Does New Rural Pension Scheme Improve the Agricultural Migrants Social Trust: Evidence form a Quasi-Natural Experiment

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Abstract: This study combines the social behavior choices model, designs a quasi-natural experiment to test the mechanism and effect of the new rural pension scheme on the social trust of agricultural migrants. The study found that the trust input growth mechanism significantly improves the social trust of agricultural migrants; The trust category comparative advantage mechanism makes the "individual-family" special social trust have a to faster growth than the general "individual-society" social trust; the spatial comparative advantage mechanism promotes the growth of social trust of agricultural migrants in the western region, but it has no significant effect on social trust of agricultural migrants in the eastern and central regions.

Keywords: New Rural Pension Scheme; Agricultural Migrants; Behavior Choice; Development of Social Trust; Quasi-Natural Experiment

1. Introduction

Social trust is the cornerstone of social relations, which is important for reducing social governance costs, stabilizing social order, enhancing social integration, and promoting harmonious social development [1]. With the deepening of reform and opening-up in China, marketization, urbanization, and industrialization have driven the transformation of "rural China" to "migrating China" [2], and hundreds of millions of agricultural migrants have left their hometowns to work and live in cities, resulting in the significant evolution of urban-rural social relations and changes in social trust patterns [3,4]. Most of agricultural migrants have the social attributes of both rural farmers and urban citizens. They are double marginalized people who are neither fully integrated into the city nor completely separated from the rural society. Although their social trust is mixed with rural tradition and urban modernity, it has strong blood, vernacular and closed nature, and it is difficult to adapt to the development of urban society [5]. Also, the development of social trust is under the pressure of many factors. In this case, the social trust of agricultural migrants has become a critical problem that China needs to solve to coordinate the development of urban and rural areas.

Deeply promoting the reform of social pension security to promote the sustainable development of social trust of agricultural migrants is a focus point of the national "14th Five-Year Plan" to "actively coping with population aging"and "promoting a new urbanization strategy with people as the core" . A plethora of studies have considered the social trust development and its determinants for agricultural migrants, and they have proposed the "actively coping with population aging", "new urbanization strategy". Meanwhile, a New Rural Pension Scheme (NRPS) has been established to promote the coordinated development of urban and rural areas. However, these studies only focus on the impact of public policies such as low-income insurance on rural social trust [6]. As an important social security system for farmers, what is the driving mechanism of social trust for agricultural migrants that have left the countryside but are difficult to enter urban society? What are the effects? No theoretical analysis or policy investigation has been made. Theoretical and empirical analysis of the mechanism and influence of the NRPS on social trust is significant for continuous promotion of the reform of the social pension security system and the development of agricultural migrants social trust under the background of population aging and new urbanization

Based on the existing studies, this paper establishes a social choice model for agricultural migrants. Then, the mechanism and influence of the NRPS on the social trust of agricultural migrants are determined by quasi-natural experiments based on breakpoint regression. This work helps to enrich the

theoretical and empirical research in related fields and provides policy insights for "actively coping with population aging", "new urbanization".

2. Literature Review

Social trust is a positive emotional state that condenses society. In this positive emotional state, people with limited cognition voluntarily hand over resources to others through social interactions, so the essence of social trust is the unilateral psychological expectation [7]. In actual social interactions, this unilateral psychological expectation has inherent uncertainty and risk, which makes social trust a risky investment [8]. Thus, social trust and risk are two sides of social behaviors, and they represent the predictability and the uncertainty of social behaviors, respectively. Social trust promotes the development of trust by resolving the risks of social behaviors, while risk impedes the formation of trust [4]. In Putnam and Robert's view, trust helps to establish a social relationship and organizational cooperation and is an important form of social capital [9]. North sees social trust as a socio-cultural factor [10]. Messick and Kramer claim that social trust is the moral feedback of social behaviors [11]. In fact, social trust, regarded as an emotional state, a psychological expectation, a risk mitigation mechanism, or a form of social capital, social culture, and moral values, is a social system with multidimensional properties.

The development of social trust is influenced by the complexity of the real social structure. Fukuyama argues that popular trust preferences in countries around the world affect both the social structure, the shaping and development of social relations, and the level of social trust equilibrium. Due to the absence of "family" culture, the "individual-community" social structure of western societies such as the United States endogenously stimulates the development and interaction of social group relations. Through universal trust, "members" of strangers and even family members become "intra-organizational" acquaintances. Meanwhile, the universal trust is expanded to special trust, and the society has a high level of universal trust [12]. Chinese society attaches great importance to the development of special trusts such as blood, kinship, and geography. Also, it strives to establish a "personal-family" model for the development of special trust among acquaintances. In this way, strangers are turned into "own people", and special trust is expanded orderly to universal trust, showing a decreasing trust differential distribution from family to acquaintances to strangers, and leading to a low level of trust in society as a whole [13]. Therefore, in Fei Xiaotong's "individual-family-society" three-level social structure, whether in China or western societies such as the United States, members of a family, friends, and associations have relatively stable macro-social structures and trust differential positions. The members carry out role recognition, social interaction, and resource exchange that match the social structure and trust differential positions [14]. At the micro-individual level, individuals in Chinese society rely on social interactions to form trust structures, and there is some social differentiation. Xiang Deping and Li Hong found that Chinese rural residents have higher levels of interpersonal trust than urban residents, and the trust significantly reduces family-stranger affinity and geographic spatial variability [15]. Li Xiaofei found that urban and rural populations in China, such as farmers, migrant workers, and urban residents, have distinct patterns of government trust due to urban integration differences [16]. In fact, different individuals, families, business organizations, social organizations, and governments make different choices about social trust, although this is a difficult choice between private and public interests [17]. Zak and Knack found that the choice of social trust structure and level is actually an explicit game of interest behavior, which determines the basic structure of social trust of different subjects and even the specific evolution of social trust [18].

The development of individual social trust is affected by socio-cultural and social institutional factors. Weber claims that social culture and social institutions have a crucial role in determining the development of trust in society and in individuals [19]. Under the rapid social transformation and changes in Chinese society as well as the influence of the social system and cultural factors, the social trust of Chinese farmers and citizens still maintains a stable structure of blood relatives and alienation [20]. However, the rapid market-oriented urbanization of Chinese society has led to the breakup of the rural-urban dichotomous social structure dominated by rural social collectives and urban social units. Also, the market competition has led to de-unitization and de-collectivization of the society and large-scale population migration, further intensifying the development of semi-acquaintance and de-acquaintance of society [21]. As a result, farmers, citizens, and other social individuals have fallen into the dilemma of social trust of multiple subjects and must focus more on the development of "individual-family" special trust. Meanwhile, people are eager for support and guarantee from the government and community organizations to expand the development of social trust [4]. Yu Hongbo's empirical study found that farmers' social trust in 40 villages in Jiangxi showed a "U" shaped trend due

to the changes in social institutional environment and culture [22]. With the structural changes of micro-individuals and macro-society, the instrumental nature of social trust has been strengthened, the interest-oriented nature of the trust behaviors of micro-individuals has become more obvious, and social trust tends to have superficiality, affinity difference, and neighborhood avoidance [23].

