

## Article

# Locational Differences of Collective Land and Their Socioeconomic Effects on the Rural Elderly in China's Pearl River Delta

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**Abstract:** In recent years, rapid urbanization in China has led to land transformation and unequal social and economic development among rural collective land in different regions. Although there has been considerable research on land development in China, there is a lack of studies on the socioeconomic impacts of unequal collective land development on rural elders. This research investigates collective land support, family support, and social support among the elderly in three types of villages—urban, suburban, and remote—in China's Pearl River Delta. The findings show that land support retains an important factor for supporting the rural elderly, while family support is in steep decline, and social elderly support offers low coverage. However, land support differs greatly with location, and only urban villages in central locations with high land values are found to provide adequate land support for the rural elderly. The key influential factor of land income has shifted from land quantity to land location, and there now appears to be a need to adjust relevant land, fiscal, and taxation policies for collective land in different locations.

**Keywords:** collective land; locational differences; socioeconomic impacts; elderly support; China



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## 1. Introduction

The urbanization process is a global phenomenon with profound social and economic effects on urban and rural areas worldwide. In particular, rapid urbanization in China has involved the transfer of rural land to urban land and has largely affected the socioeconomic status of villagers. In China, urban land is owned by the state, while rural land is collectively owned by villagers. A village often owns three types of land: farmlands, villager homesteads, and collective land for commercial and industrial uses. In the past few decades, rapid urbanization has led to an unbalanced social and economic development of villages in different geographical locations. The collective land of villages located in the central area of cities in the Pearl River Delta has been transferred from village collectives to outside enterprises and individuals for the construction of industrial and commercial buildings [1,2]. Villagers often generate income by renting out or illegally selling these collective properties, sometimes leasing their houses to rural migrants who work in the city. However, villages located in remote areas of cities generate less income from collective land, since they do not attract the same level of investment from the private sector due to their marginal locations. In short, locational differences of collective land have caused the gap in land income, and they could affect the rural social security system by bringing different incomes for rural elders in various villages.

China has an aging population of 240 million, and the proportion of rural 'left-behind' elderly has been rising with younger family members working in cities [3]. This rapid aging

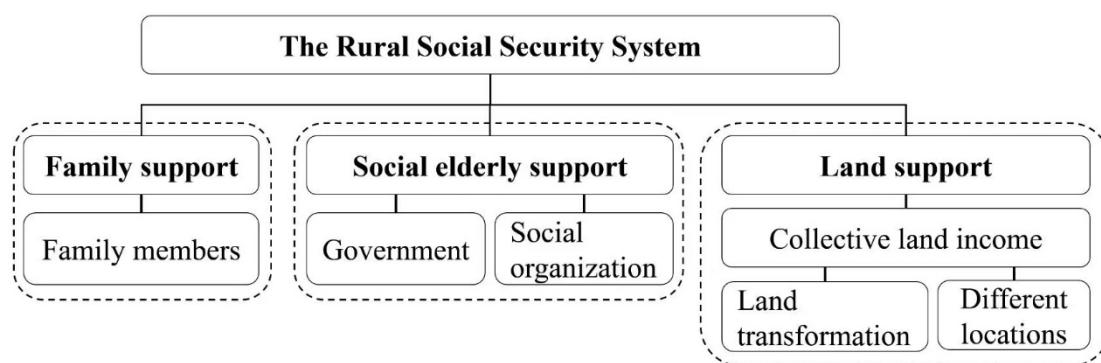
of the population has brought social and economic impacts, including a reduced labor supply and increased financial burden on the tax base and social security resources [4]. The elderly security system has faced several challenges, including family miniaturization, the elderly pension system, and medical care. These challenges are more severe in rural areas, where there are more emergency aging problems and economic underdevelopment [5,6]. The Chinese central government has attempted to establish an elderly care system that offers a comprehensive range of services in both rural and urban areas, and the long-term care pilot projects have shown that elderly people mainly depend on family support, community support, and institutional nursing (ibid). However, due to the cultural expectations of “filial piety”, which adult children are often obligated to fulfil, many Chinese elderly prefer to live at the home of their children instead of moving into nursing homes (ibid). In particular, the rural elderly depend much more on family support than the urban elderly [7]. However, young rural people have increasingly moved to work in cities, and fewer live with their parents in villages at present. Family support has been observably weakened by migration to cities for work opportunities [8]. Therefore, it is questionable whether family support is still the primary source of support for the rural elderly. Additionally, many studies on China’s aging population have focused on the well-being and residential environment of the elderly [9–11], but little research has been done to understand the dynamics of elderly support in rapidly developing rural areas. Existing research has not paid sufficient attention to the socioeconomic effects of land development in different villages on the rural social security system.

This research is an attempt to fill this gap. It first establishes a conceptual framework of the rural social security system for the elderly, comprised of family support, social support, and collective land support. The framework was applied to analyze empirical work in the Pearl River Delta, one of the most economically dynamic regions in China. The industrialization of the Delta’s regional economy has been fueled primarily by the expansion of its rural industry, much of which takes place on the collective land of villages. The Pearl River Delta therefore presents an interesting case for understanding the impact of collective land transformation on the rural aging population. The findings show that collective land support plays an important role in the rural social security system, while family support is in heavy decline, and the coverage of social elderly support is low. However, land support varies in different locations. Since only villages in central locations presently provide adequate land support and income for the rural elderly, it is necessary to adjust relevant land policies and implement appropriate fiscal and taxation policies for collective land in different locations to have more equal outcomes.

## 2. Conceptual Framework

Elderly care is embedded within welfare regimes. According to Esping-Andersen, there is a welfare triangle in which welfare is delivered by a combination of the state, the market, and the family [12]. Debates on welfare regimes have become increasingly heated and diversified as they have been applied to a wider range of societies [13]. Razavi argued that this notion could be extended to the ‘care’ domain, which includes not only the state, market, and family but also the heterogeneous cluster of care providers that are variously referred to as the community, voluntary, non-market or non-profit [14]. Some scholars posit that elderly care in China is supported by family, community, and institutional nursing [4], while others point to diverse sources of support among China’s elderly including labor income, pensions, insurance, subsidy, property income, and family support [7]. Although family support remains the primary support for China’s elderly, support resources for the rural elderly are different from those of the urban elderly. Some Chinese scholars argue that the rural social security system is comprised primarily of family support, social elderly support, and land support [15]. Family support here means that family members provide material and physical support for the elderly. Social support means that government and social organizations provide the rural elderly with a basic living guarantee. Finally, land support occurs when collective land income is used by the elderly as an economic

pillar. However, these previous studies largely ignored the effects of location differences on collective land. It remains unclear to what extent collective land supports the elderly and how land transformation affects rural social security. Therefore, this research enriches the existing research by establishing a conceptual framework of the rural social security system, including the impact of land transformation and location on land support (Figure 1). Compared to the existing theoretical approaches established by Razavi [14], Li and Otani [4], and Cai et al. [7], the innovation of this framework is that it includes the socioeconomic impacts of locational differences of collective land on the rural social security system. It emphasizes how the different locations of collective land in various villages in Chinese cities generate distinct land incomes, affecting the socioeconomic status of the rural elderly and the social security system.



