

## Article

# Employment of Land-Expropriated Farmers: The Effects of Land Expropriation and Gender Difference

Yue Wang<sup>1</sup>, Dengjiao Liao<sup>2</sup>, Bin Yan<sup>3,\*</sup> and Xinhai Lu<sup>4,\*</sup> 

<sup>1</sup> College of Public Administration, Zhongnan University of Economics & Law, Wuhan 430073, China; wangyue@zuel.edu.cn

<sup>2</sup> Urban Construction Department, Wuhan City College, Wuhan 430083, China; liaodj12@163.com

<sup>3</sup> Law School, Huazhong University of Science and Technology, Wuhan 430074, China

<sup>4</sup> College of Public Administration, Huazhong University of Science and Technology, Wuhan 430074, China

\* Correspondence: yanbin@hust.edu.cn (B.Y.); xinhailu@163.com (X.L.); Tel.: +86-138-7110-0511 (B.Y.)

**Abstract:** The employment inequality between males and females in the context of land expropriation is not conducive for land-expropriated farmers to earn a sustainable livelihood. In this study, based on the data of two waves of household surveys, the “Chinese Family Panel Study” in 2016 and 2018, the PSM-DID method is used to test the effects of land expropriation on the employment behavior of the rural labor force, and the heterogeneous results of men’s and women’s employment behaviors are analyzed. The following conclusions are drawn. Land expropriation significantly reduces the employment probability of the labor force, encouraging the rural labor force to withdraw from the labor market voluntarily; land expropriation significantly shortens the employment distance of the labor force overall, promoting the urbanization of the rural labor force in the vicinity; land expropriation has a greater impact on the unemployment of the female labor force than that of the male labor force, and it increases the employment distance of males and reduces that of females, promoting the return of females’ labor to the family. The policy significance of this study is to attach importance to the long-term sustainable livelihoods of rural households and the employment equality of males and females in urbanization. Findings suggest family-friendly compensation for land expropriation should be formulated, rural construction land should be allowed to enter the market instead of being expropriated, and cooperation between county and developed regions should be encouraged for the creation of more jobs.

**Keywords:** land expropriation; employment behavior; PSM-DID; gender difference



**Citation:** Wang, Y.; Liao, D.; Yan, B.; Lu, X. Employment of Land-Expropriated Farmers: The Effects of Land Expropriation and Gender Difference. *Land* **2023**, *12*, 1955.

<https://doi.org/10.3390/land12101955>

Academic Editors: Claudia A. Radel and Birgit Schmook

Received: 28 August 2023

Revised: 18 October 2023

Accepted: 19 October 2023

Published: 23 October 2023



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## 1. Introduction

In developing countries, land expropriation is an important cause of conflicts between the government and farmers and has profoundly changed the living conditions of farmers. In China, due to rapid economic development and the need for land financing by the government, large-scale agricultural land is converted into construction land through land expropriation.

According to the Overall Planning Outline for the National Land Use of China (2016–2030), by 2030, the area of urban space in China will reach 116,700 km<sup>2</sup>, and the number of unemployed farmers will reach 210 million [1]. Many farmers will lose their land, leave agricultural production, and transform the means of their livelihood. In addition, as an external impact, land expropriation can affect the livelihood of farmers. Even if they receive financial compensation, their livelihood strategies will be adjusted accordingly. Unlike spontaneous land transfer, land expropriation results in passive or involuntary urbanization for the rural labor force. Employment difficulty, reduced income, increased living costs, and a weak sense of belonging in cities are the major problems land-expropriated farmers face [2,3]. Some investigations have indicated that in both the central and western regions, the unemployment rate of farmers whose land has been expropriated is between 20 and

30 percent [1,4,5]. Low levels of human capital, such as education attained, vocational skills development, and health status, are important factors that affect the reemployment of land-expropriated farmers [1,4]. A single social relationship within a family, lack of social capital [6], as well as the compensation level and resettlement mode of the land expropriation are all factors affecting employment [7,8]. However, previous literature has paid more attention to the employment results, without analyzing whether the inherent reason for the high unemployment rate caused by land expropriation is because land-expropriated farmers are voluntarily or involuntarily unemployed [4,8,9].

Rational allocation of labor resources in the family is conducive to the full use of market opportunities by rural families, the maximization of household income, and the smooth progress of household reproduction [10]. Employment distance is the result of individual rural laborers' choices based on the family utility maximization. Out-migration employment distance has a significant positive impact on labor wages, the income of inter-provincial migrant laborers is higher than that of intra-city migrant laborers, and the inflow to cities and towns can also help improve the stability of employment [11]. However, the separation of registered and actual residences [12] and working location has separated family members, which is not conducive to the long term sustainability development of the family as a whole. The left-behind children and the elderly are social challenges in rural areas in China [13]. Some studies have also shown that there is a positive U-shaped relationship between employment distance and quality [9]. Moreover, land expropriation has advanced the urbanization level of suburban areas through the construction of public infrastructure and other public welfare projects, thus bringing jobs near the hometowns of migrant workers [1,5]. This raises the following questions: Does land expropriation promote the return of migrant workers to their hometown or does it help them obtain employment nearby? Are there significant differences in the reemployment behavior of males and females?

Other studies have found a U-shaped relationship between female labor force participation and gender inequality. In addition, female labor force participation has had a strong and significantly uneven impact in developing countries [9]. Like other countries, gender differences in the non-agricultural labor market also exist in China, which are mainly reflected in employment opportunity, wage difference, as well as rights and benefits guarantees [12]. In addition to being constrained by their own human capital (education level and vocational skills), family, and social environment, women also face gender discrimination in the labor market, resulting in difficulties in re-employment and low employment wages [14]. However, the labor participation rate of women is higher than that in developed countries. In 2020, the labor participation rate of women over 15 years old in China was 66.82%, compared with 61.12% in Russia and 61.41% in the United States [15]. The increase in the labor participation rate of women will improve the living standards of people in a country and even can generate a gender dividend with positive effects on economic growth [16]. However, some scholars believe that the increase in the participation degree of women in the labor market has rather led to a decline in family welfare [9]. Women's employment behavior is often based on the trade-off between family care and their earnings as workers. There have been many studies on female migrant workers. They mainly focus on the challenges women face in livelihood transformation and the participation degree of women in the labor market [6,9]. However, research on the impact of land expropriation on employment decision-making is mostly based on the family as a re-search unit, ignoring the gender division of the labor force in the family. In the family division, with women as the main bearers of domestic work, the shadow price of their domestic labor becomes the reserved wage for women's participation in the labor market. When the impact price of domestic labor is higher than the wage level obtained from the market, women will choose to give up employment and engage in domestic labor at home [6,17]. Land expropriation has improved the economic conditions of the family to a certain extent. The government will provide a certain amount of land acquisition compensation to the expropriated households to improve their economic conditions [10],

enabling women to withdraw from the labor market and focus more on domestic activities [15,18]. The impact of family responsibilities on the employment of young women is greater than that on young men. Education and employment training are conducive to the transformation of laborers from agriculture to non-agricultural employment, especially for female laborers [17]. However, in the current job market, although there is no clear statement not to recruit women, obstacles are set for women through various conditions. For example, recruitment materials might state that the job involves frequent business trips and a large workload, making it more suitable for a man, increasing the difficulty in employment for women [16].