Social trust is affected by various forms of policies and public services. Luhmann argues that social policies increase the level of institutional trust by regulating the behavior of social members, strengthening interpersonal emotional needs, reducing the risk of interpersonal interactions, and enhancing interpersonal trust [8]. Government public service projects, through diversified resource investment, improve the survival and development of recipients and help to improve the government trust. Meanwhile, the corruption, rent-seeking, and competition in the operation of public service projects weaken the government trust, which causes individual social conflicts and reduces special trust [24]. Public programs such as government assistance improve social trust by increasing recipients' social participation and facilitating social interactions while reducing recipients' need for reciprocity in their original social relationships and weakening their trust in family and friends [25]. The lack of oversight on public assistance can undermine recipients' social trust in government by creating social stigma through social reputation mechanisms. For example, Han Huawei and Chen Binli found that the government's low-income insurance policy increases low-income households' social trust in the government and their neighbors and decreases their trust in their parents [26]. Xie Zhiju found that China's rural low-income insurance policy only increased the trust of low-income households in the government but weakened the trust of non-low-income households in the government [27].

Economic development affects social trust through multiple channels, such as increasing government public services, improving production and living facilities, improving community governance, promoting social participation and cooperation, preventing social inequity, strengthening social corruption management, promoting punishment for social non-honest behaviors, reducing information asymmetry in social interactions, alleviating conflict of interest of social members, enhancing the happiness of social members, and improving social trust [28]. According to Lu Shupeng's study, economic development in China's eastern urban areas inhibits socio-political trust, while the increase of material wealth by economic growth can weaken the social trust of the population [29]. Some scholars have found that economic growth and development promote social welfare and increase socio-political trust, but the unfair distribution of economic income leads to stratification of social trust [30]. Microscopically, on the other hand, economic development reduces the conflict of social resources competition, which helps to enhance social trust; also, it increases social participation and expands social interaction, which in turn promotes social trust. On the other hand, it can increase the social trust input of social individuals, which promotes the consolidation and development of social trust [25]. Of course, income growth attributed to economic development can reduce the social dependence of individuals and their families on relatives and friends, but special trust can develop into a detriment [31].

In addition, some scholars have found that individual gender, wealth, education, social status, occupational status, social network, social trust, and perception of fairness have positive effects on the social trust of urban and rural residents [31, 32]. Zhang Liande found that the urban social trust of agricultural migrants is also influenced by personality factors such as blood, geography, and household registration status [33].

It can be seen that the social trust of individuals is a multidimensional system that is determined by the combination of social structure, social and cultural institutions, legal policies, economic development, individual endowment, and pension security. Social pension security policy, as one of the determinants of social trust, has a certain effect on the social trust of urban and rural residents. The existing studies have considered the connotation, structure, function, and determinants of social trust among rural and urban residents in China, and they have explored the impact of the rural low-income insurance system on the social trust of low-income households. Some scholars have also considered the game choice of the NRPS and health insurance, and it is found that farmers, especially the agricultural migrants, "reverse" the minimum pension payment standard due to the trust of the pension security system, which weakens the policy incentives of the NRPS and reduces the willingness of the agricultural migrants to urbanize [34]. However, few studies have focused on the impact of the NRPS on farmers' social trust, and no systematic theoretical and empirical models have been established to discuss the mechanisms and effects of the NRPS on the development of social trust of agricultural migrants. Therefore, this paper first constructs a theoretical model of social choice to analyze the mechanism of NPRS and its effect on the social trust equilibrium of the agricultural migrants. Then, a breakpoint regression model is employed to empirically examine the mechanism of the NRPS and its

effects on the trust of agricultural migrants.

3. Basic theoretical model

3.1. Model Construction

According to Coleman's rational choice theory, it is assumed that the agricultural migrants consisting of many homogeneous individuals will rationally choose their own "young and old" behavior combinations and make utility maximization decisions [35]. More specifically, agricultural migrants work at a young age to obtain income for personal consumption, child support, personal education, social trust development. Then, they use savings and interest, pension, and child support for personal consumption and maintenance of social trust relationships at an older age. The social trust of agricultural migrants is usually considered to have the same utility contribution as consumption, child support, and other behaviors. Thus, the special and general trust of agricultural migrants is actually consumer goods. Assume that the total utility function U_t of agricultural migrants depends on the consumption at a young age c_{1t}, the consumption at an old age c_{2t+1}, the number of children raised n_t, personal education e_t, special trust x_{1t}, and general trust x_{2t}. For the convenience of the study, the typical "generation overlap model" U_t is used:

$$U_t = a_1 \ln c_{1t} + a_2 \ln c_{2t+1} + b_{x1} \ln x_{1t} + b_{x2} \ln x_{2t} + b_n \ln n_t + b_e \ln e_t \qquad (1)$$

where a_1 and a_2 are the marginal utilities of the agricultural migrant unit c_{1t} and c_{2t+1}, respectively; b_{x1} and b_{x2} are the marginal utility levels of unit-specific universal and universal trust, respectively; b_n is the marginal utility of raising a single child; b_e is the marginal utility of individual education. Considering the current situation of urban survival and the development of agricultural migrants, the utility contribution of social trust is much smaller than that of consumption, education, and child-rearing. Thus, we have $b_{x1} < a_1, b_{x1} < a_2, b_{x1} < b_n, b_{x1} < b_e, b_{x2} < a_1, b_{x2} < a_2, b_{x2} < b_n, b_{x2} < b_e$. Since Chinese farmers have "individual-family" bloodline differential trust preference, special trust has a larger marginal utility than universal trust, i.e., $b_{x1} > b_{x2}$.

The behavioral costs of agricultural migrants in their young age include four components: consumption costs, child rearing costs, personal education costs, and social trust development costs; in their old age, they do not have to raise children and have no motivation to learn, so they only have consumption costs and social trust maintenance costs. Assume that the marginal cost of consumption c_{1t} is p_{1t}, the marginal cost of consumption c_{2t+1} is p_{2t}, the marginal cost of special trust is p_{x1}, the marginal cost of general trust is p_{x2}, the marginal cost of child support is p_n, and the marginal cost of education is p_e. The budget equations for the combination of behavior in young and old age for agricultural transfer migrants are：

$$p_{1t}c_{1t} + \beta_1 p_{x1}x_{1t} + \beta_2 p_{x2}x_{2t} + p_n n_t + p_e e_t + s_t + g_t = w_0 + \varphi_e e_t \qquad (2)$$

$$p_{2t}c_{2t+1} + (1 - \beta_1)p_{x1}x_{1t} + (1 - \beta_2)p_{x2}x_{2t} = (1 + r_t)s_t + \phi_n n_t + (1 + \theta_t)g_t \qquad (3)$$

In Eq. (2), $p_{1t}c_{1t}$ is the cost of consumption of agricultural migrants in the young age, which is a linearly increasing function of consumption c_{1t}; $\beta_1 p_{x1}x_{1t}$ is the cost of special trust, and it is also a linearly increasing function of special trust, where $\beta_1 > 0$ is the proportion coefficient of special trust for agricultural migrants in the tenure period; Similarly, $\beta_2 p_{x2}x_{2t}$ is the cost of general trust in young age and $\beta_2 > 0$ is the proportion coefficient of general trust in young age. In urban society, agricultural migrants are competitively disadvantaged, and the marginal cost of obtaining general trust is much greater. Therefore, p_{x2} will be larger than p_{x1}. $p_n n_t$ and $p_e e_t$ in Eq. (2) are child support costs and personal education costs, respectively; s_t is savings; g_t is the pension security funds borne by the agricultural migrants; $w_0 + \varphi_e e_t$ is the personal employment income of agricultural migrants; $\varphi_e > 0$ is the marginal revenue coefficient of education; w_0 is fixed salary income, and it is not related to education.

