution of pension incomes between urban and rural areas. However, the vast majority of rural parents still have pension incomes that fall far below the per capita consumption expenditures. Social pension security in rural China remains relatively low. The majority of rural residents rely solely on pension income, which is insufficient for maintaining a normal life. The "social pension" model has not been able to fundamentally replace the traditional "family pension" model. This redundancy of the "family pension" model is evident in the repetition of the phrase. The family old-age pension remains the primary form of old-age pension in rural areas of China. Parents in these areas still rely on their old-age pension being provided by their children [37,38]. In contrast, most urban Chinese residents can rely on pension income to meet their daily consumption needs and maintain a basic standard of living. According to Zhang et al. (2017) [39], over 60% of the elderly population depends on pension income as their primary source of livelihood.

In urban areas, the "social pension" model has largely replaced the traditional "family pension" model.

Table 1. Descriptive statistics of urban and rural pension income (CNY/month).

	2012		2016		2018		Mean	
Quartile	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**
5%	60	55	92	70	102	88	89	55
25%	960	55	1478	70	1781	88	1400	74
50%	1521	60	2125	78	2404	88	2048	88
75%	2100	180	2956	106	3295	125	2864	120
95%	3200	1300	4341	1293	4862	1514	4453	1425
Mean	1560	230	2273	263	2554	321	2231	280

Data source: authors' compilation based on the 2012, 2014, 2016, and 2018 China Household Tracking Surveys.

The following section examines the impact of social pension insurance on paternal downward intergenerational support for children based on the altruistic motivation hypothesis and the intergenerational exchange motivation hypothesis. For more information, refer to Figure 1.

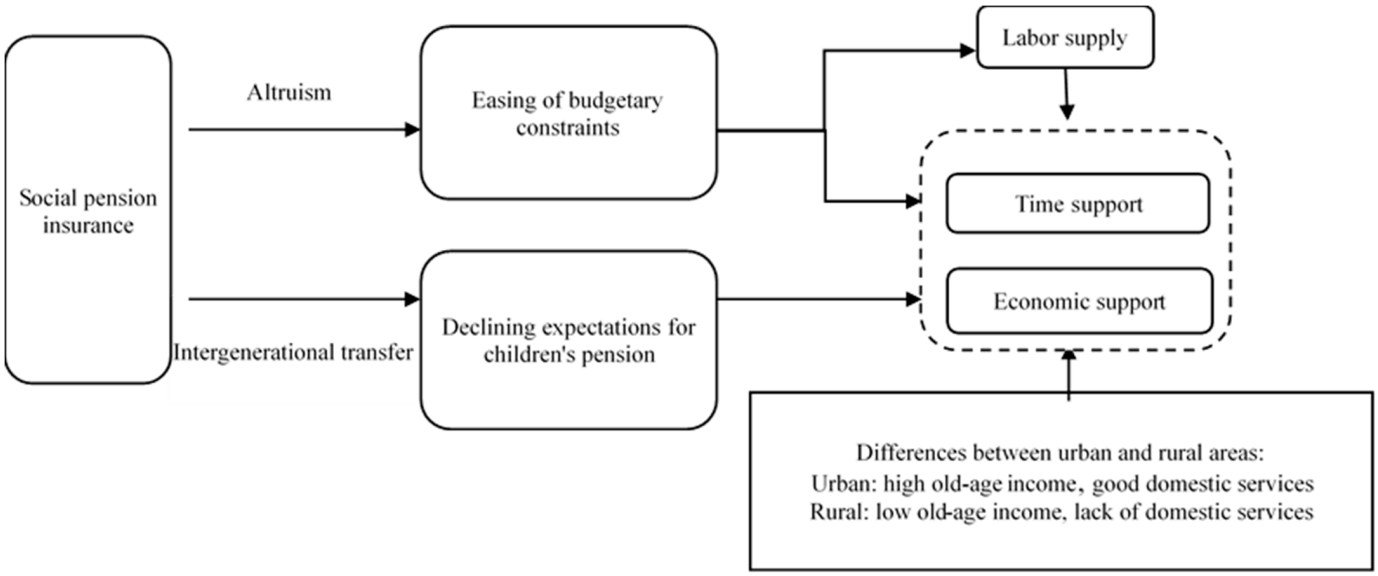


Figure 1. Theoretical analysis framework.

In the infinite time growth model, as discussed by Ramsey (1928) [40] and later by Cass (1965) [41] and Koopman (1965) [42], individuals are assumed to be altruistic. Altruism in this context means that people care about future generations and make decisions that benefit not only themselves but also future members of society. If the altruistic motivation hypothesis is true, parents provide intergenerational support to their children purely out of concern for their children's living and working conditions. They provide intergenerational support to their children from time and monetary perspectives when they can do so, and when their children are in need. Pension income is considered nonlabor income, in theory. It can increase the income level of parents and alleviate budget constraints, which may incentivize parents to exit the labor market earlier or reduce their labor supply. Studies have shown that social pension insurance generally reduces the labor supply of the older population [13,43–45]. After the reduction in labor supply, parents have more time to help their children with household chores or childcare [10,46]. Additionally, the increase in the level of social pension insurance can promote greater participation of young people in the labor force [47]. Furthermore, raising income levels through social pension insurance can alleviate budget constraints and enable parents to offer greater monetary support to their

children [11]. Thus, if the altruistic motivation hypothesis holds, then an increase in social pension insurance levels can encourage parents to provide intergenerational support for their offspring.