Land expropriation changes the family's living or natural, capital, and the land-lost farmers are forced to adjust their livelihood strategies. Men and women in a family will choose different employment strategies because of the family division of labor and differences in employment opportunities, which lead to differences in labor behaviors for different members of the family unit. This study focuses on the following three gaps in the research on the employment behavior of land-expropriated farmers:

1. Analyzing the impact of land expropriation on the employment status of farmers along with employment intention.
2. Including employment distance, employment status, and employment intention in the analysis and investigating the impact of land expropriation on labor transfer from a spatial perspective.
3. Investigating the difference in the re-employment behaviors of men and women as a result of land expropriation from the perspective of the family labor division.

By analyzing the impact of land expropriation on employment and its gender differences, this paper aims to promote the long term sustainability development of land-lost families and propose suggestions for land use policies in urbanization.

Apart from the Introduction, this paper is divided into five sections. In the first section, a model for long term sustainable livelihoods is used to establish a conceptual framework, which creates a potential path for the impact of land expropriation on the employment behaviors and gender differences of farmers. The second section describes the data source, specification of variables, and the design of the analysis model. In the third section, the Propensity Score Matching Difference-in-Difference (PSM-DID) model is used to comprehensively and quantitatively analyze the impact of land expropriation on the employment behavior of farmers and the differences in the employment behavior of male and female laborers. In the fourth section, we discuss the impact of land expropriation on the employment behavior of farmers and the causes of the impact and its influence mechanism, analyzing the reasons for the observed differences in the employment behavior of men and women whose land was expropriated. In the fifth section, a series of conclusions are drawn, and some policy suggestions are proposed.

## 2. Conceptual Framework

The analytical framework for long term sustainable livelihoods was proposed by the Department for International Development (DFID) of the United Kingdom in 1999. This framework provides a set of ideas for observing and analyzing poverty and livelihood issues [19] and focuses on how households use assets and capabilities, as well as maintain and enhance them, to protect livelihoods. In this analytical framework, livelihood capitals are divided into five types—natural capital, physical capital, human capital, financial capital, and social capital. The framework describes how farmers can use their livelihood capitals to develop livelihoods in a risky and vulnerable environment as well as to reform systems, organizations, and external public services through their own opportunities and potentials. The long term sustainable livelihood framework not only reflects the circular loop of the livelihood capital structure, livelihood strategies, and livelihood outcomes of farmers but also reflects the mutual transformation mechanisms for the five types of livelihood capitals. This model is often applied in research on family livelihoods under external impact events, such as immigration and land expropriation [1,13,20,21].

Land is an important means of production and capital for livelihoods for farmers. Land expropriation changes the capital structure of family livelihoods [21], and resettlement for land expropriation changes the living environment, lifestyle, and social relations of farmers to varying degrees. In this vulnerability context, rural households will re-select their livelihood strategies based on their livelihood capitals to maximize their livelihoods [2,10,18].

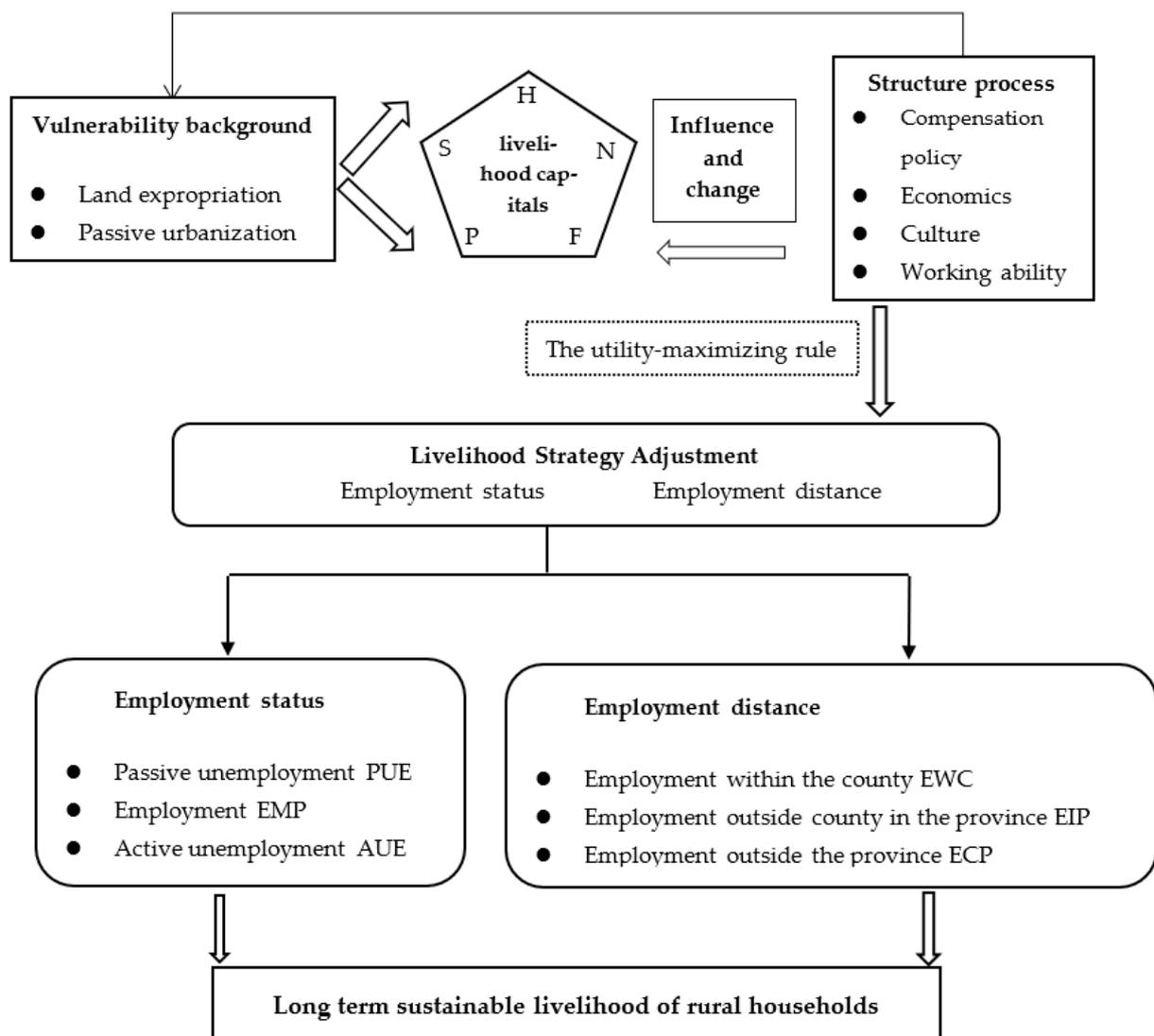
The employment of farmers after land expropriation is generally divided into four categories: farming, local non-agricultural employment (such as self-employed, floating vendors, local factory employment, etc.), migrant workers, and unemployment [4,5]. Unemployment is the biggest problem they face. Land expropriation may increase the distance between families and workplaces and may drive local economic development and increase employment [1,18]. However, the restrictions on farmers' human capital and the difference in psychological expectations for employment can lead to a great difference in the commuting distance of farmers' employment (the gap is mainly manifested as changes in the employment distance and status of farmers after land acquisition compared to before). On the one hand, land-expropriated farmers have few opportunities for employment transition due to their low level of education and lack of non-agricultural skills [14], and, on the other hand, the employability of farmers who have been expropriated is low, making it difficult to achieve employment; even if non-agricultural employment can be successfully achieved, often it is temporary work that is unstable and low-income, and the quality of employment of rural households is low [6]. In the cooperative mode of traditional Chinese families, especially in rural areas, men go out to work to earn wages for the family, whereas women bear the responsibility for caring for the family [1]. In addition, land-expropriated women are in a disadvantaged position in the labor market [8], and the quality of employment is even more serious after the loss of land resources by farmers whose land has been expropriated.