In Eq. (3), $p_{2t}c_{2t+1}$ is the consumption cost of agricultural transfer migrants in old age; $(1 - \beta_1)p_{x1}x_{1t}$ and $(1 - \beta_2)p_{x2}x_{2t}$ are the maintenance cost of special trust and general trust in old age, respectively; r_t is the interest rate of savings; $(1 + \theta_t)g_t$ is the income of pension guarantee in the old age, and $\theta_t > 0$ is the value-added coefficient of pension guarantee; $\phi_n n_t$ is the income of agriculture migrants obtained from their children in old age. It is the economic remuneration for raising children, which reflects the traditional "many sons, many blessings" cultural characteristics of Chinese society.

Therefore, under the constraints of Eqs. (2)-(3), the behavioral choices of agricultural migrants can be represented as the following optimization problem:

$$MaxU_t(c_{1t}, c_{2t+1}, x_{1t}, x_{2t}, n_t, e_t)$$

$$= a_1 \ln c_{1t} + a_2 \ln c_{2t+1} + b_{x1} \ln x_{1t} + b_{x2} \ln x_{2t} + b_n \ln n_t + b_e \ln e_t \tag{4}$$

With Eqs. (2)-(4), the optimal special and universal trust equilibrium can be obtained:

$$x_{1t}^* = \frac{b_{x1}}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e} \frac{(1+r_t)w_0+(\theta_t-r_t)g_t}{(1+r_t\beta_1)p_{x1}} \tag{5}$$

$$x_{2t}^* = \frac{b_{x2}}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e} \frac{(1+r_t)w_0+(\theta_t-r_t)g_t}{(1+r_t\beta_2)p_{x2}} \tag{6}$$

3.2. Social pension security affects social trust mechanisms and effects

In Eqs. (5)-(6), the total lifetime disposable income of an agricultural migrant is $(1 + r_t)w_0 + (\theta_t - r_t)g_t$, which is equal to the sum of the principal and interest on fixed wages $(1 + r_t)w_0$ and the net income from old-age security $(\theta_t - r_t)g_t$. This suggests that the higher the disposable income of agricultural migrants, the more economic inputs are used to expand social interactions, and the higher the equilibrium level of special trust and general trust will be [36]. Generally speaking, the value-added coefficient of personal pension security for agricultural migrants is greater than the savings rate, i.e., when $\theta_t > r_t$, then $(\theta_t - r_t)g_t > 0$. Thus, pension security raises the equilibrium level of special and general trust of agricultural migrants, and it delivers the effect mainly through the following three mechanisms (shown in Figure 1).
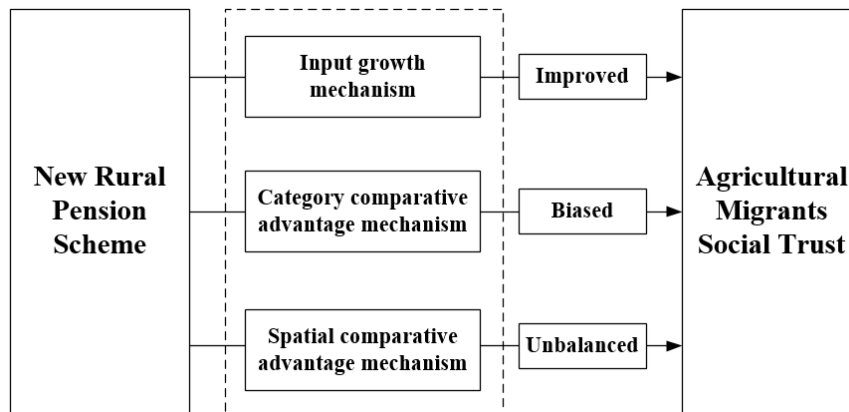

Figure 1: The function mechanism of the new rural pension scheme on the social trust of agricultural migrants.

The first one is the trust input growth mechanism. It is an inherent mechanism that drives agricultural migrants to competitively distribute the net income of old-age security $(\theta_t - r_t)g_t$ between different behaviors. The result of competitive distribution is that part of the income will be used for consumption, education, and child support, coupled with the fact that agricultural migrants belong to low-income groups and the urban survival pressure is higher [37]. $(\theta_t - r_t)g_t$ for social trust development spending will change further. Therefore, the competitive distribution of the net social security income $(\theta_t - r_t)g_t$ leads to a change in social trust equilibrium.

Under this mechanism, the special trust input equilibrium for agricultural migrants over their lifetime is $f(x_{1t}^*) = (1 + r_t\beta_1)p_{x1}x_{1t}^* = \frac{b_{x1}[(1+r_t)w_0+(\theta_t-r_t)g_t]}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e}$, and the universal trust input equilibrium is $f(x_{2t}^*) = (1 + r_t\beta_2)p_{x2}x_{2t}^* = \frac{b_{x2}[(1+r_t)w_0+(\theta_t-r_t)g_t]}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e}$. It can be seen that the input weights are determined by the relationship of behavioral marginal utility contribution, while the weight coefficients of pension security income invested in special trust and universal trust are $\frac{b_{x1}}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e}$ and $\frac{b_{x2}}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e}$, respectively. Input changes naturally lead to changes in agricultural migrant-specific trust and general trust. If $\theta_t > r_t$, then $\frac{\partial x_{1t}^*}{\partial g_t} = \frac{b_{x1}}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e} \frac{\theta_t-r_t}{(1+r_t\beta_1)p_{x1}} >$

0 and $\frac{\partial x_{2t}^*}{\partial g_t} = \frac{b_{x2}}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e} \frac{\theta_t-r_t}{(1+r_t\beta_2)p_{x2}} > 0$. This suggests that pension security increases the lifetime expected income of agricultural migrants only when their marginal payoffs from investment pension security funds are greater than that from savings. In this case, the investment of net social security income in social trust development at a proportion of $\frac{b_{x1}}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e}$ and $\frac{b_{x2}}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e}$ in turn improves the social trust equilibrium. However, because of the non-correctness of the information, agricultural migrants may choose the minimum coverage standard or even "drop out" of coverage to spend more of their income on living, education, and child support. This "adverse selection" makes the old-age security income of agricultural migrants at a low equilibrium level and reduces the social trust effect of old-age security [38], so the increment of social trust brought by the trust input growth mechanism is quite limited. Thus, we have hypothesis 1:

Hypothesis 1: When $\theta_t > r_t$, the trust input growth mechanism improves the level of social trust of agricultural migrants.