Furthermore, intergenerational support encompasses both economic and time support, and these two ways are characterized by substitutability [48]. After the social pension insurance increases the income level, parents' marginal utility of leisure will increase. This will lead them to pay more attention to their quality of life and health. They can substitute time support with monetary support when providing intergenerational support for their children. As a result, they will have more time to enjoy their leisure. Urban parents, in general, have higher levels of social security and income, which may lead them to pay more attention to their own quality of life. So, urban parents may have a stronger incentive to replace time support with monetary support. Furthermore, the domestic service market in urban areas is well developed, which strengthens the substitutability between time and monetary support. As a result, parents can more easily increase monetary support to replace time support. In rural areas, parents may not be motivated to increase monetary support in place of time support due to their low income level, leisure needs, and lower concern for their own quality of life and health. Additionally, the market for social and domestic services in rural areas is limited, and the substitutability between time support and monetary support is weaker. Rural parents cannot improve market conditions to replace time support with monetary support.

On the basis of the analysis above, if paternal intergenerational support aligns with the altruistic motivation hypothesis, the following research hypotheses can be proposed:

H1. *Social pension insurance will encourage rural parents to increase monetary and time support for their children.*

H2. *Higher income levels in urban areas may incentivize parents to reduce time support; with a more developed market for family services in urban areas, parents are in a better position to reduce time support, and social pension insurance will lead to a reduction in urban parents' time support for their children and increase their monetary support for their children.*

Diamond (1965) [49] proposed the overlapping generations model (OGM), which assumes that individuals are not altruistic. The model features overlapping generations, with each generation living for two periods. The focus of individuals in this model is on their own wellbeing and consumption during their lifetime. The absence of altruism in this model can have various implications for savings behavior, intergenerational transfers, and overall economic dynamics compared to models in which altruism is present. If the hypothesis of intergenerational transfer motivation is met, then parents provide downward intergenerational support to their children with the hope that it will influence their children's intergenerational support behavior and prompt them to provide upward intergenerational support for their parents. Intergenerational support, such as care provided by parents for their children, can raise their expectations for their children to provide upward support pensioning [21,23]. In China, the traditional pension model is known as the "family pension" or "raising children to prevent aging". There is a strong substitutability between institutional pension security and children-provided pension. With the establishment and improvement in the social pension security system, the traditional "family pension" mode is gradually being replaced by the "social pension" mode. This enhances the economic independence of parents, decreases the expectation of children's provision of a pension for the elderly, and prompts parents to live separately from their children [9]. When the term "social pension" is used instead of "family pension", parents' expectations for their children to provide their pensions decrease, and their motivation to provide intergenerational support is weakened [12,13,16,50,51]. If parents' intergenerational support behavior aligns with the intergenerational exchange motivation hypothesis, then they will provide less downward intergenerational support for their children.

The basic pension insurance for urban and rural residents, formerly known as New Rural Insurance before the merger, has partially replaced the traditional "family pension" model with the "social pension" model in rural areas of China. However, because of the generally low level of pension protection, the "social pension" model has not completely replaced the traditional "family pension" model [12]. In rural areas of China, parents still have high expectations for their children's pension despite the availability of social pension insurance [13,50]. Therefore, assuming intergenerational transfer motivation, the inhibitory effect of social pension insurance on rural parents' intergenerational support behavior will be weakened.

On the basis of the analysis above, if paternal intergenerational support adheres to the intergenerational transfer motivation hypothesis, the following research hypothesis can be formulated:

H3. *Institutional social pension security replaces the children-provided pension. As a result, parents' expectation of their children's provision of their pension decreases, and social pension insurance inhibits them from providing time and monetary support for their children. These disincentives are lessened by lower pension income and a lack of domestic services for rural parents in comparison to urban areas.*

2.2. Source of Data

The study utilizes data from the 2012, 2016, and 2018 China Family Panel Studies (CFPS), which covers a representative sample of 25 provinces, municipalities, and autonomous regions in China. The 2014 data were not utilized in this study due to the lack of information on intergenerational support behaviors provided by parents to their children. The survey focuses on the economic and noneconomic wellbeing of Chinese residents, including topics such as economic activities, educational outcomes, family relationships and dynamics, population migration, and health.

For this study, the data were processed and screened as follows: (1) The sample consisted of individuals over 60 years old who had already received a pension. Individuals who already received a pension were selected for the sample because pension participation and receipt are self-selecting processes. This presents a more serious endogeneity problem. In contrast, the level of individual pension income is primarily determined by the central and local social pension security system, which presents a less serious endogeneity problem. This age range is chosen because it meets the age requirement for receiving pensions according to China's relevant pension insurance system. Additionally, the China Family Tracking Survey only captures information on temporal or monetary support provided to children by parents aged 60 and above. The study was limited to individuals aged 60 and above who were already receiving a pension. (2) This study excluded individuals that participated in or received commercial pension insurance. The focus of this study was to examine the impact of social pension insurance on intergenerational family support behavior. It is possible that individuals' participation in or receipt of commercial pension insurance may affect the accuracy of the research findings. (3) Individuals without children were excluded. After ensuring that all relevant information was included, this study analyzed the unbalanced panel data from three periods. The data included 4158 urban samples and 8176 rural samples. The type of social pension insurance an individual receives is strongly correlated with their hukou status. Therefore, this study distinguishes between urban and rural samples based on their hukou status.