**Figure 1.** Conceptual Framework.

In the context of villages in the Pearl River Delta, social organizations refer to those village collectives that provide social security and public/community services for villagers. These organizations are distinct from non-profit organizations in the mentioned care diamond [14]. To some extent, they function as local governments in providing social welfare for villages, and so they are classified together with the government in the dimensions of social elderly support. Furthermore, land support blurs the boundaries between the state and the market. It is influenced by state land policies, economic transitions of cities, and private sector involvement in land development.

#### 1. Family support

According to the care diamond, family support is a key pillar of the elderly care system and tends to be more important in developing countries [14]. Family elderly support is often considered a virtue in China, playing an important role in rural elderly support throughout the country's history. Giles et al. found that families and kinship were perceived as the most satisfying sources of support for elderly people [16]. However, the urbanization process has created both risk and uncertainty for family support structures [17,18]. With the rapid migration of rural labor associated with low incomes, high costs of living, and heavy socioeconomic pressure, rural young people in urban areas often do not have enough money, energy, or time to contribute to elderly care [17–20]. Hence, the family support structure in China has been weakened by migration to cities for work opportunities [8]. The extremely common one-child family model further exacerbates this problem. Some researchers have indicated that this family model is at higher risk and lacks a stable financial basis for families with more children. This has led to a trend of non-family support in the one-child family. It should be noted that although older people have alternate avenues for support, the majority greatly favor family support [21].

#### 2. Social elderly support

How states construct systems of social provision and care arrangements is one of the main concerns in the welfare system and has been the subject of debate in the context of liberalization [14]. As one of the key policy areas in developing countries, social

security protects against various expected or unexpected factors that negatively influence an individual's basic survival and development [22]. Some researchers argue that social elderly support should be encouraged, as the process of economic globalization has led to the collapse of the traditional rural social system and the family support model [23]. They point out that the risk management ability of individual households in rural China is weak, which may result in the elderly being subject to great risk if social security is absent. In the past 20 years, the Chinese government has achieved notable results in providing social support for the elderly in rural areas. However, the coverage of rural social security systems is still sparse due to a number of considerations. Ginneken argued that different regions may have successfully extended social security coverage through the enactment of different policies [22]. Alongside the state, there are also social organizations delivering care provision for villagers. Recent studies have demonstrated how the organizations of collective villages in the Pearl River Delta earn income from collective properties within the villages and redistribute the income to villagers through different forms of social security, community facilities, and services [2].

### 3. Land support

Many scholars argue that the social security function of collective land in China is an important alternative avenue to both the uncertainty of family support and the low level of rural social elderly support. Land income is not only a source of livelihood but also an important social security support for the rural elderly, due to the serious impact of Chinese social transformation on family structures and the urban-rural social security gap [24]. However, some researchers have shown that land support is not adequately fulfilling that role at present. Li et al. showed that under the background of insufficient farming land in Chinese villages, it is difficult to achieve continuous increases of output per unit resulting in stagnated land support [25]. In other words, farming land cannot guarantee the survival and support of villagers and adapt to the needs of social development. In sum, there have been debates on the supporting functions of collective land, but empirical studies are required to assess the current and possible contributions of land support.

- Income through land transformation and functional changes

The Household Registration System (HRS) contributes to land transformation and functional changes [26]. Introduced in the late 1970s, it extends land-use rights and residual income rights to individual households in rural areas. Under the HRS, households are allocated land-use rights, but ownership of that land remains in the hands of village collective authorities [27]. A village often has farmland, village homesteads, and collective land for commercial and industrial uses. The collective land of urban villages in coastal cities is often transferred from village collectives to outside enterprises for the construction of industrial and commercial buildings [1,2]. In this way, villagers can receive income (e.g., through annual bonuses) from collective village properties. They can also obtain considerable income by leasing their houses to rural migrants who are largely excluded from the formal housing system in cities. Many researchers argue that land income can be increased through land transformation and functional changes. Wang suggested that the mechanism of collective land transfer and fair benefit distribution should be formalized to provide financial support for rural social security [28]. However, Gao questions whether agricultural land-based social security exists or not and argues that the financialization of agricultural land should not be amended at all [29]. Although the idea of relying on farmland to increase the income of farmers has been implemented in some areas, land transfer remains difficult due to issues of management legalization, formalization, and other problems.

- Differential effects of land location

In the theory framework of Alonso, the renter will only pay the cost when land income is worth it [30]. This means that differences in location and capital input contribute to differences in rent. Fujita further analyzed the general relationship between transport

costs and differential rent prices [31]. The results suggest that the benefits for landowners will vary from place to place due to the differential effects of location. However, this may also result in the undesirable fact that vulnerable groups have been disadvantaged by virtue of land location [32]. In the process of urbanization in China, the rent of land will depend on the quality of the land, including its geographical location. Farmers living in villages adjacent to cities can gain greater benefits, especially when land transformation and functional changes take place due to rapid urbanization [26,33]. However, land use in remote villages will not be similarly changed because of their weakness in regional location, limiting the potential for land income among their villagers. Nevertheless, few studies have been conducted specifically to assess the effects of land location on income in different villages. It seems possible that social security in collective land can vary greatly under the effects of differential rent due to location.

### 3. Research Methods and Data Collection

Both questionnaire surveys and in-depth interviews were conducted to understand the present dynamics of elderly support in rural areas. The questionnaire survey was conducted in 13 villages in the Pearl River Delta, where rural society has dramatically changed and become heterogeneous due to rapid urbanization and economic development. These villages were divided into three types—urban villages, suburban villages, and remote villages—according to their distances from the city center, land uses, transport conditions, and economic development. Urban villages were taken as those in a city with homestead and rental property but without cultivated land. Urban villages were originally rural settlements in the suburbs of Chinese cities but have since been swallowed by urban developments during the rapid urban expansion process [1,2]. The city government requisitioned their cultivated land for urban development, while leaving the residential areas of villages due to expensive compensation costs. On one hand, many villagers have “illegally” reconstructed their houses and proceeded to rent them to rural migrants. On the other hand, urban villages have a considerable number of properties (e.g., commercial and industrial buildings) on collective land, and villagers receive annual bonuses from these collective properties. Second, suburban villages are comprised of cultivated land, homesteads, and rental properties. The cultivated lands of urban and suburban villages have been partially or completely expropriated by the city government for urban development. Finally, remote villages contain only cultivated land and homesteads. In the villages selected for analysis, the urban villages included Longdong village; suburban villages included those of Shihu, Nanshe, Chikan, Longyan, Tangwei, and Jichang; and remote villages included those of Hupo, Stone, Chigang, Fuyuan, Moyuan, and Xintian.