As mentioned above, the livelihood strategy studied in this article focuses on three aspects of employment strategy—the employment status, employment intention, and employment distance of land-expropriated farmers. The expropriation of farmers' land means that the government uses public power to exchange a certain amount of compensation for the natural capital of farmers [5,8,22]. In this adjustment process, farmers lose the production materials they depend on, but they can improve the financial and physical capital of their families within a short period [20], which inevitably affects their employment status. In addition, farmers in general have a lower education level, a relatively single means of earning a living, and a lower level of social capital that can connect them to employment opportunities in the city, which affects their employment intention and employment distance [6,23].

Rural labor mobility is also one of the methods to re-allocate family labor resources. The “new economics of migration” holds that when making optimal migration decisions, individuals not only consider their personal utility maximization but also attach great importance to the maximization of the interests of related groups or larger units—“farmers or families” [24]. Therefore, in addition to the factor of wage income, laborers consider the increase in their families' overall livelihood capitals when changing employment location. One important point is about the next and previous generations. The separation of actual and registered residence of migrant workers has a negative impact on countless left-behind children and old people in China [25]. Land expropriation has adjusted the livelihood capitals of migrant families and relieved them of short-term economic pressure. They will adjust their employment distance based on their overall family utility. Moreover, land expropriation mostly occurs in the urban–rural integration or suburbs. It brings more non-agricultural employment opportunities [9,18]. A sound development of the local economy is conducive to solving the problem of imbalance between “modernity” and “homesickness” and realizing in situ urbanization [2].

Individual laborers in the family have personal differences, so different mechanisms of behavior affect their economic behavior [17]. According to Becker's theory for division

of labor within households, the different family and employment views of men and women have a heterogeneous impacts on their livelihood strategies. The theory for division of labor within households shows that the biological differences and the differences in experience and human capital investment of farmer family members determine their division of labor [26]. From the perspective of family burden, supporting the elderly and taking care of children will bring economic pressure to the family, prompting the laborers to actively seek employment and pursue higher incomes, and increasing the scope of its labor mobility. At the same time, the existence of the family burden requires the laborers to invest more energy to take care of the family, and the employment of the laborers is limited, and the probability of going out to work will be reduced [14,27]. The traditional family view in rural areas of China shows that women assume more responsibilities for caring for families, whereas men assume more economic responsibilities. Therefore, the employment behavior of male and female laborers might show heterogeneity after land expropriation [6] (Figure 1).



**Figure 1.** Analysis Framework of livelihood transformation of land-expropriated farmers. Notes: Here, five capital resources are denoted as S: social, N: natural, H: human, P: physical, and F: financial.

### 3. Materials and Methods

#### 3.1. Data Collection

The data used in this paper are from the China Family Panel Studies (CFPS) dataset. CFPS is a national follow-up survey project conducted by the Institute of Social Science

Survey (ISSS) of Peking University. The project aims to track and collect data at three levels—individual, family, and community. A comprehensive survey is conducted in 25 provinces across the country, reflecting the evolution in society, economy, population, education, and health in China and focusing on the economic and non-economic welfare of Chinese residents. The project officially started in 2010, and, as of 2021, a total of five rounds of survey data have been publicized.

In this study, the data involving land expropriation in the latest two periods (2016 and 2018) are used to estimate the impact of land expropriation on employment; the study is mainly based on the 2018 sample. In the questionnaire used in the 2018 version, the question of whether a family has undergone housing demolition/land expropriation in the past 12 months was included. On this basis, in this study, different groups of rural laborers (laborers who have undergone land expropriation and those who have not) are distinguished to investigate the influence of land expropriation, livelihood capitals, and individual characteristics on the livelihood transition of individual labor in a farmer household.

To construct data on the employment status of land-expropriated laborers, this study first combines the 2016 and 2018 datasets based on the personal identification (PID) provided in the questionnaire for adults. Moreover, to control for the differences in the family characteristics of the land-expropriated laborers, the individual and family questionnaires were paired according to the family identification (FID) provided in the family and adult questionnaires. As this study focuses on the employment behavior of land-expropriated farmers, the age group of the laborers was limited to 16 to 65 years, and the urban samples, samples with missing variables, and those missing family characteristics are eliminated. Finally, 9574 samples are obtained, with 704 land-expropriated individuals in 2018.

### 3.2. Variable Selection

The main variables will be whether land was expropriated, livelihood capital, and livelihood strategies for rural households over the past 12 months. Livelihood capital is divided into five dimensions: natural capital, physical capital, human capital, financial capital, and social capital [19]. Livelihood strategies are divided into three dimensions: employment status, employment intention, and employment distance [3,9,28]. The control variables are at the individual level and the family level, of which the control variables at the individual level are gender, age, and education, and the control variables at the family level control for the compensation received by the family for land expropriated, the rental income of family assets, the number of minor children in the family, and the location of the family.

(1) Dependent variable. This study mainly analyzes the influence of land expropriation on the employment behavior of laborers, involving three aspects—employment status, employment intention, and employment distance. Referring to Esteban when studying the Spanish labor market, the labor status is divided into “employed, unemployed and inactive” [28], combining with the employment situation of rural laborers in China [1,29], the employment status of laborers is divided into employment and unemployment. Based on whether they have actively sought employment, unemployment status is divided into active and passive unemployment to represent employment intention. Active unemployment refers to the situation where the labor force is in good economic condition and has the ability to find employment, but does not seek employment. Passive unemployment refers to the individual having the willingness to find employment but being unable to find a job. In addition, based on the region that the laborers are working in, employment distance is divided into three categories—in-county employment, outside-county employment (but within the same province), and outside-province employment (Table 1).