2.3. Econometric Model Setting

This study presents an econometric model to estimate the impact of social pension insurance on downward time support and monetary support provided by urban and rural parents to their children based on a previous analysis.

Model (1) is provided as follows:

$$Probit(timep_{it} = 1|X_{it}) = \alpha_0 + \alpha_1 pension_{it} + \alpha_2 X_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

Model (2) is provided as follows:

$$Probit(moneyp_{it} = 1|X_{it}) = \beta_0 + \beta_1 pension_{it} + \beta_2 X_{it} + \mu_i + \varepsilon_{it} \quad (2)$$

The variables used in this study are $timep_{it}$ and $moneyp_{it}$, which indicate whether parent i provides time and monetary support, respectively, to their children in period t. Additionally, $pension_{it}$ represents the logarithm of parent i's pension income in period t, whereas X_{it} includes control variables such as parent, children, and family characteristics. The control variables consist of province and time dummy variables to account for regional differences and time trends. Models (1) and (2) incorporate individual effects where μ_i and ε_{it} represent a random disturbance term. As the explanatory variables in Models (1) and (2) are dichotomous choice variables, they are estimated using a panel data $Prob_{it}$ model.

If paternal intergenerational support behavior is consistent with the altruistic motivation hypothesis, then social pension insurance can facilitate downward intergenerational support for children by alleviating paternal budget constraints and reducing labor supply. If parents' intergenerational support behavior adheres to the intergenerational transfer motivation hypothesis, then social pension insurance may decrease upward intergenerational support for children. Institutional pension replaces the child-provided pension, and parents' expectations for their children to provide their pension decrease. Social pension insurance may also inhibit parents from providing time and monetary support for their children.

To examine the intermediate mechanism of social pension insurance on paternal downward intergenerational support behavior, this study presents an econometric model to test the impact of social pension insurance on paternal labor supply and children's upward intergenerational support behavior.

Model (3) is provided as follows:

$$Probit(laborp_{it} = 1|X_{it}) = \Phi_0 + \Phi_1 pension_{it} + \Phi_2 X_{it} + \mu_i + \varepsilon_{it} \quad (3)$$

Model (4) is provided as follows:

$$labort_{it} = max\left\{\lambda_0 + \lambda_1 pension_{it} + \lambda_2 X_{it} + \mu_i + \varepsilon_{it}, 0\right\} \quad (4)$$

Model (5) is provided as follows:

$$Probit(timec_{it} = 1|X_{it}) = \alpha_0 + \alpha_1 pension_{it} + \alpha_2 X_{it} + \mu_i + \varepsilon_{it} \quad (5)$$

Model (6) is provided as follows:

$$Probit(moneyc_{it} = 1|X_{it}) = \beta_0 + \beta_1 pension_{it} + \beta_2 X_{it} + \mu_i + \varepsilon_{it} \quad (6)$$

where $laborp_{it}$ and $labort_{it}$ refer to the labor participation and labor time of parent i in period t. $timec_{it}$ and $moneyc_{it}$ indicate whether the parent receives time support from their children (with or without monetary support). Models (3)–(6) include province and time dummies as control variables, individual effects (μ_i), and a random disturbance term (ε_{it}). The explanatory variable for labor participation in Models (3), (5), and (6) is a dichotomous choice variable, estimated using a panel data $Prob_{it}$ model. Model (4) has some zero-sample observations for labor hours and is estimated using a panel data Tobit model.

The pension income of individuals in Equations (1)–(6) is primarily determined by the social pension insurance system and is not influenced by individual time allocation decisions. As a result, the endogeneity problem has little impact [19]. To estimate this, the study uses the panel data $Prob_{it}$ random effects model and the panel data Tobit random effects model.

2.4. Description of Variables and Descriptive Statistics

2.4.1. Explained Variable

The explained variables include "time support (from parent to child)" and "monetary support (from parent to child)" based on the following CFPS questionnaire question: "In the past 6 months, have you done housework or babysitting for your children?" The second question asks the following: "Including in-kind and cash, have you provided economic help to your children in the past 6 months?" The explanatory variable "time support (parent to child)" takes the value of 1 if the parent provides childcare and does housework for their children, and 0 otherwise. The explained variable "financial support (parent to child)" takes the value of 1 if the parents provide financial assistance to their children and 0 otherwise.

2.4.2. Key Explanatory Variables

The study's explained variable is the logarithm of paternal pension income, referred to as pension income. It is defined and calculated based on the following question in the CFPS questionnaire: "Including all kinds of subsidies, how much do you currently receive in total per month after tax in pension and social pension insurance?" To ensure income comparability between years, pension incomes for 2016 and 2018 are adjusted to the 2012 level using the consumer price index.