For the survey, a total of 928 questionnaires were randomly distributed to elderly people in the 13 selected villages. To let the elderly interviewees correctly understand the content of the survey, questioners asked local volunteers to contact and interview these people. Some questioners also spoke to the interviewees in Cantonese besides Mandarin Chinese, as nearly one-half of old people in rural areas of the PRD cannot speak Mandarin. To get the true opinions from the elderly people, their children and village officials were not present at the interview. In this way, 745 valid questionnaires were collected at the end. These elderly people were over 55 years old and retired with rural hukous (household registration documents). The content of the questionnaire included the age, gender, education, land income resources (e.g., collective bonuses, housing renting, planting), social security income from government and organizations, and family support (e.g., money and other support from family members) of respondents. The survey showed that all villages were similar in terms of the proportion of gender, education, and age (Table 1). The majority of the elderly in selected villages had a relatively low level of education, i.e., 75.70% of them had only completed a primary school education.

**Table 1.** Basic information about the elderly in the selected villages.

| Gender                 | Urban Village |       | Suburban Village |        | Remote Village |       | Summation |       |
|------------------------|---------------|-------|------------------|--------|----------------|-------|-----------|-------|
|                        | N             | %     | N                | %      | N              | %     | N         | %     |
| Male                   | 46            | 47.9% | 128              | 48.1%  | 180            | 47.0% | 354       | 47.5% |
| Female                 | 50            | 52.1% | 138              | 51.98% | 203            | 53.0% | 391       | 52.5% |
| Age                    | Urban Village |       | Suburban Village |        | Remote Village |       | Summation |       |
|                        | N             | %     | N                | %      | N              | %     | N         | %     |
| 55–65 years            | 25            | 26.0% | 97               | 36.5%  | 149            | 38.9% | 271       | 36.4% |
| 65–75 years            | 43            | 44.8% | 109              | 40.9%  | 130            | 33.9% | 282       | 37.9% |
| 75–85 years            | 23            | 23.9% | 42               | 15.8%  | 86             | 22.5% | 151       | 20.3% |
| Over 85 years          | 5             | 5.2%  | 18               | 6.8%   | 18             | 4.7%  | 41        | 5.5%  |
| Education              | Urban Village |       | Suburban Village |        | Remote Village |       | Summation |       |
|                        | N             | %     | N                | %      | N              | %     | N         | %     |
| Primary school or none | 67            | 69.8% | 216              | 81.2%  | 281            | 73.4% | 564       | 75.7% |
| Junior high school     | 23            | 23.9% | 40               | 15.0%  | 68             | 17.7% | 131       | 17.6% |
| High school and higher | 6             | 6.3%  | 10               | 3.7%   | 34             | 8.9%  | 50        | 6.7%  |
| <b>Total</b>           | 96            |       | 266              |        | 383            |       | 745       |       |

#### 4. Location Differences in Elderly Support

##### 4.1. Features of Elderly Income

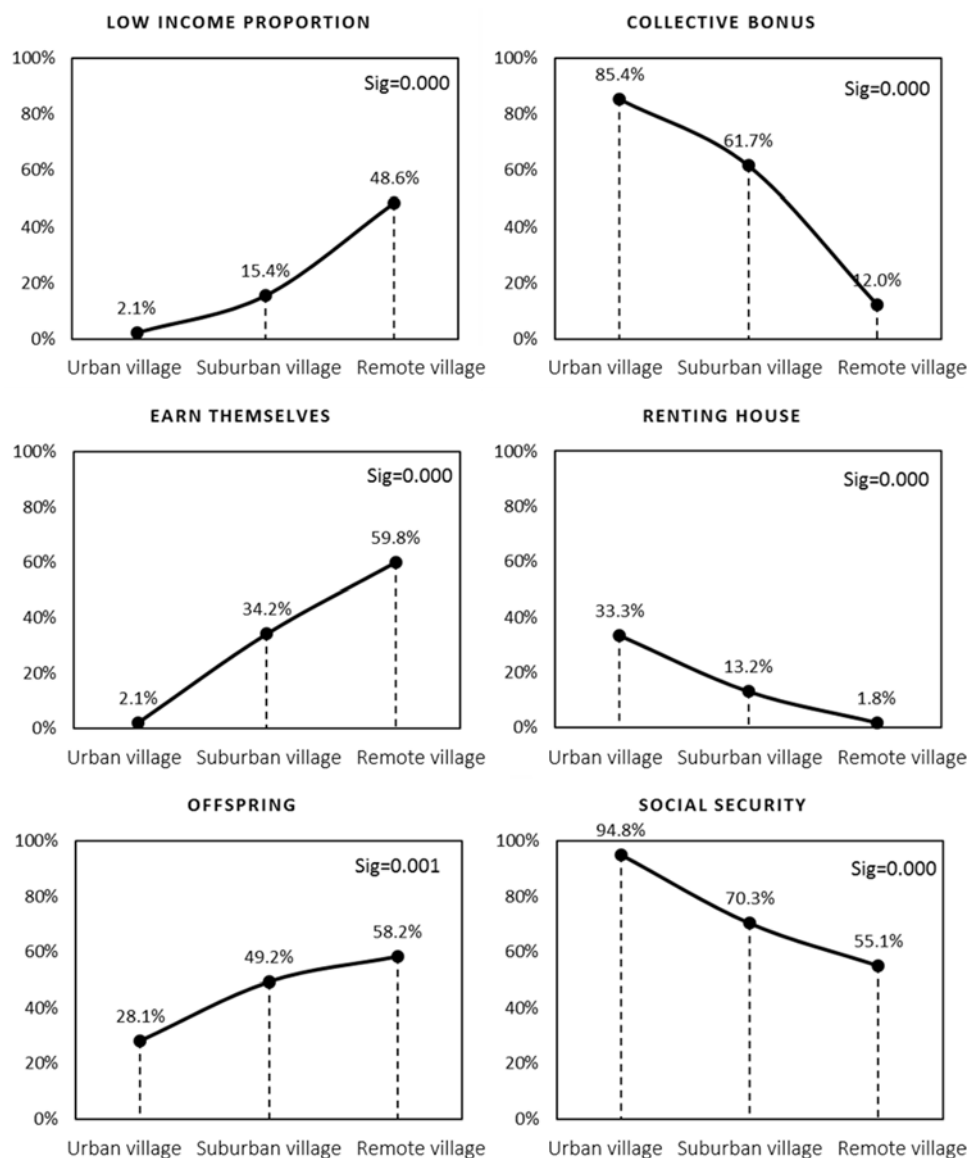
The income of elderly people in the Pearl River Delta area reflects a significant geographical location difference. The survey showed that the average monthly income of the elderly was approximately 1250 yuan, while Guangdong's per capita disposable income was more than 2750 yuan. Old people with a monthly income of 500 yuan or less accounted for approximately 30.7%, while people with 2000 yuan or less accounted for 85.1%. The income of the rural elderly in remote areas is significantly lower than that of those in urbanized areas (see Figure 2a). In remote villages, 48.6% of the rural elderly have a monthly income lower than 500 yuan, while that figure is just 2.1% in urban villages. As argued by Yang (2013), urban–rural differences and area imbalance are two observable characteristics of the rural elderly in China.