The second one is the trust category comparative advantage mechanism. This mechanism refers to the rational allocation of pension security benefits by agricultural migrants based on the comparative advantages of special and general trust, which in turn affects the special and general trust equilibrium. The social security income of agricultural migrants invested in social trust is $\frac{(b_{x1}+b_{x2})(\theta_t-r_t)g_t}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e}$, where the proportion of special trust is $\frac{b_{x1}}{b_{x1}+b_{x2}}$ and the proportion of universal trust is $\frac{b_{x2}}{b_{x1}+b_{x2}}$. The two proportions are determined by the comparative advantage relationship of utility contribution. Since $b_{x1} > b_{x2}$, the special trust equilibrium input is greater than the general trust equilibrium input. This directly leads to a greater preference for special trust in social security. Because of the total marginal cost and marginal social welfare advantages of the "individual-family" special trust of agricultural migrants in the Chinese society, as well as the inertia of the special trust preference of the vernacular culture, there are $(1 + r_t\beta_1)p_{x1} < (1 + r_t\beta_2)p_{x2}$ and $b_{x1} > b_{x2}$. Therefore, $\frac{\partial x_{1t}^*}{\partial g_t} - \frac{\partial x_{2t}^*}{\partial g_t} = \frac{\theta_t-r_t}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e}\left[\frac{b_{x1}}{(1+r_t\beta_1)p_{x1}} - \frac{b_{x2}}{(1+r_t\beta_2)p_{x2}}\right] > 0$, i.e., the NRPS prefers the special trust development of "individual-family". This leads to hypothesis 2.

Hypothesis 2: When $\theta_t > r_t$ and $\frac{b_{x1}}{(1+r_t\beta_1)p_{x1}} > \frac{b_{x2}}{(1+r_t\beta_2)p_{x2}}$, the trust category comparative advantage mechanism leads to faster growth and biased development of special social trust of agricultural migrants.

The third one is the spatial comparative advantage mechanism. It refers to the mechanism of spatial differentiation of social trust equilibrium with the advantage of spatial heterogeneity of "NRPS" coverage, which causes spatial non-equilibrium of social trust development. For agricultural migrants, the total social trust equilibrium $x_{1t}^* + x_{2t}^* = \frac{(1+r_t)w_0+(\theta_t-r_t)g_t}{a_1+a_2+b_{x1}+b_{x2}+b_n+b_e}\left[\frac{b_{x1}}{(1+r_t\beta_1)p_{x1}} + \frac{b_{x2}}{(1+r_t\beta_2)p_{x2}}\right]$ varies with the level of the spatial development of the city they live in and the marginal costs and marginal utilities of social consumption, education, child support, old-age security, and social trust. The more developed the region, the larger the ethnic heterogeneity and class heterogeneity in the urban space, the higher the possibility of social conflicts caused by culture, language, and risk, the higher the marginal cost $(1 + r_t\beta_1)p_{x1}$ and $(1 + r_t\beta_2)p_{x2}$ of social trust development, and the smaller the marginal utility b_{x1} and b_{x2} of social trust. The total marginal utility $a_1 + a_2 + b_n + b_e$ of consumption, education, and child support is relatively high, resulting in a smaller effect of social trust on the incremental income of "NRPS". There are comparative social trust costs and non-substitutional advantages of the equal amount of "NRPS" pensions in the backward areas, and its impact on social trust development is more significant. Thus, we have hypothesis 3:

Hypothesis 3: The spatial comparative advantage mechanism is more conducive to the development of social trust of agricultural migrants in backward areas and causes spatial non-equilibrium of social trust development.

4. Empirical Methods and Data

4.1. Empirical Methods

The use of OLS regressions is the most intuitive method to determine the impact of social pension

security on the social trust of agricultural migrants. However, this method can create a "selection bias" due to two problems: One is the endogenous bias induced by the reverse causality between social trust and old-age security participation, and the other is unobservable variable omission bias, such as preference, personality, and expectation omission bias. To solve the problem of bias in both aspects, this paper employs a breakpoint regression design (RDD) analysis framework to construct a natural (e.g., matching method, DID, and IV) experiment to obtain better estimation results. In the experiment, social security affects the development of social trust of agricultural migrants as an exogenous system [39].

The basic idea of RDD is that under the quasi-natural experimental condition of New Rural Pension Scheme(NRPS), the agricultural migrants located near both sides of the policy standard boundary should be similar in all aspects, and the only difference is whether they can receive the NRPS intervention or not. Considering the age of agricultural migrants as the policy allocation variable, the pension receipt as the treatment variable, and the social trust as the outcome variable, when the age allocation variable of agricultural migrants crosses the policy threshold, the proportion of those who accept the intervention of NRPS increases significantly, and the social trust changes from a smooth state to a jump state at the breakpoint of the policy intervention accordingly. This jump is caused by the outcome variable of social trust brought by the pension receipt disposal variable of NRPS.

According to the "Guidance on the Launch of New Rural Social Pension Pilot", participants must be at least 60 years old to receive the pension. This provides the threshold of policy intervention required for the breakpoint regression design, i.e., participants aged 60 or older receive pensions, while those under 60 do not. The can be expressed as:

$$D_i = \begin{cases} 1 & z_i \geq 60 \\ 0 & z_i < 60 \end{cases} \tag{7}$$

In equation (7), D_i is the treatment variable of "NRPS" for the agricultural migrant i; z_i is the age allocation variable of " NRPS". When $z_i \geq 60$, $D_i = 1$; otherwise, $D_i = 0$. If Eq. (1) holds, the effect of the NRPS on the social trust of the agricultural migrants can be expressed by the following regression model:

$$Y_i = \alpha + \beta_i D_i + \theta f(z_i) + \mu_i \tag{8}$$

In Eq. (8), Y_i denotes the social trust of the agricultural transfer migrant i; D_i reflects the participation of agricultural migrants in the NRPS; β_i is the coefficient for the effect of the treatment variable on the outcome variable; Y_i is a polynomial function of $f(z_i)$ with respect to z_i. Although the NRPS takes the age of 60 as the criteria for granting pensions, some local governments do not strictly follow the policy. In this case, some individuals receive pensions even though they have not reached the age of 60, and some do not receive pensions even though they meet the criteria [40]. This makes the NRPS treatment variable not change absolutely from 0 to 1 after the age breakpoint, but jump randomly between 0 and 1. Considering the situation that the "NRPS" policy is not strictly implemented and the sample behavior near the breakpoint is random, this paper chooses the Fuzzy RD strategy to obtain more effective regression [41]. The relationship between the processing variable D_i and the configuration variable z_i in FRD can be expressed as

$$P[D_i = 1|z_i] = \begin{cases} g_1(z_i) & z_i \geq 60 \\ g_0(z_i) & z_i < 60 \end{cases}, \quad g_1(z_i) > g_0(z_i) \tag{9}$$

In the FRD framework, the identification of the treatment effect of NRPS on the social trust of agricultural migrants can be achieved by comparing the level of social trust between those who have reached the age of 60 and receive pensions and those who have not reached the age of 60 and do not receive pensions. The function expression is:

$$\tau = \frac{\lim_{z \downarrow 60} E(Y|Z=z_i) - \lim_{z \uparrow 60} E(Y|Z=z_i)}{\lim_{z \downarrow 60} E(D|Z=z_i) - \lim_{z \uparrow 60} E(D|Z=z_i)} \tag{10}$$

In Eq. (10), τ is the local average treatment effect (LATE) of the social trust brought to the insured agricultural migrants by the NRPS. Based on the parametric two-stage least squares (2SLS) regression method, the impact of NRPS on the social trust of agricultural migrants can be estimated by using NRPS as an instrumental variable for the pension receipt status of agricultural migrants. The first-stage regression of the pension status of agricultural migrants and its instrumental variable is as follows:

$$D_i = \delta + \lambda_i T_i + \omega f(z_i) + \mu_i \tag{11}$$

The second-stage regression is:

$$Y_i = \alpha + \beta_i D_i + \theta f(z_i) + \mu_i \qquad (12)$$

In Eq. (11), D_i refers to the real state of the NRPS for agricultural migrants, and $T_i = 1(z_i \geq 60)$ is the instrumental variable of D_i, i.e., the ideal state of the pension system. Finally, the FRD causal analysis is completed by substituting Eq. (11) into Eq. (12).