2.4.3. Intermediary Mechanism Variables

This study examines the intermediary mechanism test, which involves four variables: paternal labor participation, paternal labor time, time support (child to parent), and monetary support (child to parent). Labor participation is determined by the response to the following question: "In the past week, did you work at least one hour?" A response of "yes" is coded as 1, indicating involvement in the labor force, whereas a response of "no" is coded as 04. Paternal labor time is determined by the response to the following question: "Excluding lunch breaks but including overtime hours, with or without pay, was the time worked paid or unpaid?" This is accompanied by the following note: "Please indicate the number of hours per week you worked at this job over the past 12 months. Please note that subjective evaluations will not be considered." This information is used to determine paternal labor hours, labor participation, and labor supply, as well as any time or monetary support provided from child to parent or parent to child. The term "availability of time support (from children to parents)" is defined based on the CFPS questionnaire. If the respondent's children have completed their housework or taken care of their daily meals within the past 6 months, the value is 1; otherwise, it is 0. The question "Is there financial support (from children to parents)?" is defined based on the following question in the questionnaire: "Including in-kind and cash, in the past 6 months, did your children provide you with economic help?" If the answer is yes, the value is 1, indicating that parents are receiving monetary support from their children. If the answer is no, then the value is 0.

2.4.4. Control Variables

The main control variables in this study are presented here. (1) Individual characteristics: age, gender (1 = male; 0 = female), marital status (1 = married; 0 = other), activity disabilities (1 = yes; 0 = no), years of education, and urban and rural areas (urban areas = 1; rural areas = 0). (2) Child characteristics: number of children, gender structure of children (number of sons/total number of children), years of education of children, whether any children are married (yes = 1; no = 0), and age of children. (3) Family characteristics: household savings, family debt, family size, and whether parents are separated from their children (1 = yes; 0 = no). In this study, the following questions in the questionnaire were used to determine whether older people had mobility impairments: "whether they can go outdoors independently", "whether they can eat independently", "whether they can do kitchen activities independently", "whether they can use public transport independently", "whether they can shop independently", "whether they can clean and disinfect independently", and "whether they can do laundry independently". If one of the activities cannot

be performed independently, the value is 1; otherwise, it is 0. Compared to the subjective self-assessment of physical health, the use of the objective indicator "whether there are barriers to activity" is more appropriate for the research content of this study to control for the impact of physical health on intergenerational support.

Table 2 shows descriptive statistics for the variables of interest for the urban and rural samples of families. Comparing the urban and rural samples in Table 2, 45% of urban parents provide time support to their children, and 48% of rural parents provide time support to their children; in terms of monetary support, 34% of urban parents provide monetary support to their children, and 11% of rural parents provide monetary support to their children. Compared with time support, urban parents are more likely to provide monetary support than rural parents. Rural parents have a higher labor force participation rate and work longer hours than urban parents in terms of labor supply. This is likely due to the relatively low level of old-age security in rural China, which requires rural parents to engage in agricultural labor to make a living. Table 2 also shows that the proportions of rural parents who receive time and monetary support from their children are 42% and 56%, respectively; meanwhile, the proportions of urban parents who receive time and monetary support from their children are only 24% and 35%, respectively.

Table 2. Descriptive statistics of variables.

Variable Name	Define	Urban Samples (n = 4158)		Rural Samples (n = 8176)	
		Mean	Standard Deviation	Mean	Standard Deviation
Explained variable					
Time support (from parents to children)	1 = supply, 0 = do not supply	0.45	0.50	0.48	0.50
Monetary support (from parents to children)	1 = supply, 0 = do not supply	0.34	0.47	0.11	0.31
Intermediary mechanism variables					
Labor participation	1 = participate, 0 = do not participate	0.14	0.35	0.49	0.50
Labor time	hour/week	7.78	19.0	20.0	24.2
time support (from children to parents)	1 = yes, 0 = no	0.24	0.43	0.42	0.49
Monetary support (from children to parents)	1 = yes, 0 = no	0.35	0.48	0.56	0.50
Key explanatory variables					
Pension income	CNY/month	2231	1508	280	516
Control variables					
Age	Years	68.6	6.74	68.3	6.00
Gender	1 = male; 0 = female	0.53	0.50	0.50	0.50
Marital status	1 = nuptial; 0 = others	0.82	0.39	0.77	0.42
Mobility disability	1 = yes; 0 = no	0.09	0.28	0.14	0.34
Have medical insurance	1 = yes; 0 = no	0.91	0.29	0.95	0.22
Educational attainment	Years	7.24	4.67	3.19	3.85
Urban dwellers	1 = urban; 0 = rural	0.85	0.35	0.30	0.46
Number of children		1.53	0.87	1.82	1.12
Gender structure of children	son/daughter	0.65	0.42	0.76	0.34
Educational attainment of children	Years	11.9	3.48	8.08	3.73
Any children married	1 = yes; 0 = no	0.48	0.50	0.55	0.50
Age of children	Years	40.6	7.24	40.3	6.69
Family assets	CNY ten thousand	10.9	22.3	2.77	7.61
Family debt	CNY ten thousand	1.59	7.54	1.52	5.49
Family size		3.83	1.84	4.56	2.08
Separated or not	1 = yes; 0 = no	0.37	0.48	0.28	0.45

Data source: authors' compilation based on the 2012, 2014, 2016, and 2018 China Household Tracking Surveys.