The five largest income sources of villagers in the three types of rural areas differ significantly (see Figure 2b–f). There appear to be two main factors for this. First, the more remote the area is, the higher the proportion of elderly people relying on their own labor to support themselves. Conversely, elderly people who live closer to the city are more likely to benefit from external income sources. Approximately one-third of elderly villagers support themselves by renting their houses in urban villages, while less than 2% do so in remote villages. Second, the social security income and village collective bonuses in urban villages are significantly higher than those of remote villages ( $p$ -value less than 0.001). These findings suggest that the financial risk of the elderly security system at present is relatively large, resulting in insufficient elderly security services in rural areas. The development of rural elderly social security is obviously lagging in terms of the demand for pensions and other sources [20].

##### 4.2. Features of Elderly Income

In the past few decades, urban and rural families have experienced rapid transformation, including new lifestyles and lowered birth rates, which have led to weakened family support [34]. However, studies have shown that family support remains more important in rural areas than in urbanized areas [35]. This study empirically evaluates this issue from the perspective of location differences. The findings of this research show that financial support from offspring (family elderly support) is limited. The average amount of family support for the elderly is 378.9 yuan per month, accounting for 30.3% of the elderly's monthly

income, and family contribution to elderly medical expenses only comprises 27.8% of their total medical expenses.



**Figure 2.** (a–f) Income features of the respondents in rural villages.

Specific to interviewee location, the non-parametric test showed that the observed number of elderly people who did not receive assistance from their offspring in urban areas was significantly higher than the expected number, whereas the observed number of elderly people in remote villages who received support from their offspring was slightly higher than the expected number. This indicates that elderly people in urban villages may have their own sources of income and are no longer dependent on their offspring, whereas the elderly in non-urbanized areas are more dependent on the support of their offspring. The key difference between suburban and remote villages is the higher degree of family support in the villages peripheral to cities (the number of elderly obtaining 1000–2000 yuan per month was significantly higher than the expected number) and a lower level of support from children in remote villages (the number of elderly receiving 500 yuan per month or less was significantly higher than the expected number, Table 2). In the survey, several old women cried sadly for their poverty when they were invited to tell their living conditions. These female respondents usually came from remote villages and earned only a few dozen

yuan per month. In general, the further away from the city center the elderly are located, the more financial resources they obtain from offspring.

**Table 2.** Non-parametric chi-square test of offspring support in rural villages.

| Offspring Support | Urban Village |          |          | Suburban Village |          |          | Remote Village |          |          |
|-------------------|---------------|----------|----------|------------------|----------|----------|----------------|----------|----------|
|                   | Observed      | Expected | Residual | Observed         | Expected | Residual | Observed       | Expected | Residual |
| No income         | 63            | 35.2     | 27.8     | 84               | 97.5     | −13.5    | 126            | 140.2    | −14.2    |
| <500 yuan         | 16            | 34.4     | −18.4    | 88               | 95.3     | −7.3     | 163            | 137.2    | 25.8     |
| 500–1000 yuan     | 7             | 17.3     | −10.3    | 52               | 47.8     | 4.2      | 75             | 69.0     | 6.0      |
| 1000–2000 yuan    | 8             | 7.0      | −1.0     | 31               | 19.3     | 11.7     | 15             | 27.8     | −12.8    |
| Above 2000 yuan   | 2             | 2.2      | −0.2     | 11               | 6.1      | 4.9      | 4              | 8.7      | −4.7     |
| Total             | 96            |          |          | 266              |          |          | 383            |          |          |
| Chi-square value  | 38.1          |          |          | 13.8             |          |          | 15.3           |          |          |
| Significant       | 0.000         |          |          | 0.008            |          |          | 0.004          |          |          |

Previous studies have suggested that family support for medical expenses is much more important than emotional support, although the latter is also necessary [36]. This study also showed that the further away an elderly person lives in the city, the higher the proportion of family provision for medical expenses. In urban villages, there are community hospitals that provide free care for local villagers. However, for the high medical insurance coverage and medical subsidies in urbanized villages, only 14.6% of elderly medical fees are paid by their families. This proportion rises to 34.7% in remote villages, where there is a lack of financial subsidies, collective share bonuses, and other income.

With rapid urbanization, a considerable proportion of young people have moved to work and live in cities, often leaving the elderly in villages without sufficient care and emotional support. Some rural elderly are forced to spend a substantial amount of time engaged in manual labor in exchange for three meals per day, an income source that is more stable when compared to declining family support [37].

#### 4.3. Subtle Changes in Social Security for the Elderly

Government-provided social security has been the main development trend in line with the decline of family support, but its coverage in rural areas remains low [38,39]. Our survey supports these findings. There are positive correlations between the level of social security of the rural elderly and the economic resources of cities and villages. The questionnaire revealed that 76.9% of elderly people benefit from social security (agricultural insurance), and the monthly income from social security is 456.9 yuan, accounting for 36.6% of elderly monthly income.

Due to a lack of financial resources from cities and villages, remote villages have low social security coverage and low per capita income, only 227.2 yuan. Closer to the city, the economic resources of local governments and village collectives are greater, and social security coverage is therefore higher. Social security income in urban villages reaches 773.4 yuan per capita. Above all, location differences lead to wide variance in social security pension support. Location also leads to serious differences in social security coverage. The results of the nonparametric test show that the proportion of elderly people who do not participate in social security in urban and suburban villages is significantly lower than expected, whereas it is significantly higher than expected in remote villages. The significance test *p*-values were 0.000 (Table 3).



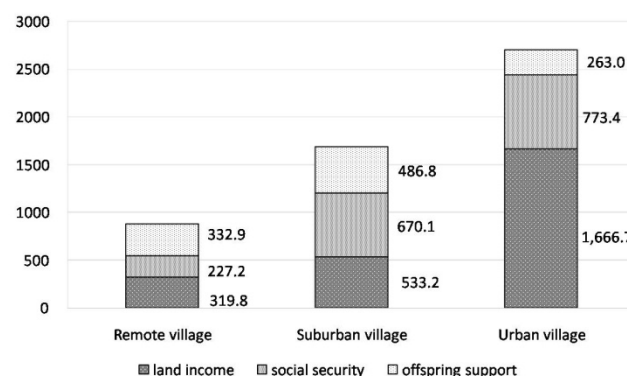
**Table 3.** Non-parametric chi-square test of social security coverage in rural villages.

| Social Security        | Urban Village |          |          | Suburbanvillage |          |          | Remote Village |          |          |
|------------------------|---------------|----------|----------|-----------------|----------|----------|----------------|----------|----------|
|                        | Observed      | Expected | Residual | Observed        | Expected | Residual | Observed       | Expected | Residual |
| Social security        | 30            | 29.3     | 0.7      | 69              | 81.3     | −12.3    | 128            | 116.7    | 11.3     |
| Villagesocial security | 62            | 44.5     | 17.5     | 151             | 123.0    | 28.0     | 132            | 177.4    | −45.4    |
| Total                  | 92            |          |          | 220             |          |          | 260            |          |          |
| Chi-square value       | 22.0          |          |          | 23.2            |          |          | 33.9           |          |          |
| Significant            | 0.000         |          |          | 0.000           |          |          | 0.000          |          |          |

#### 4.4. Significant Location Differences in Land Support

In view of the current situation, rural family pension support is confronted by many challenges, and social security insurance alone is insufficient to meet the needs of the rural elderly. Therefore, land security remains an important pillar of support [24,40]. Previous studies have emphasized that the number, age, education, and career prospects of offspring all have significant effects on land support, in that a larger family size results in smaller farmland per capita, which then weakens the potential for land support [41]. In addition to these variables, this study focused on the effect of location on land support as a proportion of overall elderly support.