**Table 1.** Explained variable name, assignment and descriptive statistics.

	Variable	Variable Meaning	Mean	Max	Min
Employ-ment status	Passive unemployment PUE	Willing to work but unable to find a job	0.01	1	0
	Employment EMP	Has worked for at least 1 h in the past week or engaged in seasonal work, and is currently in the rest season	0.92	1	0
	Active unemployment AUE	Did not try to find a job and did not want to work	0.08	1	0
Employ-ment distance	Employment within the county EWC	Work in the village, township, or county-level city	0.89	1	0
	Employment outside county in the province EIP	Work outside the county and still in the same province	0.04	1	0
	Employment outside province ECP	Work in other provinces in the country	0.07	1	0

(2) Independent variables. In this study, the core explanatory variable is the exogenous event variable of whether “land expropriation occurred or not”, and the control variables are the two indices of livelihood capital and of personal characteristics, which are used to represent the influencing factors on the transformation of laborers’ livelihood strategy in the context of land expropriation [19]. According to the framework of long term sustainable livelihoods, family livelihood capital includes the following five aspects: financial capital, natural capital, physical capital, social capital, and human capital. To meet the modeling needs, the logarithm is taken on the variables for the amount of money. Table 2 presents the definitions of the variables and their descriptive statistics for the sample group with expropriated land.

**Table 2.** Control variable name, meaning, and descriptive statistics.

Variable	Variable Meaning	Mean	Max	Min
Asset	The sum of labor rent income, land rental income, and other asset rental income is taken as logarithm	0.88	12.6	0
Compensation	The sum of housing demolition compensation and land expropriation compensation is taken as logarithm	0.18	12.8	0
Cash assets	Total cash and deposits is taken as logarithm (yuan)	6.31	14.5	0
Household	The net house property owned by the family is taken as logarithm (yuan)	11.08	18.4	0
Agricultural	The total value of agricultural machinery is taken as logarithm	3.80	13.5	0
Durable	The total consumption value of durable goods is taken as logarithm (yuan)	8.44	14.2	0
Support	Logarithm of money given by relatives	0.78	13.2	0
Healthy	1. Unhealthy 2. General 3. Relatively healthy 4. Very healthy 5. Healthy	2.99	5	1
Education	Years of formal education (years)	6.84	19	0
Age	The age of the laborer	44.50	65	16
Gender	Male = 1, Female = 0	0.52	1	0
Children	Number of household members under 16 years of age	0.51	8	0
Area	Four major economic zones: West = 1, Middle = 2, East = 3 and Northeast = 4	2.11	4	1

(3) The changes in the livelihood strategies of land-expropriated farmers before and after land expropriation. The variation in livelihood strategy refers to the change in the employment behavior of rural laborers before (in 2016) and after (in 2018) land expropriation. In this study, a state-transition matrix is used to describe the variation in the livelihood strategy of land-expropriated laborers (Table 3). Table 3 shows that after land expropriation, the livelihood strategies of Chinese rural households have changed significantly. In terms of employment status, after land expropriation, the employment probability of laborers declined slightly from 92.3% in 2016 to 88.4%; this is different from the unemployment rate of 20–30% shown in previous research [5]. This might be because the samples in this study focused on laborers aged 16–65. Among the unemployed, those who failed to find a job for objective reasons accounted for less than 1.0%. Most of the reasons for unemployment are the low subjective intention of land-expropriated laborers to be re-employed. Among them, the number of people who voluntarily withdrew from the labor market rose from 7% in 2016 to 10.6% in 2018. In 2016, 10.5% of land-expropriated farmers who were employed were unwilling to find a job and chose to quit the labor market voluntarily after land expropriation in 2018. After land expropriation, the reduction in family natural capital (i.e., land) and the land expropriation compensation will reduce the employment willingness of rural labor.

**Table 3.** Transfer matrix of livelihood strategy of land expropriated farmers.

Employment Status (2016)	Employment Status (2018)				Employment Distance (2016)	Employment Distance (2018)			
	EMP	PUE	AUE	Total		EWC	EIP	ECP	Total
EMP	575 88.6%	6 0.9%	68 10.5%	649 92.3%	EWC	565 90.7%	24 3.9%	34 5.4%	623 88.5%
PUE	0 0.0%	5 100%	0 0.0%	5 0.7%	EIP	34 81%	1 2.4%	7 16.6%	42 6.0%
AUE	42 84.0%	1 2.0%	7 14.0%	50 7.0%	ECP	35 89.7%	1 2.6%	3 7.7%	39 5.5%
Total	622 88.4%	7 1.0%	75 10.6%	704 100%	Total	634 90.0%	26 3.7%	44 6.3%	704 100%

Data source: CFPS survey data in 2016 and 2018.

In terms of labor mobility after land expropriation, there are differences between nearby and remote transfers. We find that 90% of land-expropriated farmers chose to work within the county, and most of the farmers employed in other places chose to work nearby after land expropriation. In 2016, 81% of the laborers employed in other counties in the province moved to the regions within the county for employment after land expropriation in 2018, and 89.7% of laborers employed outside the province moved to the regions within the county for employment. Moreover, there was a slight increase in the number of outside-province employments after land expropriation, and a total of 9.8% of those employed in the county transferred to outside-county employments within or outside the province.

In Table 4, we analyzed the difference in employment distance for male and female survey respondents and found that 90.89% of women are employed within the county, whereas 87.31% of men are, indicating that both men and women are more willing to work locally if employment could be achieved locally. At the same time, 8.12% of men chose to work in a different province, whereas only 5.42% of women chose to, indicating that men were more willing to choose long-distance employment compared to women. Or, it may have been due to female having to take care of the elderly and children at home, making long-distance employment inconvenient. Alternatively, females may have a willingness to work remotely, but their employability may have been poor, and they were unable to find a job.

**Table 4.** Comparison of employment distance between Male and Female Laborers.

Employment Distance	EWC	EIP	ECP	Sum
Men	8717 (87.31%)	456 (4.57%)	811 (8.12%)	9984
Women	8329 (90.89%)	338 (3.69%)	497 (5.42%)	9164

Data source: CFPS survey data in 2016 and 2018.