The multitrack pension system in China creates a significant disparity in social pension security between urban and rural areas. In the sample, the average monthly pension for urban parents is CNY 2231, while for rural parents, it is only CNY 280. Table 2 also compares the distribution of pension income between urban and rural parents. Social pension security in rural China is still low. Most rural residents cannot maintain a normal life by relying solely on pension income. It is difficult to fundamentally change the "family pension" model of the rural family. Currently, the "social pension" model has not been able to replace the "family pension" model in rural areas. The "family pension" remains the primary pension model in rural China, where parents depend on their children to support their pensions. However, most Chinese urban residents can rely on their pension income to meet their daily consumption needs and maintain a basic standard of living.

Table 3 describes the intergenerational support behaviors of urban and rural parents at different levels of pension income. Table 3 shows that, as pension income increases, the proportion of parents providing monetary support to their children increases significantly in both urban and rural families. However, there is no significant difference in the proportion of parents providing time support to their children at different pension levels in the urban sample. In rural families, the proportion of parents providing time support to their children shows a significant upward trend overall.

Table 3. Paternal downward intergenerational support behavior under pension income subgroups (%).

	Urban Samples		Rural Samples	
Pension Income Groups	**Time Support**	**Monetary Support**	**Time Support**	**Monetary Support**
<20%	45.4	14.3	38.6	6.7
20–40%	41.6	17.7	56.6	11.6
40–60%	47.5	27.9	52.0	11.1
60–80%	44.9	25.5	47.4	12.3
>80%	47.5	34.4	44.8	13.8

Data source: authors' compilation based on the 2012, 2014, 2016, and 2018 China Household Tracking Surveys.

3. Results

3.1. Basic Regression Results

Table 4 presents the basic regression results for the impact of social pension insurance on paternal downward intergenerational support behaviors in rural and urban areas. The columns in Table 4 present the marginal effects of each variable. Columns (1) and (2) in Table 4 report the marginal effects of pension insurance on paternal downward intergenerational support provided by rural households. The regression results show that all F-tests of the model were significant at the 1% level, indicating that the explanatory variables had strong explanatory power for the explained variables. The parameter estimates indicated that the coefficient in column (1) is 0.042 and passed the 5% significance test. Similarly, the coefficient in column (2) is 0.146 and passed the 1% significance test.

The estimation results in Table 4 indicate that, for every 1% increase in rural paternal pension income, the probability of providing time support to their children increases by 4.2%, and the probability of providing monetary support to their children increases by 14.6%.

The estimation results for the rural samples suggest that when social pension security alleviates the budget constraints faced by parents in providing intergenerational support, it promotes rural parents to provide intergenerational support for their children both temporally and economically. The estimation results for the rural samples validate this study's research hypothesis H1. The effect of social old-age security on rural paternal intergenerational support is consistent with the altruistic motivation hypothesis, which verifies that altruistic motivation plays a role in the intergenerational support behavior of rural parents. The results of the rural estimation indicate that, when time constraints are relaxed for parents to take care of their grandchildren or household chores, rural parents

have more time to provide support for their children. Additionally, because of the easing of budget constraints, rural parents can provide more monetary support for their children.

Table 4. Marginal effects of the impact of social pension insurance on paternal downward intergenerational support in urban and rural areas.

	Rural Samples		Urban Samples	
	(1)	(2)	(3)	(4)
	Time Support	Monetary Support	Time Support	Monetary Support
Pension income	0.042 **	0.146 ***	−0.073 **	0.232 ***
	(2.163)	(6.118)	(−2.535)	(6.149)
Age	−0.034 ***	0.003	−0.029 ***	−0.007
	(−7.318)	(0.468)	(−3.949)	(−0.745)
Gender	−0.159 ***	0.103 **	−0.145 ***	0.027
	(−4.087)	(2.030)	(−2.638)	(0.410)
Marital status	−0.218***	−0.019	−0.035	−0.064
	(−4.699)	(−0.310)	(−0.491)	(−0.742)
Mobility disability	0.067	−0.130 *	0.101	0.013
	(1.274)	(−1.743)	(1.148)	(0.121)
Have medical insurance	0.163 **	−0.152	0.045	0.008
	(2.191)	(−1.640)	(0.549)	(0.082)
Educational attainment	0.002	0.015 **	0.012 *	0.030 ***
	(0.450)	(2.278)	(1.861)	(3.815)
Urban and rural (1 for urban areas)	0.091 **	0.058	0.139 *	−0.108
	(2.275)	(1.109)	(1.848)	(−1.212)
Number of children	−0.007	0.073 ***	−0.147 ***	0.046
	(−0.346)	(2.907)	(−4.315)	(1.235)
Gender structure of children	0.007	−0.069	−0.024	0.0162
	(0.126)	(−0.949)	(−0.404)	(0.221)
Educational attainment of children	−0.004	0.001	−0.003	−0.041 ***
	(−0.705)	(0.147)	(−0.325)	(−3.758)
Any children married	0.077	0.052	0.225 ***	0.130 *
	(1.625)	(0.895)	(3.591)	(1.825)
Age of children	−0.003	−0.030 ***	−0.006	−0.007
	(−0.781)	(−5.513)	(−0.901)	(−0.845)
Family assets	0.022 ***	0.018 ***	0.025 ***	0.016 *
	(4.244)	(2.653)	(3.524)	(1.906)
Family debt	0.062	0.150 *	0.003	0.144
	(0.904)	(1.754)	(0.039)	(1.467)
Family size	0.158 ***	−0.024	0.187 ***	−0.018
	(13.090)	(−1.551)	(9.119)	(−0.735)
Separated or not	−0.234 ***	−0.392 ***	−0.300 ***	−0.301 ***
	(−4.365)	(−5.513)	(−3.955)	(−3.321)
Time virtualization	Control	control	control	control
Area virtualization	Control	control	control	control
Wald chi2	271.871	852.792	494.56	260.63
Observations	8176	8176	4158	4158

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, with z-values in parentheses; estimations are reported as marginal effects.