As a result of location differences, rural land support has collapsed, and only urbanized land can provide sufficient support for the elderly at present. This survey of 745 elderly people revealed that collective land provides an average monthly income of 587.8 yuan, accounting for 47.0% of all monthly income. The proportion of elderly land income is higher in those areas close to the city center. In remote villages, the average income of the elderly from collective land was 319.8 yuan, accounting for 36.4% of total monthly income, which meets only basic survival needs. However, for those villages closer to the city center, while the proportion of cultivated land income is much lower, rental income and collective bonuses provide considerable support for the elderly. As examples, the average monthly income from suburban collective land is 533.2 yuan, 31.5% of total monthly income, but in urban villages, the average monthly income from collective land is as high as 1666.7 yuan, accounting for 61.7% of monthly gross income (Figures 3 and 4).

**Figure 3.** Income sources of the elderly in rural villages (yuan/month).

As we might expect, villages with a greater level of economic development tend to have more industrial enterprises. Housing prices and other benefits related to location have risen sharply in urbanized villages, and this provides greater resources for elderly support. Nevertheless, factories in suburban villages have contributed to significant environmental pollution, resulting in a decline in food production. As a result, the land neither provides the income that it once did nor meets the needs of the elderly. This research supports the conclusion that collective land security in different locations is quite imbalanced, leading to social inequality for the elderly.

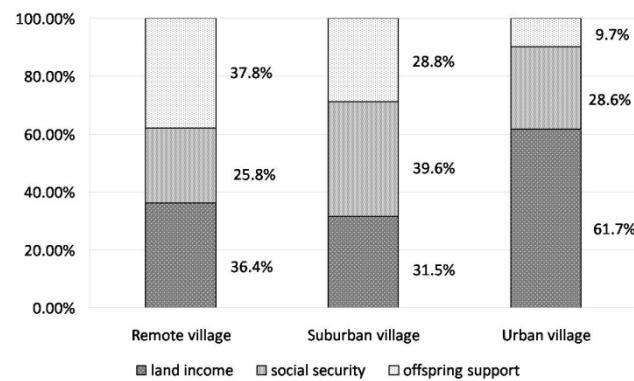


Figure 4. Proportion of income sources of the elderly in rural villages.

### 5. Reasons for Land Support Differences

#### 5.1. Cultivated Land Use

Land security is important for rural elderly support due to the pressing concerns of family support and social security. The primary land support method is elderly farming with self-sufficiency, while leftover crops offer extra economic support. Of the 745 rural elderly people surveyed, 44.7% cultivated the land themselves, and 33.6% let the land be expropriated by governments (Table 4). Among the 333 respondents, 320 elderly people grew crops. Among these respondents, 53.0% were self-sufficient and 34.0% sold surplus crops.

Table 4. Land use by elderly people in rural villages.

| Land Use               | People | Proportion (%) |
|------------------------|--------|----------------|
| Cultivating themselves | 333    | 44.7           |
| Renting partly         | 102    | 13.7           |
| Renting totally        | 35     | 4.7            |
| Expropriated           | 250    | 33.6           |
| Uncultivated           | 25     | 3.4            |

The performance of rural land support differed according to the distance from big cities, where remote village land tended towards food cultivation while urbanized villages mainly generate income through rent. In remote villages, 69.5% of farmers cultivate the land by themselves, while closer to cities, cultivated land decreases gradually and is replaced by rent and expropriation. The difference in land usage was significant, with Chi-square  $p$ -values < 0.000 (Table 5).

Table 5. Non-parametric chi-square test of offspring support in rural villages.

| Land Use             | Urban Village |          |          | Suburban Village |          |          | Remote Village |          |          |
|----------------------|---------------|----------|----------|------------------|----------|----------|----------------|----------|----------|
|                      | Observed      | Expected | Residual | Observed         | Expected | Residual | Observed       | Expected | Residual |
| Planting totally     | 2             | 52.6     | −50.6    | 96               | 118.9    | −22.9    | 235            | 171.2    | 63.8     |
| Renting totally      |               |          |          | 17               | 36.4     | −19.4    | 85             | 52.4     | 32.6     |
| Planting and renting |               |          |          | 4                | 12.5     | −8.5     | 31             | 18.0     | 13.0     |
| Expropriated         | 92            | 39.5     | 52.5     | 134              | 89.3     | 44.7     | 24             | 128.5    | −104.5   |
| Uncultivated         | 2             | 3.9      | −1.9     | 15               | 8.9      | 6.1      | 8              | 12.9     | −4.9     |
| Total                | 96            |          |          | 266              |          |          | 383            |          |          |
| Chi-square value     | 119.5         |          |          | 47.1             |          |          | 140.3          |          |          |
| Significance         | 0.000         |          |          | 0.000            |          |          | 0.000          |          |          |

#### 5.2. Homestead Use

There are many ongoing changes to the functions of rural homesteads, including “private circulation” and “the paid use of homesteads”. The transformation of homesteads is mainly

caused by industrial differentiation based on resources and location. In terms of homestead usage, remote village homesteads provide the single function of self-occupation, whereas homesteads closer to city center villages are increasingly used to generate rental income.

The questionnaire revealed that 86.3% of elderly homesteads are self-occupied, 11.8% are partially rented, 0.5% are completely rented, and 1.3% of elderly people have had their land expropriated. However, urban villages have a large rental market demand: approximately 63.5% of elderly people occupy part of houses and rent or sublet the rest, 2.1% of urban village inhabitants completely rent their village houses, and only 28.1% of the houses are solely self-occupied. In contrast, in suburban villages, approximately 90.2% of houses are completely self-occupied, and in remote villages, almost all of the homesteads are used only for elderly self-occupation, providing little economic support.

Infrastructure investments also lead to homestead income differentiation. Closer to the city center, the demand for rental accommodation and land expropriation is higher (Figures 3 and 4), leading to greater rental income and collective bonuses.

### 5.3. Land Revenue and Time Investment Situation

The land income and time investment of rural elderly individuals are negatively correlated. The data reveal that their average monthly income is 587.8 yuan from cultivated and rented land. Not considering the 38% of those surveyed who are uncertain of the time spent on their land, 39.6% of elderly people spend more than 3 months on their land, while 13.1% spend less than 10 days on their land. Land revenue and time investment of the rural elderly present a negative correlation in remote rural areas, whereas in urban villages, the majority of elderly people can obtain high incomes merely by collecting rental costs (Table 6).