4.2. Data source

The data used in this paper are obtained from the China Family Panel Studies (CFPS). CFPS is led by the China Social Science Survey Center of Peking University, taking nationwide residents as the main survey target and using the implicit stratified multi-segment probability sampling technique, including individual, household, and community-level information on the residents' pension insurance, social trust, etc. Considering that the NRPS has been implemented nationwide since 2012, there is a certain lag in the implementation of the policy, and the breakpoint regression design is locally randomized. Thus, there is no need to track the data, and the 2014 cross-sectional data is used in this paper. CFPS 2014 survey covers 25 provinces, municipalities, and autonomous regions in China, with a target sample size of 37,147 households, which is highly representative.

Before the empirical study, the CFPS 2014 individual, household, and community-level data were matched and processed as follows: (1) According to the State Council's "Guidance on the Launch of the New Rural Social Pension Pilot", only respondents with an agricultural household registration were included in the sample, and other pension insurance such as enterprise supplementary pension insurance, commercial pension insurance, urban residents' pension insurance, and school students pension insurance were excluded from the sample; (2) The "agricultural migrants" is defined as those who have an agricultural household and currently reside in an urban area. Specifically, the CFPS survey focuses on the agricultural migrants living in urban areas and having an agricultural household registration; (3) After the above processing, the missing values of key variables were further eliminated, and 3123 valid samples were obtained. Among these samples, 583 agricultural migrants received pensions from the NRPS, with a proportion of 18.7%, and the proportion of those who did not receive pensions but were eligible for insurance was 81.3%.

4.3. Definition of variables and their descriptive statistics

The explanatory variable (i.e., the RDD outcome variable) is the social trust of agricultural migrants. Social trust stems from people's psychological identification with society. This paper uses the question "Do you like to trust or doubt people" in CFPS2014 and constructs a "0-1" dummy variable. The respondents who choose "Most people can be trusted" are assigned a social trust value of 1, and those who choose "Be as careful as possible" are assigned a social trust value of 0.

The core explanatory variable (i.e., the RDD treatment variable) is whether or not the respondent is receiving a pension from NRPS. The variable is assigned a value of 1 if the respondent has received the pension and 0 if he/she has not.

To control endogeneity, the age of the respondents is used as the configuration variable of the NRPS in the regression. The probability of receiving a pension is only 0.02% when the respondent is close to 60.5 years old, and the probability of receiving a pension jumps to 72% when the respondent is over 60.5 years old (see Figure 1). It can be seen that the actual policy age breakpoint for NRPS in the samples is 60.5. Therefore, the sample is assigned a value of 1 if it is older than 60.5; otherwise, it is assigned a value of 0.

The selection of control variables followed the exogenous principle as much as possible [42], mainly including individual, family, and community characteristics of the agricultural migrants. The individual characteristics variables include gender, marriage, physical appearance, intelligence, and political identity of the agricultural migrant. Specifically, the health, appearance, and intelligence come from the surveyors' observation of the respondents, which reduces the interference of information subjectivity to a certain extent. The household characteristic variable is household size, which indicates the number of people eating at home. Community control variables are determined by neighborhood housing congestion, resident class homogeneity, ethnic heterogeneity, and spatial development variability. Community housing crowdedness is determined by the investigator's subjective evaluation (from "crowded" to "loose" in seven levels) and assigned a value of 1 to 7. A greater value indicates that the community housing is more "loose". The homogeneity of residents' class is mainly determined by the socio-economic status of the residents. It is described by seven levels from "mixed" to "very

similar", and assigned the values of 1 to 7. A larger value indicates a higher homogeneity of the residents' class. To highlight the regional spatial development differences for the agricultural migrants, following the criteria of the National Bureau of Statistics to divide the eastern, central, and western regions, the provinces in the eastern region are assigned a value of 3, those in the central region are assigned a value of 2, and those in the western region are assigned a value of 1.

To investigate the mechanism of action, the following treatments were made in the empirical evidence. First, the FRD model is used to directly determine the role of the input growth mechanism and its total impact. Secondly, the variables of "language mainly used in interviews" and "east, central, and western regions" in the sample items are used to conduct a categorical regression on the total samples to verify the existence of a category comparative advantage mechanism and a spatial comparative advantage mechanism for social trust. Among them, the question of "language mainly used in interviews" has the options of "dialect" and "mandarin". Mainstream sociologists believe that agricultural migrants interviewed in dialects have stronger "individual-family" specific social trust, while those interviewed in mandarin have stronger "individual-social" general social trust. Therefore, this paper assigns the value of "dialect" as 1 and the value of "mandarin" as 0 in the empirical evidence. Then, this division is used to classify the samples for regression to compare the selection preference, direction, and effect of the NRPS on the social trust of the two groups of agricultural migrants. Finally, the biased effect of the comparative advantage mechanism of special trust and universal trust is explained. To verify the comparative advantage mechanism of income space, this paper divides the samples into three groups: eastern, central, and western regions. Based on this, the results of the three groups of regressions are compared in terms of the impact of the NRPS on the social trust of agricultural migrants.

To save space, the statistical characteristics of the explanatory variables, explanatory variables, configuration variables, control variables, and mechanism variables are not described in detail, and they are presented in Table 1.

Table 1: The statistics characteristics of the main variables

Variables		Total Sample		Age <60.5 years sample		Age≥60.5 years sample	
		Average value	Standard deviation	Average value	Standard deviation	Average value	Standard deviation
Explained Variables	Social Trust	0.510	0.500	0.506	0.500	0.526	0.500
Explanatory variables	Whether to receive the new rural pension system	0.187	0.390	0.016	0.126	0.718	0.450
Configuration variables	Age	49.055	15.607	42.872	12.273	68.312	6.565
Control variables	Gender	0.462	0.499	0.462	0.499	0.461	0.499
	Marriage	0.822	0.382	0.843	0.364	0.759	0.428
	Appearance	5.406	1.139	5.546	1.081	4.975	1.207
	Intelligence	5.335	1.219	5.475	1.167	4.899	1.273
	Political Identity	0.027	0.162	0.020	0.140	0.049	0.215
	Family size	3.774	1.712	3.857	1.694	3.518	1.742
	Housing overcrowding	4.790	1.449	4.825	1.442	4.682	1.464
	Resident Homogeneity	4.918	1.385	4.926	1.385	4.893	1.387
	Ethnic Minority Gathering Areas	0.093	0.291	0.097	0.296	0.082	0.274
	East Midwest Region	2.182	0.803	2.175	0.803	2.206	0.802
Mechanism Variables	Language	0.561	0.496	0.536	0.499	0.638	0.481
	Eastern Region	0.430	0.495	0.425	0.494	0.445	0.497
	Central Region	0.322	0.467	0.325	0.468	0.315	0.465
	Western Region	0.248	0.432	0.250	0.433	0.240	0.427
Sample size		3123		2364		759	