### 3.3. Statistical Analysis

#### 3.3.1. DID Model

To verify whether the change in employment before and after land expropriation was caused by the land expropriation itself, DID was employed in this study. The method is to divide the samples into treatment and control groups. The status of the control group was set as the unconditional result of the treatment group, i.e., the status of the control group was used to explain the results of the treatment group in a state that was not affected by other factors; then, the differences between the results in the two cases were calculated to identify the effects. This method has a significant advantage, as it can use panel data to control for the adverse effects of non-observable variables. To achieve the objective of this research, the panel data constructed using the CFPS data of 2016 and 2018 matched by FID are used in this study, and the samples that underwent follow-up investigation and entered the treatment and control groups are retained. A policy dummy variable is constructed, i.e., the samples are divided into treatment and control groups based on whether land expropriation occurred ( $Du$ ). The treatment group refers to individuals whose land was not expropriated in 2016 but expropriated in 2018, with an assigned value of 1. The control group refers to those who did not undergo land expropriation in 2016 and 2018, with an assigned value of 0. Moreover, the dummy variable for the policy implementation period is constructed based on whether it was before and after land expropriation ( $Dt$ ): before the land expropriation (2016) is assigned 0 and after the land expropriation (2018) is assigned 1. To better measure the impact of the land expropriation policy on the transformation of farmers' livelihood strategy, the crossover term ( $Du \times Dt$ ) (hereinafter referred to as policy) of the two dummy variables above is further set to accurately evaluate the net effect of the impact of land expropriation policy on the transformation of farmers' livelihood strategy. Based on the above analysis, to identify the impact of land expropriation on employment behavior, the following DID model is defined:

$$Y_{it} = \beta_0 + \beta_1 \times Dt + \beta_2 \times Du + \beta_3 \times Dt \times Du + \alpha_1 \times X_{it} + \varepsilon_{it} \quad (1)$$

where  $i$  represents land-expropriated laborer, and  $t$  represents the period.  $Y_{it}$  denotes the livelihood strategy of laborer  $i$  in period  $t$ . Based on the index system established above, the explained variables are divided into two dimensions—employment distance and employment status according to the laborer's livelihood strategy.  $X_{it}$  denotes a series of control variables that affect the laborer's livelihood strategy, i.e., the variables in the index system mentioned above, such as property income, family livelihood capital, and personal characteristics;  $\varepsilon_{it}$  denotes stochastic disturbance term.

The coefficient  $\beta_3$  calculated using Equation (1) is the net effect of the land expropriation on the transformation of farmers' livelihood strategies.

#### 3.3.2. PSM-DID Model

The application of Difference-in-Difference (DID) has its limitations, including the randomness and common trend in sample selection. As the samples in this study are from the random samples from the entire country, to avoid sample selection bias, the sampling households with similar characteristics as the treatment group are selected as the control group before DID was carried out. The Propensity Score Matching (PSM) method can be used to avoid sample selection bias of observable variables. The basic idea of PSM is to

estimate the propensity score of each sample using the logit model, i.e., each sample enters the treatment group, which is the probability of land expropriation.

To estimate the propensity score of the samples, the kernel matching method was used to match the most similar control samples in the treatment group; then, we obtained the treatment and control groups that could be compared and calculated the changes in the outcome variables of the non-land-expropriation group (control group) matched with the land-expropriation group (treatment group) before and after land expropriation. Finally, the change in the outcome variable of the land expropriation group before and after land expropriation after matching was subtracted from that of the land expropriation group before and after land expropriation to obtain the average treatment effect (ATT) of the land expropriation exercise, which can effectively measure the net impact of land expropriation on the livelihood strategy selection of laborers.

#### 4. Results

##### 4.1. Effects of Land Expropriation on Employment Behavior

Table 5 presents the regression results of the DID model for the effects of land expropriation on the employment behavior of laborers. Columns (1)–(3) show the dimensions of the laborers' employment statuses. The results indicate that land expropriation had a negative effect on the employment rate. Compared with that of the non-land-expropriated laborers, the employment rate of the land-expropriated laborers reduced by 0.043, and the probability of them choosing to quit the labor market voluntarily increased by 0.0457. The results are significant at the 5% level. Columns (4)–(6) show the dimensions of the laborers' employment distances. The results show that land expropriation had a significant positive effect on employment within the county. Compared with the non-land-expropriated laborers, the probability of land-expropriated laborers choosing employment within their county increased by 0.0308, and the probability of them choosing outside-county employment within their province reduced by 0.0293. It had no significant effect on outside-province employment. In other words, land expropriation promoted the nearby urbanization of rural laborers. This means that land acquisition is conducive to achieving in situ urbanization and accelerating the urbanization process in China.

**Table 5.** Regression results of DID model.

Variable	Employment Status			Employment Distance		
	EMP	PUE	AUE	EWC	EIP	ECP
Policy	−0.0430 **	−0.0030	0.0457 **	0.0308 *	−0.0293 **	0.0004
Asset income	−0.0021 **	−0.0001	0.0022 **	−0.0007	0.0002	0.0005
Compensation	0.0009	0.0013 *	−0.0021	−0.0023	0.0029 *	−0.0010
Household	−0.0003	0.0003	0.0000	0.0021 **	−0.0006	−0.0015 *
Agricultural	0.0045 ***	−0.0007 ***	−0.0038 ***	0.0044 ***	−0.0023 ***	−0.0021 ***
Durable	0.0004	−0.0002	−0.0003	0.0028 ***	−0.0004	−0.0024 ***
Cash assets	0.0004	0.0001	−0.0005	−0.0014 ***	0.0009 ***	0.0006
Support	−0.0033 ***	0.0002	0.0031 ***	−0.0003	−0.0005	0.0009
Healthy	0.0159 ***	0.0007	−0.0166 ***	−0.0092 ***	0.0030 ***	0.0062 ***
Education	0.0007	0.0000	−0.0008	−0.0059 ***	0.0031 ***	0.0028 ***
Age	0.0018 ***	−0.0005 ***	−0.0013 ***	0.0060 ***	−0.0021 ***	−0.0039 ***
Gender	0.0306 ***	0.0025 **	−0.0331 ***	−0.0292 ***	0.0062 **	0.0230 ***
Children	−0.0001	−0.0012 *	0.0014	0.0078 ***	−0.0046 **	−0.0036 *
Area	−0.0055 ***	−0.0005	0.0060 ***	0.0058 ***	0.0013	−0.0072 ***
R <sup>2</sup>	0.0277	0.0104	0.0261	0.1074	0.0445	0.0472

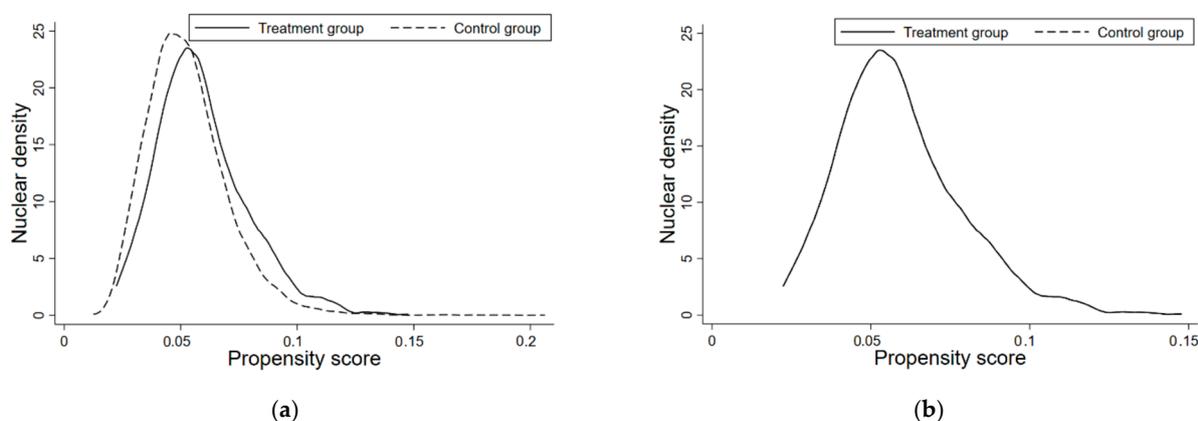
Note: \* means significant at the 10% level, \*\* means significant at the 5% level, \*\*\* means significant at the 1% level.