**Table 6.** Monthly land income of elderly people in rural villages.

| Monthly Income from Land | People | Proportion |
|--------------------------|--------|------------|
| <500 yuan                | 260    | 34.9%      |
| 500–1000 yuan            | 73     | 9.8%       |
| 1000 yuan or above       | 65     | 8.7%       |
| Notclear                 | 347    | 46.6%      |

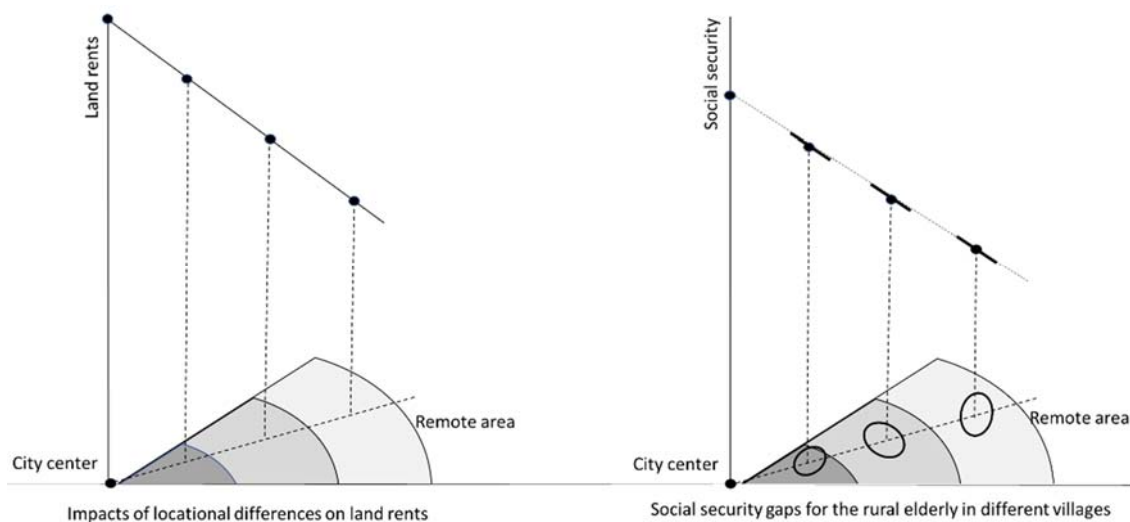
The efficiency of land support presents obvious differences according to the distance from city centers. Less time investment and higher benefits are apparent in urbanized land support through homestead rental and collective bonuses. In urban villages, the average monthly income of the elderly reaches 1666.7 yuan, 72.9% of elderly people either do not need to or are uncertain if they invest their own time on their land, and approximately 19.8% invest less than one month per year. However, in remote villages, there are higher time and resource investments but lower earnings, as the average elderly monthly land income is 319.8 yuan, while just 18.7% of elderly people invest less than 3 months and 58.4% invest more than 3 months in their land (Table 7).

**Table 7.** The time that the elderly spend on farmland in rural villages.

| Time Spent        | Urban Village | Suburban Village | Remote Village |
|-------------------|---------------|------------------|----------------|
| 10 days or less   | 12.5%         | 18.8%            | 9.2%           |
| 10 days–1 month   | 7.3%          | 2.3%             | 3.7%           |
| 1–3 months        | 3.1%          | 6.4%             | 5.8%           |
| 3–6 months        | 4.2%          | 8.6%             | 24.7%          |
| 6 months or above | 0.0%          | 16.9%            | 33.7%          |
| None or notclear  | 72.9%         | 47.0%            | 22.9%          |

## 6. Discussion

Rapid urbanization has drawn various rural resources to cities [42] and led to distinct values and incomes of collective lands in different locations. This study shows that collective land support has collapsed in remote areas but provides adequate benefits for the elderly in urbanized areas. In the rural social security system, land income and its derivatives play an indispensable role [43], as family support is in sharp decline [19], and social supports at present are not enough to sustain the elderly. However, closer to the city center, villagers receive more substantial land income, resulting in an emergent polarization trend between different villages. Different types of villages are subject to different effects of land location in the city (Figure 5). In remote villages, since there is less land income, land support for the elderly is weaker than family support and social security. However, in urban villages, land support accounts for the largest proportion of elderly support. The difference in land income between remote and urban villages is dramatic. The level of land-use transformation also appears to correspond with the level of social and economic development. From remote villages to urban villages, more and more agricultural areas have been developed into secondary and tertiary industries, such as factories, rental houses, and collective property [44].



**Figure 5.** Impacts of locational differences on land rents and social security gaps.

At the beginning of the urbanization process, land income was more related to the amount of land. However, with continuing urbanization and urban infrastructure investments, there is a substantial difference in land support: elderly people in urban villages enjoy the benefits of urbanization by renting housing and properties, while elderly people in remote villages have low incomes and are forced to find additional income by farming. The results confirm the research of Han and Zhu that land support can achieve very little in most rural villages [15]. Income and benefits from collective land in the PRD for the rural elderly have shifted from land quantity to land location.

In line with the existing works of Razavi [14], Li and Otani [4], Cai et al. [7], and Han and Zhu [15], the results of this study have significant relevance to social justice issues. Three levels of policy issues are worth discussing in light of these findings.

### 1. Social security constraints of collective land policymaking.

Although some elderly people in rural areas can engage in farming to obtain a low income, this is not a long-term solution. From a humanitarian perspective, elderly support via farming should be eliminated, and rural support should gradually be integrated with urban social security. As argued by Williamson and Pampel, the government should aim to improve the social security system to ensure the basic needs of rural elderly are met, as the process of economic globalization has led to the collapse of the traditional social

system and the family pension model [23]. The notion of retirement in rural China should be brought into the policy agenda [22]. However, as the rural social security of collective land is not universal, relevant land policies should also be assessed. For instance, there are retention problems in land contracting rights if the villagers have not been cultivated for a certain number of years. Furthermore, new policies could be considered to promote rural land transfer and farmhouse resorts based on regional income and local conditions.

## 2. Collective property tax in urbanized areas.

Financial support is arguably the first responsibility of the government in social security considerations [45]. Within the scope of land-use policies, appropriate taxation systems could be explored not only based on the division of state-owned land and collective land but also on the effects of location, with tailored regional rural transfer payments implemented to tackle the problem caused by location differences [46]. Furthermore, based on taxation policy, we can draw lessons from the practice of land transfer and circulation usage in Nanhai district of Foshan city. A trading platform for state-owned land and collective land could be established in the near future and a unified management system in the long term [47]. However, much attention should also be paid to construction conditions and other historical factors that lead to disparate collective property income in similar locations.

## 3. The strengthening of social welfare for remote rural villages.

In line with urban–rural planning, transfer payments based on location differences could be implemented to improve the municipal infrastructure and public services in locations unsatisfactory for the elderly in terms of medical services and cultural resources [48]. Further, in low population density areas, an intensive homestead planning program might be beneficial for improving the efficiency of municipal and public service facilities as well as the long-term welfare and efficiency of the community public service supply [49].

In general, rural social security in collective land is unequal, and relevant land policies should be assessed in consideration of location and its effects. New taxation policies tailored to different locations and land uses could be explored to address the social inequality issues of the elderly in different village types.