Columns (3) and (4) in Table 4 present the marginal effects of the impact of pension income on the downward intergenerational support provided by urban parents. The regression results show that all F-tests of the model were significant at the 1% level, indicating that the explanatory variables had strong explanatory power for the explained variables. The parameter estimation results show that the estimated coefficient in column (3) is −0.073 and passed the test at the 5% significance level, while the estimated coefficient in column (4) is 0.232 and passes the test at the 1% significance level. The estimation results show that, for every 1% increase in urban paternal pension income, the probability of providing time

support to children decreases by 7.3%, but the probability of providing monetary support to children increases by 23.2%.

The estimation results for the urban and rural samples suggest that pension insurance encourages parents to provide intergenerational support to their children when higher pension income eases the parents' budget, in line with the altruistic hypothesis. The estimation results for the urban and rural samples confirm the research hypothesis H2 of this study, indicating the role of altruistic motives in the behaviors of urban parents in providing intergenerational support to their children. On the one hand, urban parents have a higher income level and tend to prioritize their quality of life over taking care of their children and household chores. As a result, they are motivated to provide more monetary support and have more leisure time. This allows them to improve their quality of life and reduce their time spent on childcare. On the other hand, the improved development of the market for domestic services in cities and the greater substitutability of temporal and economic support create the conditions for parents to substitute time for economic support when providing intergenerational support, whereas more nonagricultural employment opportunities for urban parents increase their opportunity costs of providing time support [52].

The comparison between urban and rural areas shows that old-age security increases the economic support of urban parents but reduces their time support. This is due to the higher income levels in cities, which make parents more concerned about their own quality of life and incentivize them to reduce their time support. Additionally, the well-developed market for domestic services in urban areas allows parents to reduce their time support further. The intergenerational support behavior of urban and rural parents under institutional old-age security provision is consistent with the hypothesis of altruistic motivation. This verifies the idea that altruistic motivation plays a role in the intergenerational support behavior of urban and rural parents.

3.2. Endogeneity Test

Although individuals' enjoyment of old-age security after retirement is largely determined by the central and local social security systems—which can alleviate, to some extent, the self-selection problem caused by using individuals' participation in or receipt of old-age security as an explanatory variable in the previous literature [38]—it is possible that there are omitted variables, such as work situation in young age and the concept of old-age security, which lead to endogeneity in the estimation of model problems. Following a study by Yu (2019) [11], this study used the average level of social pension security in the province where the sample is located as an instrumental variable. The average level of social pension security in the province in which the sample was located satisfies two conditions for instrumental variables: First, validity, whereby the level of social pension security received by an individual is determined by the social security system in their region. The average level of social pension security measures the level of social pension security in the region in which the parents are located. Columns (1) and (4) in Table 5 present the results of the first-stage regression of the instrumental variable probit model, respectively, and show that there is a strong correlation between average provincial pension income and individual pension income. Additionally, this study treats intergenerational support behaviors as a continuous variable using two-stage least squares (2SLS). The first-stage regression of endogenous explanatory variables on instrumental variables produces F-values of 199 and 61 for the rural and urban samples, respectively. These values are greater than the empirical threshold of 10, further verifying the validity of the instrumental variables in this study. Second is exogeneity, whereby the level of old-age security in the province is determined by the social security system of the central and regional governments. This system is not related to individual- or family-level characteristics and does not directly affect the intergenerational support behaviors of the family. Therefore, it satisfies the exogeneity requirement of the instrumental variable.

Only an increase in the pension level significantly increased the impact of parental monetary support on offspring in the estimation results in Table 5. The results of the Wald

test for the initial hypothesis of exogeneity "H0: ρ = 0" are presented in Table 5, for which *p*-values of 0.256, 0.144, 0.513, and 0.455 indicate that the original hypothesis of exogeneity cannot be rejected. The regression results of the instrumental variable model are not systematically different from those estimated by the probit model, the endogeneity problem of the model in this study is not serious, and the pension income of individuals is mainly determined by the social pension system, which can be considered an exogenous variable. The use of instrumental variables in this case will increase the equation of the estimator and reduce the validity of the model's estimation. Therefore, according to the results of the exogenous Wald test, the probit model should be used as the basis of interpretation in this study.

Table 5. Impact of social pension insurance on paternal downward intergenerational support in urban areas (Ivprobit model).