In Table 5, the social capital variables show how social capital influences employment. From the perspective of employment distance, the property and material capital (household and agricultural) owned by households and the numbers and ages of children in households have a positive impact on labor force selection for county-level employment and a negative impact on outside-province employment; the higher a family's cash assets, labor health status, and years of education, which will increase the probability of the labor force choosing to work in other counties and provinces, their mobility distance increased. The one-time land expropriation compensation, which increases the cash assets, promotes employment outside the county and also increases the passive unemployment rate of the labor force.

From the perspective of employment status, land expropriation accelerates the transformation of farmers from their own agricultural production to agricultural and industrial work. Families with asset income and good relationships with relatives will reduce their labor employment, promoting labor to actively leave the labor market and increasing the labor unemployment rate. On the contrary, more household agricultural machinery, better health status, and older age have a positive impact on labor force employment, reducing the unemployment probability.

To avoid errors in the results of the DID estimation, a PSM-DID test is conducted on the results. In this study, the kernel matching method was used to match samples with the same propensity score. To ensure the parallel assumption in the PSM-DID model, the treatment and control groups must show no significant differences in the characteristic variables after matching, and it is necessary to carry out a balance test on the matching variables. The results show that the standard error of matching variables is less than 10%, and the results of the *t*-test do not reject the null hypothesis that the treatment and control groups have no systematic differences (the specific results are not shown in the text to save space).

The PSM-DID model also needs to meet the common support assumption to prove the validity of the results. Therefore, the kernel matching method is used to match the two groups of farmers; then, the kernel density diagrams for the propensity scores of the two groups of farmers before and after the matching are constructed, respectively. In Figure 2, the treatment and control groups demonstrate the same trend before kernel matching but have significant differences, indicating that the land-expropriation and non-land-expropriation groups cannot be compared directly. In comparison, after kernel matching, the propensity scores of the treatment and control groups are almost the same (manifested as coincidence in Figure 2b), indicating that the observable variables of the two groups of farmers had similar characteristics, thereby strengthening the comparability of the two groups of farmers. Moreover, the kernel density diagrams indicate that the propensity scores of the two groups of farmers are in the same range, indicating that the matching satisfied the common support assumption.



**Figure 2.** Nuclear density map of tendency score of the land-expropriation group and non-land-expropriation group: (a) before matching and (b) after matching.

The kernel matching method is used to test the relationship between the land expropriation and employment behavior of laborers. Table 6 shows the following results: (1) Land expropriation has a negative effect on the continuous employment of land-expropriated farmers; compared with the laborers without land expropriation, the probability of employment is reduced by 0.041 and reduces the employment intention of laborers by 0.037, significant at the level of 1%. (2) Land expropriation encourages land-expropriated farmers to seek employment within the county, reducing the probability of outside-county employment; compared with the laborers without land expropriation, the employment within the county increased by 0.018, and the result is significant at the level of 10%. At the same time, the land-expropriated laborers also significantly reduced the probability of employment of the laborers outside the county but in the province by 0.017, but it has no significant effect on employment outside the province. PSM-DID further verifies the robustness of the analysis results of the above-mentioned traditional DID model.

**Table 6.** Estimation results of PSM-DID model.

Employment Behavior	Before 2018 (Dt = 0)	After 2018 (Dt = 1)	Difference
EMP	0.005 (0.006)	−0.036 *** (0.006)	−0.041 *** (0.008)
PUE	0.000 (0.002)	0.004 ** (0.002)	0.004 (0.003)
AUE	−0.005 (0.006)	0.032 *** (0.006)	0.037 *** (0.008)
EWC	−0.004 (0.006)	0.013 ** (0.006)	0.018 * (0.009)
EIP	0.015 *** (0.004)	−0.002 (0.004)	−0.017 *** (0.006)
ECP	−0.010 ** (0.005)	−0.011 ** (0.005)	−0.001 (0.007)

Note: \* means significant at the 10% level, \*\* means significant at the 5% level, \*\*\* means significant at the 1% level.

#### 4.2. Analysis of Gender Differences in Employment Behavior

The family will adjust the livelihood strategies of family members to cope with the impact of land expropriation, as an exogenous variable, on the family. Therefore, the differences in the effects of land expropriation on the employment behavior of men and women are studied.

##### 4.2.1. Analysis of Gender Differences in Employment Status and Intention

This research uses the PSM-DID method to study the heterogeneous effects of land expropriation on the employment statuses of men and women; the results are presented in Table 7. The result shows that the employment probability of land-expropriated men is 0.033 lower than that of non-land-expropriated men, and the probability of choosing to quit the labor market voluntarily increased by 0.028. The employment probability of land-expropriated women is 0.102 lower than that of non-land-expropriated women, and the probability of choosing to quit the labor market voluntarily increased by 0.11. After land expropriation, the agricultural family loses their natural capital (i.e., land), on which it depends for its survival, and the laborers lose their job due to factors such as age and poor single-life skills. However, the impact of land expropriation on women's passive unemployment is not significant, probably because women "take a greater responsibility for the care of children and elder member of a family" in rural Chinese households [20]. After having land expropriated, male laborers go out for employment, and the heavy responsibility of nurturing children and taking care of the elderly in the family is mostly borne by women, which makes them trapped in family affairs and unable to go out for

employment, reducing the probability of female employment [3]. At the same time, land expropriation has significantly promoted the active withdrawal of women from the labor market, and its probability is higher than that for men. Therefore, the impact of land expropriation on the employment of women is greater. Land expropriation caused laborers' unemployment, but it also brought asset income and compensation, enhanced the economic capital of the family, resulting in the reluctance of the laborers to be re-employed. When the family economy was greatly improved, the woman chose to voluntarily withdraw from the labor market in order to better care for the family [27]. Moreover, the unemployment effect of land expropriation on women is higher than that on men, and the employment intention of women is lower than that of men.

**Table 7.** PSM-DID results of the impact of land expropriation on employment status.

Variable	EMP		PUE		AUE	
	Men	Women	Men	Women	Men	Women
Difference between experimental group and control group before policy	0.003 (0.047)	0.010 (0.009)	0.003 (0.047)	0.010 (0.009)	0.003 (0.006)	−0.013 (0.009)
Difference between experimental group and control group after policy	−0.030 *** (0.008)	−0.092 *** (0.012)	−0.030 *** (0.008)	−0.092 *** (0.012)	0.030 *** (0.008)	0.097 *** (0.011)
Difference-In-Difference	−0.033 *** (0.011)	−0.102 *** (0.015)	−0.033 *** (0.011)	−0.102 *** (0.015)	0.028 *** (0.010)	0.110 *** (0.014)

Note: \*\*\* means significant at the 1% level.