## 7. Conclusions and Future Research

This research establishes a conceptual framework of the rural social security system, including land support, social elderly support, and family support. In particular, we enrich existing studies by adding the influence of local differences in collective land on the rural social security system. It also provides new empirical evidence in three types of villages—urban, suburban, and remote—in China’s Pearl River Delta, which has experienced rapid urbanization and socioeconomic transition. The empirical findings show the important role of land income in rural social security systems. Urban villages in central locations with high land values provide adequate land support for the elderly, while remote villages bring little land income for the elderly.

The rapid urbanization process has been accompanied by the transfer of rural land into urban land. In the PRD, a lot of farmland in many villages (especially those located in the city center) has been requisitioned by local governments for urban development, while residential land and collective industrial land are often reserved for villagers’ living and working. Since the early 1990s, the rural elderly have tried to seek new income resources from renting their houses to migrants, renting their collective properties to external enterprises, or working in factories. Hence, some scholars argue that households in rural areas can transfer land rights without incurring excessive transaction costs [50–52]. However, this has mainly taken place in villages located in the city center with high land value. In remote villages, the rural elderly have mainly earned their income from food cultivation rather than from the second or third sectors. However, they cannot get many benefits from farming because they are not familiar with new technologies applied in agriculture and the land production is very low efficient. From then on, the elderly staying

in rural areas have encountered many living problems because they just get limited outputs from the collective land. Thus, differences in land income have significantly impacted the rural social security system.

The results of this study indicate a correlation between the location character of the village and the living conditions of the old inhabitants. However, more research needs to be done through extensive fieldwork to further understand the non-market aspects of collective land. Several ethnographers and social anthropologists have investigated social and political dynamics in rural China in recent decades [53–55]. Many rural property issues in China are unrelated to the market economy [51,56]. According to our survey, the rent of a pond for fishing in the developed suburban area of the PRD can reach as high as 9000 yuan per year, while the rent of some small ponds in remote villages might be only 5 yuan per year because they are seen as “private properties” of nearby peasants. The latter situation indicates a non-market economy in remote areas, where people might look at these small plots of collective land nearby as their ancestral assets. Most local governments in rural China have not paid sufficient attention to this unique perspective of natural resources. Through the lens of anthropological observation, we can gain a better understanding of the property of collective land in China. In other words, future research should pay attention to the influence of this social custom and conventional factors on collective land and rural lives.

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## References

- Hao, P.; Geertman, S.; Hooimeijer, P.; Sliuzas, R. The Land-Use Diversity in Urban Villages in Shenzhen. *Environ. Plan. A Econ. Space* **2012**, *44*, 2742–2764. [CrossRef]
- Lai, Y.; Peng, Y.; Li, B.; Lin, Y. Industrial land development in urban villages in China: A property rights perspective. *Habitat Int.* **2014**, *41*, 185–194. [CrossRef]
- Chu, Y.; Zhao, P. China Focus: Home-Based Elderly Care Deepens in Rural China. Available online: [http://www.xinhuanet.com/english/2019-02/09/c\\_137809319.htm](http://www.xinhuanet.com/english/2019-02/09/c_137809319.htm) (accessed on 9 February 2019).
- Li, F.; Otani, J. Financing elderly people’s long-term care needs: Evidence from China. *Int. J. Health Plann. Manag.* **2018**, *33*, 479–488. [CrossRef] [PubMed]
- Liu, L.-J.; Guo, Q. Loneliness and health-related quality of life for the empty nest elderly in the rural area of a mountainous county in China. *Qual. Life Res.* **2007**, *16*, 1275–1280. [CrossRef]
- Yang, Q.Z. Cultural Perspective on Solving Rural Endowment Problems. *Sci. Soc.* **2013**, *1*, 107–109.
- Cai, F.; Giles, J.; O’Keefe, P.; Wang, D. *The Elderly and Old Age Support in Rural China*; The World Bank: Washington, DC, USA, 2012.
- Li, Y.X.; Luo, J. A survey and Thinking of Rural Land Retirement—A Case of 140 Farmers in the Xinzheng Village, Songjiang District. *Econ. Res. Guide* **2010**, *4*, 19–20.
- Kwei, J. An Elderly Perspective: A Case Study of Elderly Residents’ Preferences and Opinions on Housing in Various Communities in Beijing. Master’s Thesis, University of Southern California, Los Angeles, CA, USA, 2009.
- Liu, Y.; Dijst, M.; Geertman, S.; Cui, C. Social Sustainability in an Ageing Chinese Society: Towards an Integrative Conceptual Framework. *Sustainability* **2017**, *9*, 658. [CrossRef]
- Liu, Y.; Dijst, M.; Geertman, S. The subjective well-being of older adults in Shanghai: The role of residential environment and individual resources. *Urban Stud.* **2017**, *54*, 1692–1714. [CrossRef]
- Block, F.; Esping-Andersen, G. Social Foundations of Postindustrial Economies. *Contemp. Sociol.* **2001**, *30*, 581. [CrossRef]
- Zhou, J.; Ronald, R. Housing and Welfare Regimes: Examining the Changing Role of Public Housing in China. *Hous. Theory Soc.* **2017**, *34*, 253–276. [CrossRef]