5. Results and discussion

5.1. The breakpoint of the NRPS

Before conducting the FRD regression analysis, it is necessary to make a reasonable judgment on the breakpoint relationship according to whether the processing variables and the outcome variables jump before and after the breakpoint. In this paper, the samples are within the age range of 40-0 years

old, and the quadratic functions of the NRPS and social trust of the agricultural migrants after the age breakpoint are shown in Figure 2 and Figure 3, respectively. The policy breakpoint analysis indicates that the probability of receiving a pension for agricultural migrants jumps significantly at age 60.5, i.e., the probability of receiving a pension for agricultural migrants increases significantly after the age of 60.5, which is consistent with the rule of receiving a pension. Figure 3 shows that the social trust level of the agricultural migrants also shows a significant increase after the age of 60.5. On the whole, under the breakpoint age rule of the NRPS, the receiving of pension has increased the level of social trust of agricultural migrants, and the breakpoint age does exist.
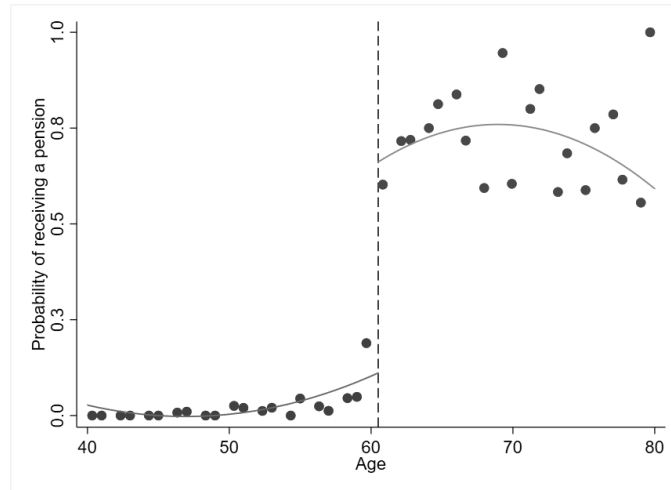

Figure 2: Probability of agricultural migrants receiving a pension before and after the breakpoint
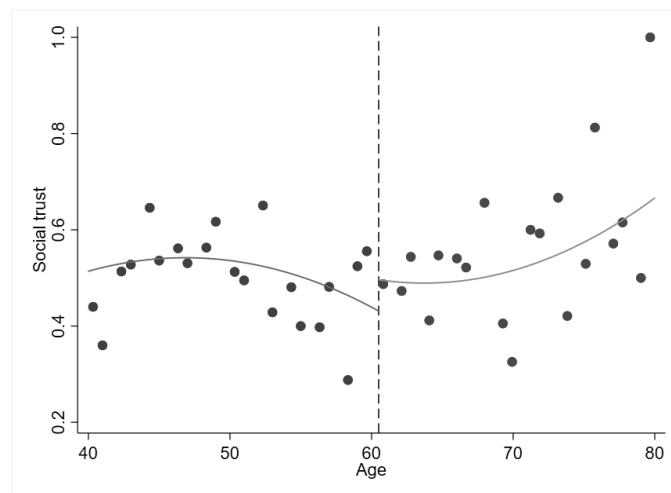

Figure 3: Level of social trust of the agricultural migrants before and after the breakpoint

5.2. Impact of the NRPS on social trust

Table 2 reports the regressions results of the FRD model which illustrates the impact of the NRPS on the social trust of agricultural transfer migrants. Group A and Group B are the results of the FRD model without and with control variables, respectively, and each group includes both the age bandwidth "+/-6" "+/-7.05" "+/-8 " results for the three scenarios. Among them, the bandwidth "+/-7.05" group is the optimal bandwidth using the cross-validation method. It can be seen that the regression results are basically consistent in magnitude, direction, and significance level between the group with no control variables and the group with control variables and between different bandwidth groups, showing better robustness.

Part (1) of Table 2 shows the results of the first-stage regressions, which reveal the effect of pension eligibility on the probability of receiving a pension for agricultural migrants. The results show that the agricultural migrant eligible for pension under the age bandwidth of "+/-7.05" increases the probability of receiving pension by 30.9% at the significance level of 1%, (only the optimal bandwidth for the set of uncontrolled variables is explained in limited space, hereinafter). This shows that the NRPS has been

seriously implemented by governments at all levels and correctly perceived by rural residents. Part (2) Table 2 presents the results of parsimonious regressions, which show the effect of pension eligibility on the social trust of agricultural migrants. The regression coefficients of the model indicate that pension eligibility increases the level of social trust of agricultural migrants at a significant level of 10%. The results of the second-stage regression presented in part (3) of Table 2 show that pensions have a significant positive impact on the level of social trust of agricultural migrants, and the social trust of agricultural migrants who received pensions increases by 24.6% compared to those who do not receive pensions. It is suggested that the economic income of agricultural migrants has been increased by the pension subsidy of the NRPS, and the social trust has been increased by the mechanism of input growth. This effect holds for both the pension eligibility and the actual receipt of the pension.

Table 2: Estimation results of the FRD model about the effect of the NRPS on the social trust of agricultural migrants

Variables	A Groups without control variables			B Groups with control variables		
	+/-6	+/-7.05	+/-8	+/-6	+/-7.05	+/-8
(1) Results of the first stage regression: the effect of pension eligibility on the probability of receiving a pension for the agricultural transfer population						
Pension Qualification	0.358***	0.309***	0.263***	0.361***	0.312***	0.266***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant term	-0.456***	-0.485***	-0.495***	0.512	0.263	0.484
	(0.000)	(0.000)	(0.000)	(0.200)	(0.496)	(0.193)
R2	0.379	0.374	0.350	0.398	0.383	0.361
(2) Results of the minimalist regression: the impact of pension eligibility on the level of social trust of the agricultural migrants						
Pension Qualification	0.029**	0.022*	0.025***	0.027**	0.189*	0.023**
	(0.037)	(0.054)	(0.009)	(0.049)	(0.10)	(0.020)
Constant term	-0.064	-0.058	-0.045	-0.245	-0.168	-0.074
	(0.143)	(0.161)	(0.252)	(0.450)	(0.587)	(0.803)
R2	0.004	0.003	0.005	0.018	0.015	0.017
(3) Results of the second-stage regression: the effect of pension receipt on the level of social trust of the agricultural migrants						
Pension Qualification	0.253*	0.246*	0.341**	0.246*	0.219*	0.307**
	(0.069)	(0.064)	(0.010)	(0.081)	(0.100)	(0.024)
Constant term	-0.164**	-0.152**	-0.174***	-0.382	-0.280	-0.251
	(0.014)	(0.016)	(0.004)	(0.260)	(0.390)	(0.425)
R2	0.003	0.003	0.005	0.017	0.015	0.017
Sample size	825	923	1004	825	923	1004

Note: Values in parentheses are standard errors, *, **, *** indicate confidence levels of 10%, 5%, and 1%, respectively.