#### 4.2.2. Gender Differences in Employment Distance

This study also uses the PSM-DID method to study the effects of land expropriation on the heterogeneity of the employment distance of male and female laborers. As shown in Table 8, land expropriation has no significant effect on the probability of a man choosing to be employed within the county but has a significant positive effect on that of a woman. Compared with that of non-land-expropriated female laborers who have not undergone land expropriation, the probability of land-expropriated female laborers choosing to be employed within the county increased by 0.042. Land expropriation has a negative effect on both men's and women's choice of outside-county employment. More interestingly, compared with that of non-land-expropriated men, the probability of land-expropriated men choosing outside-province employment increased by 0.022. However, compared with that of non-land-expropriated women, that of land-expropriated women decreased by 0.02. Land expropriation promotes men to choose outside-province employment and increases the mobility distance of men. For women, land expropriation promotes their choice of employment within the county. According to the theory of a family division of labor, the men undertake more economic responsibilities of the family and will pursue higher economic income in the process of choosing a job, so as to promote them to find employment in more distant locations; the women undertake more responsibility for family care and upbringing and tend to choose employment closer to the home in order to provide more family care [26]. The above results show that the mobility of male and female laborers after land expropriation are differentiated in two directions. Male laborers tend to choose long-distance outside-province employment, whereas female laborers tend to choose employment within the county.

**Table 8.** PSM-DID results of the impact of land expropriation on employment distance.

Variable	EWC		EIP		ECP	
	Men	Women	Men	Women	Men	Women
Before 2018 (Dt = 0)	−0.001 (0.009)	−0.008 (0.008)	0.028 *** (0.006)	0.000 (0.005)	−0.028 *** (0.007)	0.008 (0.006)
After 2018 (Dt = 1)	0.023 ** (0.011)	0.034 *** (0.010)	−0.017 ** (0.008)	−0.022 *** (0.007)	−0.006 (0.009)	−0.012 (0.008)
Difference	0.024 (0.015)	0.042 *** (0.013)	−0.045 *** (0.010)	−0.022 *** (0.009)	0.022 * (0.011)	−0.020 ** (0.010)

Note: \* means significant at the 10% level, \*\* means significant at the 5% level, \*\*\* means significant at the 1% level.

## 5. Discussion

Based on the above empirical results and the long term sustainable livelihood model of land-expropriated farmers, this section discusses the reasons for the changes in the employment behavior of land-expropriated farmers and gender differences.

### 5.1. Hidden Effects of Land Expropriation on Employment

The conclusions of this paper confirm the theoretical framework that land expropriation as an exogenous shock changed the capital structure of farmers' livelihoods, and the laborers were forced to adjust their livelihood strategies.

From the perspective of employment status, land expropriation encourages laborers to quit the labor market voluntarily, reducing the employment rate of farmers. The reason might be that, on the one hand, although the land expropriation has changed the existing natural capital and physical capital of farmers, the compensation for land expropriation provided by the government has changed the economic situation of families in a short time. Some families choose to rest on their laurels and actively leave the labor market [5,8], reducing the probability of employment. On the other hand, land-expropriated farmers are mostly people with low educational levels, a single social network, and few non-agricultural skills, so they have difficulty obtaining employment [23]. Farmers' arable land has been requisitioned, losing the land to support their families and being forced to leave their homes to seek other jobs. However, many farmers have connections in rural areas and lack social resources to seek other jobs [24]. Land acquisition damages the social capital of the requisitioned families. Thus, when they are passively unemployed due to land expropriation, it will take some time for the employment training provided by the local government to have observable effects, leading to a decline in the employment rate of farmers after land expropriation and relocation destroyed the social capital of families and led to passive unemployment.

From the perspective of labor mobility, land expropriation has enhanced the employment of laborers in their county, inhibiting the probability of them choosing outside-county employment. Employment distance is the result of individual rural laborers' choices and opportunities based on the maximization of family utility. Although employment distance has a significant positive effect on labor wages, the income of inter-provincial migrant laborers is higher than that of intra-city migrant laborers, and migration to cities with more developed economies and more job opportunities can also contribute to employment stability [1,29]. State land acquisition promotes local economic development and creates more local employment opportunities. Land-lost groups no longer have to leave their homes to work in more distant locations, and nearby employment can prevent the separation of family members [30,31], resulting in a more stable family structure and enhanced social stability [32,33]. County-level urbanization construction provides secondary and tertiary industries close to home, such as agricultural product processing, light industry, and service industry, providing suitable employment opportunities for female laborers [34,35]. To further expand employment opportunities, it is necessary to fully leverage the advantages

of land and labor costs in the county, attract investment, and achieve a regional coordinated development of land economy [36]. Moreover, due to the need for local economic development or infrastructure projects, agricultural land is converted mostly to construction land. These projects change the external living environment of land-expropriated farmers. With the advancement of county urbanization, the increase in industrial production has brought more employment opportunities [37]. Due to a lack of non-agricultural production skills among the land-expropriated labor force, men are more likely to engage in manual labor production, whereas women are more likely to engage in light manual labor [18,30]. In addition, such employment separation is often accompanied by residential separation, and the separation of family members is not conducive to the healthy development of family relations [10]. Left-behind children and the elderly are real social problems in rural areas [13]. To maximize the family utility, land-expropriated farmers choose to obtain employment nearby because of their family responsibilities of taking care of their children and supporting the elderly. This has promoted the local urbanization of the labor force.

Overall, research has found that landless farmers with good household livelihood capital are more likely to have local employment opportunities. This conclusion is consistent with Yang and Shi's (2012) research, which pointed out that family social capital helps migrant workers to work outside the home. As the value of family social capital increases, the labor force of families with more abundant family social capital is more willing to return to their hometown for employment [38]. Ma (2016) also found that the prominent feature of labor mobility among landless farmers is the concentration of local non-agricultural mobility [39]. The possible reason is that the land acquisition area is located in the surrounding area of the city, and urbanization has a strong ability to absorb new labor.

### *5.2. Hidden Effects of Gender Difference on Employment*

Land expropriation has increased the county employment rate of female laborers, reduced their outside-county and outside-province employment rates, and shortened their employment distances. It has reduced the outside-county employment rate of male laborers, promoted outside-province employment, and increased their employment distance. Moreover, land expropriation has had a far greater effect on female laborers withdrawing from the labor market voluntarily than on male laborers. The reason may be that the change in family livelihood capital has a heterogeneous impact on the livelihood strategies of men and women in the family. The traditional Chinese division of labor model is "the male manages external affairs, whereas the female manages internal affairs" [17,32]. On the one hand, men assume economic responsibilities by earning money outside to support the family [7,17], which drives laborers to actively seek employment and pursue higher incomes at the cost of long-distance labor mobility. On the other hand, women assume the responsibilities of taking care of the family and performing household duties, which requires laborers to devote more energy to caring for the family. At present, most of the compensation methods for land expropriation in China are housing and one-time economic compensation, which has greatly improved the family financial capital in a short time [22], creating conditions for rural women to return to their families and assume the responsibility of raising children and caring for their families. Meanwhile, land expropriation promotes the development of the local economy, creates nearby employment opportunities for female laborers, which meets the needs for women to be involved in the labor market while taking care of their families. Land expropriation has changed the natural capital of the family. After the agricultural land is expropriated, the man will change the previous state of "half-work and half-farming" [24,40]. In order to maintain the family's living standards, in the process of choosing a job, men will pursue higher wage income, prompting them towards to more distant employment.