14. Razavi, S. The political and social economy of care in a development context: Conceptual issues, research questions and policy options. *Trab. Empl.* **2007**, *6*, 17–27.
15. Han, F.; Zhu, Q.Z. Rural Old-Age and Land Support—Investigation and Thinking about Rural Land Old-Age Security Weakening. *Probe* **2008**, *5*, 128–132.
16. Giles, J.; Wang, D.; Zhao, C. Can China’s Rural Elderly Count on Support from Adult Children? Implications of Rural-to-Urban Migration. *J. Popul. Ageing* **2010**, *3*, 183–204. [[CrossRef](#)]
17. Thøgersen, S.; Anru, N. “He Is He, and I Am I”: Individual and Collective among China’s Rural Elderly. *Eur. J. East Asian Stud.* **2008**, *7*, 11–37. [[CrossRef](#)]
18. Fisher, K.R.; Shang, X.; Li, Z. Absent Role of the State: Analysis of Social Support to Older People with Disabilities in Rural China. *Soc. Policy Adm.* **2011**, *45*, 633–648. [[CrossRef](#)]
19. Chen, J.L. A Research on the Elderly Supporting Patterns in China: A Survey in Suzhou. Ph.D. Thesis, Nanjing University, Nanjing, China, 2012.
20. Gruijters, R.J. Family care-giving and living arrangements of functionally impaired elders in rural China. *Ageing Soc.* **2017**, *37*, 633–655. [[CrossRef](#)]
21. Tian, B.H.; Lei, H.; Zhong, Z.B. Living Situation and Elderly Support Willing—Empirical Analysis of Rural Family Support Influence. *China Rural. Surv.* **2012**, *2*, 74–85.
22. Ginneken, W. Extending social security: Policies for developing countries. *Int. Labour Rev.* **2003**, *142*, 277–294. [[CrossRef](#)]
23. Williamson, J.B.; Pampel, F.C. *Old-Age Security in Comparative Perspective*; Oxford University Press on Demand: Oxford, UK, 1993.
24. Liang, Y.; Lu, W.; Wu, W. Are social security policies for Chinese landless farmers really effective on health in the process of Chinese rapid urbanization? a study on the effect of social security policies for Chinese landless farmers on their health-related quality of life. *Int. J. Equity Health* **2014**, *13*, 5. [[CrossRef](#)]
25. Li, H.; Huang, X.; Kwan, M.-P.; Bao, H.X.H.; Jefferson, S. Changes in farmers’ welfare from land requisition in the process of rapid urbanization. *Land Use Policy* **2015**, *42*, 635–641. [[CrossRef](#)]
26. Qin, X.L.; Wu, L.; Liu, L.M. Influencing Factors on Transformation of Peasant Households’ Land Use in Impoverished Limestone Mountainous Areas. Chinese. *Agric. Sci. Bull.* **2018**, *34*, 8.
27. Yan, X.; Bauer, S.; Huo, X. Farm Size, Land Reallocation, and Labour Migration in Rural China. *Popul. Space Place* **2014**, *20*, 303–315. [[CrossRef](#)]
28. Wang, Q.; Zhang, X.; Wu, Y.; Skitmore, M. Collective land system in China: Congenital flaw or acquired irrational weakness? *Habitat Int.* **2015**, *50*, 226–233. [[CrossRef](#)]
29. Shengping, G. The Legal Dilemma of the Financialization of Agricultural Land and a Way Forward. *Soc. Sci. China* **2015**, *36*, 91–109. [[CrossRef](#)]
30. Chisholm, M.; Alonso, W. Location and Land Use: Toward a General Theory of Land Rent. *Econ. Geogr.* **1966**, *42*, 277. [[CrossRef](#)]
31. Fujita, M. *Urban Economic Theory*; Cambridge Books: Cambridge, UK, 1989.
32. Harvey, D. Class-monopoly rent, finance capital and the urban revolution. *Reg. Stud.* **1974**, *8*, 239–255. [[CrossRef](#)]
33. Xu, Y.; Tang, B.; Chan, E.H.W. State-led land requisition and transformation of rural villages in transitional China. *Habitat Int.* **2011**, *35*, 57–65. [[CrossRef](#)]
34. Wang, T.F.; Wang, F.; Tang, Y.C.; Wang, Y.Y.; Pei, X.M. Land collectivization and the Structural Transition of Traditional Rural Family. *Soc. Sci. China* **2016**, *37*, 111–129.
35. Long, F. The Improvement of Family Pension Theory. *Rural Econ.* **2007**, *5*, 3–6.
36. Zhang, J.L.; Yu, D.Y. The Research of the Trend of China’s Rural Family Endowment. *Rural Econ.* **2002**, *12*, 19–21.
37. Qian, X.F. Sources of Income for Urban and Rural Elderly and Their Economic Impact from Different Perspective. *J. South China Agric. Univ.* **2011**, *10*, 104–113. [[CrossRef](#)]
38. Liu, Z.L. Reconsideration and Reformulation of the System of China’s Social Insurance of Endowment in Rural Areas. *Manag. World* **2003**, *8*, 46–56+80–154. [[CrossRef](#)]
39. Li, Y.S. The Role of Government in the Construction of Rural Social Security. *Soc. Sci. Res.* **2005**, *4*, 120–125. [[CrossRef](#)]
40. Huang, H. Reform of Rural Land System from Perspective of Rural Social Security. *Chin. Agric. Sci. Bull.* **2010**, *26*, 425–430.
41. Xu, H.Z.; Guo, Z.X.; Guo, Y.Y. Vocational Differentiation of Farmers, Old-Age Security and Rural Land Transfer—A Empirical Research of 372 Farmer Questionnaires in Nanjing. *J. Agrotech. Econ.* **2011**, *1*, 687–693.
42. Long, H. Lou Land Use Transition and Rural Transformation Development. *Prog. Geogr.* **2012**, *31*, 131–138. [[CrossRef](#)]
43. Wei, T.; Yan, L.L. An Empirical Research on the Endowment Contribution of the Rural Land Security in China. *Popul. Econ.* **2014**, *201*, 99–107.
44. Zhu, F.K.; Ke, X.L.; Zhang, F.R. Characteristics and Diagnostic Criteria of Rural Residential Land Marginalization in the Urban-Rural Transformation Development Period in China. *Prog. Geogr.* **2017**, *36*, 549–556. [[CrossRef](#)]
45. Wang, Z.W. The Analysis of Government’s Responsibility of Rural Pension Insurance in China. *Soft Sci.* **2006**, *20*, 4. [[CrossRef](#)]
46. Wang, F.; Li, R. Regional Difference Analysis on the Substitutability of New Rural Social Pension Insurance and Family Support. *Insur. Stud.* **2016**, *12*, 114–123.
47. Yun, W.J.; Yang, H.K. A Case Study on Cixi City: Land Consolidation as a Platform for Rural Land Transfer. *Resour. Ind.* **2010**, *12*, 58–61. [[CrossRef](#)]

48. Wu, X.; Li, L. The Motives of Intergenerational Transfer to the Elderly Parents in China: Consequences of High Medical Expenditure. *Health Econ.* **2014**, *23*, 631–652. [[CrossRef](#)] [[PubMed](#)]
49. Wang, T.; Cheng, W.; Zhao, T.Y. Research on Economical and Intensive Utilization of Rural Homestead in Several Northeast Cold Regions in The New Period. *Archit. J.* **2016**, *7*, 60–66.
50. Khai, L.D.; Markussen, T.; McCoy, S.; Tarp, F. Access to land: Market and non-market land transactions in rural Vietnam. In *Land Tenure Reform in Asia and Africa*; Palgrave Macmillan: London, UK, 2013; pp. 162–186. [[CrossRef](#)]
51. Yang, X.; Zhang, A.; Zhang, F. Farmers' heterogeneous willingness to pay for farmland non-market goods and services on the basis of a mixed logit model—A case study of Wuhan, China. *Int. J. Environ. Res. Public Health* **2019**, *16*, 3876. [[CrossRef](#)]
52. Sachs, J.D.; Woo, W.T. Understanding China's economic performance. *J. Policy Reform* **2001**, *4*, 1–50. [[CrossRef](#)]
53. Liu, X. In *One's Own Shadow: An Ethnographic Account of the Condition of Post-Reform Rural China*; University of California Press: Berkeley, CA, USA, 2000. [[CrossRef](#)]
54. He, S.; Xue, D. Identity building and communal resistance against landgrabs in Wukan Village, China. *Curr. Anthropol.* **2014**, *55*, S126–S137. [[CrossRef](#)]
55. Trappel, R. *China's Agrarian Transition: Peasants, Property, and Politics*; Lexington Books: Lanham, MD, USA, 2015. [[CrossRef](#)]
56. Wang, X.; Bennett, J.; Xie, C.; Zhang, Z.; Liang, D. Estimating non-market environmental benefits of the Conversion of Cropland to Forest and Grassland Program: A choice modeling approach. *Ecol. Econ.* **2007**, *63*, 114–125. [[CrossRef](#)]