	Rural Samples			**Urban Samples**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
	First Stage	**Time Support**	**Monetary Support**	**First Stage**	**Time Support**	**Monetary Support**
Pension income		−0.081	0.364 **		−0.193	0.038
		(−0.742)	(2.388)		(−0.951)	(0.168)
Provincial average pensions	0.002 ***			0.001 ***		
	(14.13)			(7.829)		
Exogenous Wald test		1.310	2.130		0.432	0.561
		(*p* = 0.256)	(*p* = 0.144)		(*p* = 0.513)	(*p* = 0.455)
Observations	8176	8176	8176	4158	4158	4158

***, and ** indicate significance at the 1% and 5% levels, respectively, with z-values in parentheses.

4. Discussion

4.1. Mechanisms

4.1.1. Test of Paternal Labor Supply

In order to test the intermediate mechanism of social pension insurance on parental downward transfers, this study further tests the impact of social pension insurance on the labor supply of urban and rural parents. Table 6 reports the marginal effect of pension insurance on the labor force participation and working hours of urban and rural parents. The results of the parameter estimation show that, for every 1% increase in the pension income of rural parents, the labor participation rate of rural parents decreases by 15.9% and the weekly working time decreases by 2.695 h. For every 1% increase in the pension income of urban parents, the labor participation rate of urban parents decreases by 24.6% and the weekly working time decreases by 7.845 h. From a comparison between urban and rural areas, it can be seen that, after the increase in pension income, the labor supply of urban parents decreases more obviously. It is also precisely because of the higher income level that urban parents have a better quality of leisure time and quality of life, so they are more motivated to reduce time support and increase monetary support when supporting the next generation.

Consistent with most studies, this study finds that the increase in pension income decreases the labor supply of the elderly population [13,38–40]. After the reduction in labor supply, the time constraint of parents can be eased, and they can have more time to help their children with housework or take care of children and can provide time support for their children. The estimated results in Table 6 verify the mechanism of social endowment insurance by easing mobility constraints and reducing the labor supply time, thus increasing the likelihood of parents providing intergenerational support for their children.

Table 6. Impact of pension insurance on paternal labor supply in urban and rural areas.

	Rural Samples		Urban Samples	
	(1)	(2)	(3)	(4)
	Time Support (*Panel, Prob*$_{it}$)	**Monetary Support** (*Panel, Prob*$_{it}$)	**Labor Participation** (*Panel, Prob*$_{it}$)	**Working Hours** (*Panel, Tob*$_{it}$)
Pension income	−0.159 ***	−2.695 ***	−0.246 ***	−7.845 ***
	(−7.273)	(−5.540)	(−5.382)	(−5.649)
Year fixed effect	control	control	control	control
Province fixed effect	control	control	control	control
Observations	8176	8176	4158	4158

*** indicates significance at the 1% level, with z-values in parentheses. Estimations are reported as marginal effects.

4.1.2. Testing of Children's Upward Intergenerational Support

This study further examined the impact of pension insurance on the provision of intergenerational support to parents by urban and rural children. Table 7 reports the marginal effect of pension insurance on the time and monetary support provided by children to their parents. The parameter estimation results show that, for every 1% increase in the pension income of rural parents, the probability of receiving upward monetary support from their children decreases by 4.1%. For every 1% increase in the pension income of urban parents, the probability of receiving upward monetary support from their children decreases by 8.4%. Table 7 shows that, as most studies in the existing literature conclude, an increase in pension income will reduce the amount of intergenerational support children provide to their parents. Institutional pension security also has a substitution effect on children's pension.

Table 7. Marginal effect of pension insurance on children's upward intergenerational support of urban and rural.

	Rural Samples		Urban Samples	
	(1)	(2)	(3)	(4)
	Time Support	**Monetary Support**	**Time Support**	**Monetary Support**
Pension income	−0.008	−0.041 ***	−0.011	−0.084 ***
	(−1.295)	(−6.869)	(−1.295)	(−10.410)
Time virtual	control	control	Control	control
Regional virtual	control	control	Control	control
Observations	8176	8176	4158	4158

*** indicates significance at the 1% level, with z-values in parentheses. Estimations are reported as marginal effects.

The estimated results in Table 7 further verify the role of altruistic motivation in parental intergenerational support behavior. If parental intergenerational support aligns with the intergenerational exchange motivation hypothesis and institutional pension security serves as a substitute for children's pensions, then parents' expectations of children's pensions will decrease. Theoretically, this will also lead parents to reduce intergenerational support for their children. However, when combined with the estimation results in Table 4, it becomes evident that the increase in pension income "crowds out" children's upward intergenerational support. Nevertheless, it encourages parents to provide downward intergenerational support to their children. This finding further validates the hypothesis that parents' downward intergenerational support for their children is consistent with altruistic motivation.

4.2. Heterogeneous Analysis

The savings level of households is closely linked to the time allocation decisions (e.g., labor supply) of household members [53]. Therefore, this study categorizes the sample

into low-, medium-, and high-savings groups and explores the impact of social pension insurance on households with different levels of savings through subgroup regressions (see Table 7). Because of the logic of the full text, this study only reports the estimation results for the low-savings and high-savings groups.

In the regressions for the rural sample subgroups in Table 8, it is evident that an increase in pension insurance income significantly contributes to the monetary support provided by rural parents for their children in both the low- and high-savings groups. However, the impact of social pension insurance on parents' time support for their children is only significant in the high-savings group. This could be attributed to the fact that dedicating time to children often entails withdrawing from the labor market, resulting in a loss of stable and continuous income. Conversely, in rural areas with relatively weak social security systems, precautionary savings serve as a crucial risk management tool when faced with uncertain events, such as major medical expenses and fluctuations in income. A lower level of savings implies that rural parents and mothers struggle with coping mechanisms for unexpected risks, necessitating continued participation in market labor to enhance their ability to handle future uncertainties. Therefore, pension income has neither effectively reduced labor supply nor alleviated the time constraints experienced by rural parents in households with low savings, nor has it contributed significantly to their time support for their children.