5.3. Validity test

FRD multi-bandwidth regression confirms the robustness of the results, but further testing of the configuration variable continuity and predetermined control variable smoothness at the breakpoint is required to ensure the reliability of the FRD model regression results. It is worth noting that if the study configuration variables are not significantly different at the breakpoints, they can be considered as not significantly manipulated, and thus the validity of the FRD regression results can be guaranteed [39]. Referring to the Mccrary method, the probability density plot of the configuration variable (i.e., age) is shown in Figure 4 [43]. It can be seen that the sample density distributions on both sides of the breakpoints are not significantly different and highly overlapping at the horizontal confidence interval of 95%, and the fitted lines have good continuity. This result indicates that the configuration variables have not been significantly manipulated and are strongly exogenous.

Regarding the test of smoothness of the predetermined control variables, the above regression results show that the consideration of the control variables does not significantly affect the effect of pension receipt on the social trust of agricultural migrants. This proves that the control variables are smooth at the breakpoint and do not significantly enhance the endogeneity of the regression results. Figure 5 visualizes the effect of pension receipt on the control variables. As can be seen in Figure 5, the individual, household, and community control variables do not jump significantly when the surveyed

agricultural migrants reach the pension age, and the confidence intervals on both sides of the breakpoints have strong overlap, verifying the assumption of smoothness of the control variables.
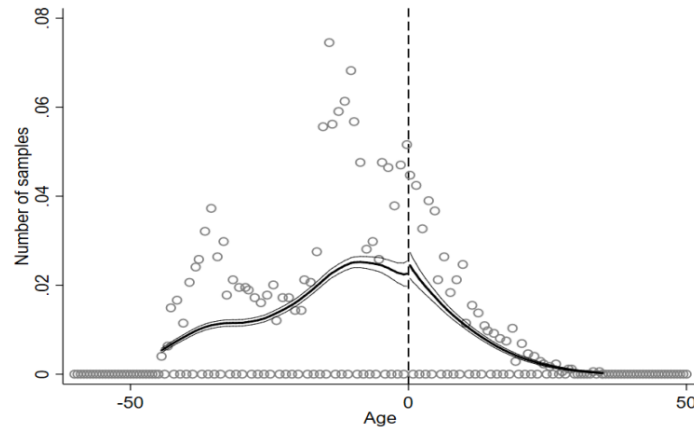

Figure 4: Density function of age. Note: The value of the horizontal coordinate indicates the difference between the actual age of the agricultural migrants and 60.5 in years; the value of the vertical coordinate is the number of samples; the dotted line indicates the location of the breakpoint at 60.5; the solid line in the middle is the fitted line, and the solid lines above and below are the horizontal confidence interval bounds of 95%.
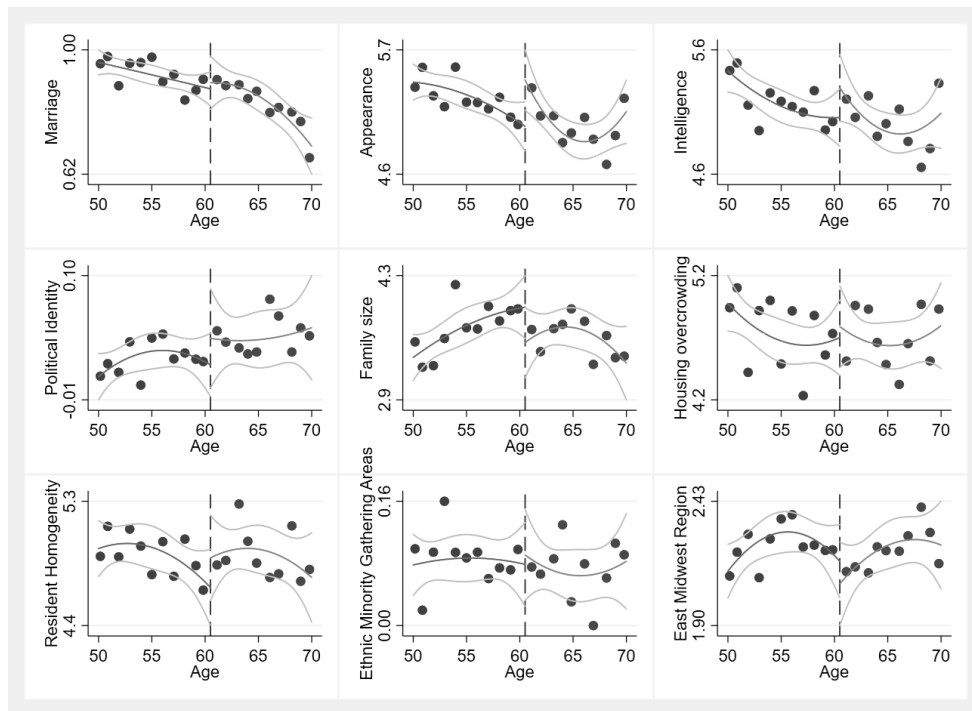

Figure 5: Effect of receiving pension on the control variables. Note: The value of the horizontal coordinate indicates the actual age of the agricultural migrants in years; the value of the vertical coordinate is the number of samples; the dotted line indicates the location of the breakpoint at the age of 60.5; the solid line in the middle is the fitted line, and the solid lines above and below are the horizontal confidence interval bounds of 95%.

Finally, the samples are restricted to the agricultural migrants not covered by the NRPS, and the same regression model is used. The agricultural migrants who are not covered by the NRPS are not eligible for pension even if they meet the age rule, so their pension eligibility should not have a significant impact on their social trust. The test results in Table 3 show that there is no significant effect of pension eligibility on the social trust of the agricultural migrants not covered by the NRPS, further indicating the validity of the findings obtained by the FRD model. As a result, theoretical hypothesis 1 has been verified with certainty through multiple rounds of robustness regressions, that is, the NRPS has increased the social trust level of agricultural migrants.

Table 3: The effect of pension eligibility on the social trust level of agricultural migrants

Variables	A Groups without control variables			B Groups with control variables		
	+/-6	+/-7.05	+/-8	+/-6	+/-7.05	+/-8
Results pf the minimalist regression: the impact of pension qualification on the level of social trust of the agricultural transfer population						
Pension Qualification	0.026	0.010	0.011	0.025	0.005	0.006
	(0.217)	(0.552)	(0.417)	(0.247)	(-0.781)	(0.655)
Constant term	-0.080	-0.104	-0.097*	-0.012	0.084	0.255
	(0.235)	(0.098)	(0.100)	(0.978)	(0.834)	(0.505)
$R2$	0.002	0.000	0.000	0.030	0.025	0.024
Sample size	521	586	647	521	586	647

Note: Values in parentheses are standard errors, *, **, *** indicate confidence levels of 10%, 5%, and 1%, respectively.

5.4. Impact mechanism test

The previous regression directly confirms the reliability of hypothesis 1, and empirically confirms the robustness of the input growth mechanism and its effects. To save space, this section focuses on testing the validity of hypothesis 2 and hypothesis 3 and verifying the effect of the category comparative advantage mechanism and the spatial comparative advantage mechanism on agricultural migrants.