The reunification of husband and wife is conducive to family stability and development. The family is the cell of society, and, in the process of urbanization, the separation of families, in the era of great migration, indicates that the urbanization process has de-

viated from aims of human welfare and family development [21]. The difference in the employment distance between men and women leads to the separation of family members, with women carrying a heavier burden of alone bearing the responsibility of educating their children and caring for the elderly. Men are employed far away from the family, unable to take care of their families. The separation of family members for long periods, the decreased exchange between husband and wife, and the lack of father companionship for children are not conducive to the stable development of the family.

## 6. Conclusions

In the rural areas of China, land is a means of production for farmers to survive [1]. In the process of urbanization, land expropriation has caused farmers to lose their land and jobs and develop livelihood challenges. The government expropriates rural land out of public interest, providing a certain amount of compensation for land expropriation. However, the one-time economic compensation is not enough to maintain the livelihood of farmers [5,22]. Due to the need for long term sustainable development of their families, land-expropriated farmers adjust their livelihood strategies [2], thus achieving the means of livelihood with maximized family utility [2,10]. This is mainly manifested by the change in the employment behavior of laborers. This study is conducted based on the five types of livelihood capitals under the long-term sustainable livelihoods framework. The changes in the employment strategies of land-expropriated farmers under the impact of the exogenous policy of land expropriation are analyzed from the perspective of family utility maximization. Moreover, the changes in employment behavior are investigated from the employment status, employment intention, and non-agricultural employment distance perspectives. The heterogeneity of the employment behavior of male and female laborers after land expropriation is discussed from the perspective of the family's division of labor. In this article, based on the CFPS 2016 and 2018 data analysis, the PSM-DID model is used to conduct empirical research. The following major conclusions are drawn. (1) Land expropriation reduces the employment rate and employment intention of land-expropriated farmers. (2) Land expropriation encourages land-expropriated farmers to choose to seek employment within the county, reducing the probability of outside-county employment. (3) From the perspective of gender difference, land expropriation reduces the migration distance of female laborers, encouraging their migration to other parts of the county, and increases the migration distance of male laborers, encouraging them to migrate outside the province. (4) The impact of land expropriation on the unemployment of female laborers is far greater than that of male laborers. This is partly because, after land expropriation, women have low employment intention and choose to be unemployed voluntarily.

With the goal of long-term sustainable livelihoods for rural households, promoting the employment of land-expropriated farmers and gender equality in their employment is important. The following policy suggestions are proposed in this study:

(1) A family-friendly compensation policy for land expropriation should be established. The provision of one-time large-amount compensations for land expropriation should be avoided in order to provide long term sustainability benefits for farmers that are conducive to increasing the employment intention of land-expropriated farmers. As Yue Wang and Yuhao Huang (2020) suggested, the key for rural farmers to get rid of the curse of "land expropriation" and integrate into the city is to improve their citizenization ability (citizenization ability refers to the ability to integrate in cities of migration) [41]. Collective property rights are a unique form of property right in China that lie between private property rights and state-owned property rights. These collective rights can leverage the collective economy to provide its unique advantage in making up for government failure and market failure in the provision of public goods. Through collective property rights, part of the land expropriation compensation can be reserved for the collective economy, to develop the village's collective economy. For example, the village collective can allocate a portion of funds from family land acquisition compensation to develop

the collective economy, which can not only increase the employment of villagers but also distribute dividends annually, thereby improving the sustainable economic benefits of the expropriated households [41]. Thus, the appreciation of land value from urbanization can be transformed into the capacity improvement for citizenization.

(2) The scope of land expropriation should be reduced, and rural construction land should be allowed to enter the market. At present, due to the existence of an urban–rural dual land system in China, urban state-owned land use rights can be directly traded in the market, whereas rural collective land cannot be directly traded in the market. As a result, the price of rural collective land is much lower than that of state-owned land. When the state expropriates rural collective land, it does not compensate according to the market transaction price of land, but according to the income from the original use of land, and the compensation standard is accordingly low [42]. Therefore, the government should strictly control the scope of land expropriation and allow collective construction land to enter the market, which could reduce the exogenous impact on the livelihoods of rural households and could allow farmers to share the land value-added benefits and employment opportunities brought by urbanization.

(3) The attractiveness of counties to labor needs to be improved. County is a transfer station between urban and rural areas. To avoid the separation of family members in urbanization, the county should develop its comparative advantages and strengthen its cooperation with developed regions. For example, by jointly building industrial parks with cities in the eastern region, the county provides land, whereas enterprises in the eastern cities provide technology and funds, and more job opportunities are created for the county, thus laborers can work in the county town where their home is nearby. The innovative aspects of this research are as follows. (1) A conceptual framework for the potential paths of the effects of land expropriation on the employment behavior of farmers and gender differences has been created. (2) The effects of land expropriation on the heterogeneity of the employment status and employment distance of men and women have been discovered. (3) The likely mechanisms underlying the effects of land expropriation on the employment of farmers, and why gender differences are observed, have been discussed.

One limitation of this research is that there are large gaps in the development of different regions in China, resulting in large differences in the land expropriation compensation and employment behaviors of laborers. This article only studies the overall characteristics of the survey samples and the influence paths. The differentiated employment behavior among the different regions should be investigated in future studies. Another limitation reflects current data availability. The adjustment of employment behavior is a long-term dynamic process. Although the CFPS database has now been publicly available for six waves, there are less than 100 samples of households that have been continuously tracked and have experienced land acquisition in published years, making it more challenging to conduct empirical research. Future studies are needed to conduct longitudinal and more broadly representative panel survey data.

**Author Contributions:** Conceptualization, Y.W. and X.L.; methodology, Y.W.; software, D.L.; validation, Y.W. and D.L.; formal analysis, D.L.; investigation, Y.W. and B.Y.; resources, Y.W. and B.Y.; data curation, D.L.; writing—original draft preparation, D.L.; writing—review and editing, Y.W.; visualization, D.L.; supervision, X.L.; project administration, B.Y.; funding acquisition, B.Y. All authors have read and agreed to the published version of the manuscript.

**Funding:** This work was supported by Institute of Human Rights Law, Huazhong University of Science and Technology, special project (grant numbers 2022WKFZZX008); Zhongnan University of Economics and Law, International Construction Project: RCEP and Regional Coordinated Development Research Platform Construction (31733211001).

**Data Availability Statement:** The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

**Conflicts of Interest:** The authors declare no conflict of interest.

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