Table 8. The impact of pension insurance on the parental downward transfer of urban and rural parents: different savings levels.

	Rural Samples		**Urban Samples**	
	(1)	**(2)**	**(3)**	**(4)**
	Rural Samples	**Urban Samples**	**Rural Samples**	**Urban Samples**
Part I: Low-savings group				
Pension income	0.031	0.204 ***	0.036	0.267 ***
	(0.749)	(4.276)	(0.817)	(3.891)
Observed value	2725	2725	1386	1386
Part II: High-savings group				
Pension income	0.102 ***	0.115 ***	−0.154 **	0.333 ***
	(3.069)	(3.136)	(−1.978)	(3.486)
Observations	2725	2725	1386	1386

*** and ** indicate significance the 1% and 5% levels, respectively, with *z*-values in parentheses. Estimations are reported as marginal effects.

Table 8 shows the estimation results for the urban sample. It indicates that urban parents with high levels of savings are inhibited from providing time support to their children by pension income. However, pension income has no significant effect on the provision of time support to children by parents in the low-savings group. Parents with higher levels of savings may provide more monetary support to their children than time support. This could be because they have higher levels of wealth, a stronger need for leisure, and a greater concern for their own quality of life.

5. Conclusions

Parental downward intergenerational support is an important informal institutional arrangement that plays a crucial role in urban and rural sustainable development, as well as in the labor supply of young females. This support can effectively ensure female labor supply and mitigate the negative effects of rural depopulation. It is of great theoretical and practical significance to pay attention to parental intergenerational support behavior and its effects. On the basis of the altruistic motive hypothesis and the intergenerational exchange motive hypothesis, this study constructed a decision analysis framework for parents' downward time support and monetary support under the provision of institutional

pension security. On the basis of the empirical facts of the social pension insurance system, this study investigated the influence of the social pension insurance system on parents' intergenerational support behavior and its mechanism to investigate and reveal the role of altruistic motivation in the intergenerational support behavior of Chinese urban and rural parents. The study found that social pension insurance encouraged rural parents to provide time and monetary support to their children. Pension income can alleviate the mobility constraint of rural parents and reduce their market labor supply, thus helping parents to provide intergenerational support to their children. Comparing urban and rural areas, it was found that pension insurance increased the monetary support of urban parents, but it inhibited their time support. This is because, with the high level of urban income, parents pay more attention to their own quality of life and have the motivation to reduce time support; additionally, the urban domestic service market is better organized. Parents also have the ability to reduce time support. Under the provision of institutional pension security, the intergenerational support behavior of urban and rural parents conforms to the hypothesis of altruistic motivation, which verifies the role of altruistic motivation in the intergenerational support behavior of urban and rural parents. The results of the heterogeneity analysis show that the influence of social endowment insurance on the intergenerational support behavior of urban and rural parents is more significant in families with better economic status.

Under the influence of traditional culture, altruism plays an important role in parents' intergenerational support behavior, and the development of social pension security is conducive to rural parents' intergenerational support for their children. The informal system of parental time support determined by traditional Chinese family culture, as a complement to the formal system, plays an important and positive role in promoting rural women's participation in the labor force. However, with the improvement in the social security system and the miniaturization of the family structure, it is expected that the role of traditional culture will gradually weaken. This has manifested in urban families: parents pay more attention to their own quality of life and health problems, reduce time support for their children, and increase monetary support for their children; this will constitute constraints and impacts on women's labor force participation.

With economic development and improvement in the social security system, the family form in China is gradually changing from the multigenerational large family to the small nuclear family [54]. The downward trend of parental time support will weaken in the long run, and women will face more time constraints in participating in the market labor force. To ensure women's participation in market labor and promote gender equality, efforts can be made in the following aspects: Firstly, it is necessary to further promote and improve the development of the domestic labor market, develop socialized domestic services, create convenient and high-quality conditions for families to choose formal socialized domestic services as an alternative to informal systems of intergenerational family support, and support the participation of young workers in the labor market. Secondly, further improvements to the pension security system and appropriately raising the level of basic pensions in urban and rural areas will not only improve the health and wellbeing of the elderly but also ease their mobility constraints and help them provide better intergenerational support for their children. Thirdly, further improvements to the labor market protection system for related benefits, including flexible working hours, maternity leave during work, and other family friendly working time schemes, are needed to reduce "family–work" time conflicts.

This study aimed to enhance the comprehension of intergenerational support behaviors in both urban and rural areas. Because of data limitations, this study has two areas for further improvement: First, the lack of accurate quantitative information in the China Family Tracking Survey (CFPS) data makes it impossible to thoroughly examine the degree of intergenerational support from parents. Additionally, the analysis could be developed further. This study examined whether rural parents provide intergenerational support for paternal care. Second, it is important to note that the China Family Tracking Survey (CFPS) did not collect data on the development of the market for socialized home economics

services in communities or villages. Therefore, this study cannot accurately discuss the impact of the development of the market for socialized home economics services.

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