Table 4: Mechanism test: the mechanism of pension receipt affecting social trust of agricultural migrants

Variables	A Category comparative advantage mechanism		B Spatial comparative advantage mechanism		
	Individual - Family	Personal-Social	Eastern Region	Central Region	Western Region
(1) Results of the first-stage regression: the effect of pension eligibility on the probability of receiving a pension for agricultural migrants					
Pension Qualification	0.281***	0.439***	0.229***	0.336***	0.384***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant term	-0.462***	-0.562***	-0.549***	-0.449***	-0.363***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
$R2$	0.374	0.299	0.361	0.395	0.379
(2) Results of the minimalist regression: the impact of pension eligibility on the level of social trust of agricultural migrants					
Pension Qualification	0.032**	-0.044	0.001	-0.012	0.058*
	(0.012)	(0.249)	(0.950)	(0.570)	(0.061)
Constant term	-0.057	-0.004	-0.077	-0.126*	0.024
	(0.264)	(0.962)	(0.169)	(0.092)	(0.791)
$R2$	0.008	0.004	0.000	0.000	0.014
(3) Results of the second-stage regression: the effect of pension receipt on the level of social trust of agricultural migrants					
Pension Qualification	0.443***	-0.497*	0.071	-0.140	0.477*
	(0.007)	(0.095)	(0.706)	(0.543)	(0.095)
Constant term	-0.228***	0.171	-0.100	-0.071	-0.173
	(0.004)	(0.207)	(0.219)	(0.538)	(0.236)
$R2$	0.009	0.009	0.000	0.000	0.010
Bandwidth	+/-7.928	+/-3.912	+/-8.633	+/-9.568	+/-6.006
Sample size	605	227	520	684	191

Note: Values in parentheses are standard errors, *, **, *** indicate confidence levels of 10%, 5%, and 1%, respectively.

In Table 4, the regression of group A of the FRD model gives information on the comparative advantage mechanism. The regressions in Panel A (1) show that the pension eligibility asymmetrically increases the probability of receiving pensions for agricultural migrants with different social trust preferences. The regression of group A (2) shows that the pension eligibility significantly increases the level of "individual-family" special social trust of agricultural migrants, but it has no significant effect on "individual-society" general trust. The regression results in Panel A(3) show that the NRPS significantly increases the "individual-family" special trust level of agricultural migrants and decreases

the "individual-society" general trust level. This shows that the agricultural migrants consider the comparative advantage of "individual-family" special trust, rationally bias the limited incremental income of the NRPS to the development of "individual-family" special trust, and even prefers to inhibit the development of "individual-society" universal trust. As expected from theoretical hypothesis 2, the NRPS drives faster growth of "individual-family" special trust of agricultural migrants through the comparative advantage mechanism, so the NRPS has a preference for "individual-family" special trust development.

The regression results of group B in Table 4 show that the pension eligibility and the receipt of pension only have a significant effect on the social trust level of agricultural migrants in the western region. This result is consistent with the inference of hypothesis 3. In the relatively developed eastern and central urban areas, the growth effect of social trust generated by the NRPS is offset by the suppression effect and substitution effect of social trust cost, which makes it difficult to change the social trust of agricultural migrants significantly. As for the agricultural migrants in the western region, the social trust growth effect of the NRPS is greater than the cost inhibiting effect and substitution effect, and the social trust development has a positive effect. This spatial comparative advantage mechanism of drives the growth of social trust of agricultural migrants in the western region, but it does not affect the growth of social trust of agricultural migrants in the east-central region, which inevitably leads to the spatial differentiation of social trust development of agricultural migrants in the west and the east-central regions. This result indicates that the NRPS has a western spatial bias of social trust development, and there is indeed a spatial non-equilibrium. Thus, hypothesis 3 is verified.

6. Conclusion

By combining the "overlapping generations model" and social choice theory, this paper establishes a two-period social behavior choice model and determines the optimal equilibrium of social behavior combinations such as consumption, education, child support, social security, and social trust of the agricultural migrants. Then, using CFPS2014 data, a quasi-natural experiment is designed to test the mechanisms and effects of the NRPS on the social trust of agricultural migrants. The study shows that agricultural migrants rationally select the social behavior mix and determine the social trust equilibrium. As an important social security policy, the NRPS affects the social trust balance of agricultural migrants through three mechanisms. First, the trust input growth mechanism improves the overall social trust level of agricultural migrants. Second, the comparative advantage mechanism asymmetrically increases the level of "individual-family" special trust and "individual-social" general trust of agricultural migrants, resulting in the biased development of "individual-family" special trust. Third, the comparative spatial advantage mechanism makes the social trust of agricultural migrants in the eastern and central regions not affected by the NRPS, while the social trust of agricultural migrants in the western region increases significantly. Therefore, while the NRPS improves the overall social trust of agricultural migrants, it also leads to the biased growth of "individual-family" social trust and unbalanced social trust development space.

The effect of the NRPS on the development of social trust of agricultural migrants shows that to accelerate the development of social trust of agricultural migrants, it is necessary to deepen the reform of institutional mechanisms and effectively improve the capacity of social trust development. Also, it is necessary to fully consider the adaptability of social options to agricultural migrants, optimize the social policy mix, and enhance the comprehensive effect of the policy mix on social trust development. Besides, we need to improve the social pension system, dynamically adjust the pension insurance level, and strengthen the effectiveness of the NRPS. Moreover, by combining the biased and spatial non-equilibrium of social trust influenced by the NRPS, we can dynamically and precisely adjust the category and spatial comparative advantages of social trust of agricultural migrants to prevent the spatial imbalance of social trust development. It should be noted that there are massive agricultural migrants due to the non-agricultural urbanization of farmers, and the vast majority of them have become weak competitors in urban society. Meanwhile, the policy orientation, policy social environment, and operating mechanism have undergone urbanization and non-agricultural changes, which require the transformation and upgrading of the social old-age security policy. Although in 2014, the government integrated the NRPS with the urban residents' pension insurance into a unified national pension system for urban and rural residents. Though the pension system for agricultural migrants has developed satisfactorily, continuous reform and development are still needed to enhance social trust and development.

This study has some limitations.First of all, this paper uses the breakpoint regression design to

analyze the impact of social endowment insurance on the social trust of agricultural migrant population. This method improves the effectiveness of causal analysis, but it has strict requirements on data, and its use of data is not flexible enough, which limits the diversity and expansion of the research content to a certain extent, resulting in the difficulty of further deepening the research conclusions. Therefore, we can try to use multiple methods Based on diversified data, further analysis is carried out around the relevant research on the development of social trust.Secondly, as the psychological and behavioral relationship between individuals in the social system, the development law of social trust is very complex. Different social subjects may show different development laws for different types of social trust. This study only focuses on the impact of social endowment insurance on the development of general social trust of agricultural migrant population, and does not make a comparative analysis of the development of social trust of different groups, nor does it make a specific classification of social trust, which may lead to a relatively one-sided and weak research conclusion, so it can further enrich the connotation of social trust and present it in empirical research.

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Authors' contributions

H.J., conceptualization, supervision, project management. H.J., data curation, methodology, validation, resources, funding, writing—original draft preparation conceptualization, formal analysis, Z.L.writing—review and editing, screening questionnaires and tables, all authors have read and agreed to the published version of the manuscript.

Data availability

The data that support the findings of this study are available from [Institute of Social Science Survey, Peking University] but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of [Institute of Social Science Survey, Peking University].The link to the CFPS2014 is:https://opendata.pku.edu.cn/dataverse/pku/.

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