

Research on the Impact of Urban Rural Factor Flow on the Income Gap between Urban and Rural Areas in the Western Region

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Abstract: Based on provincial-level panel data from 2000 to 2020, this article uses a bidirectional fixed effects model to study the impact of urban-rural factor mobility on urban-rural income inequality. The results showed that: firstly, agricultural price policies have a significant negative impact on the urban-rural income gap. Secondly, natural disasters have a significant negative impact on the urban-rural income gap. Third, the proportion of fixed assets investment in agriculture has a significant negative effect on the urban-rural income gap. Fourthly, the degree of agricultural modernization has a significant negative impact on the urban-rural income gap. Fifth, the density of agricultural machinery has a significant negative impact on the urban-rural income gap. After replacing the estimation method with non parametric estimation and lagged first-order regression, the results remained robust.

1. Introduction

The imbalance in urban-rural development is an important issue facing China's current social development. The 19th National Congress of the CPC proposed the rural revitalization strategy, which is actually to implement the strategic orientation of rural priority, adjust the development thinking of the past urban orientation, stimulate the endogenous power of rural development, boost rural development, and promote the harmonious development of urban and rural relations. Traditional production factors such as labor and capital provide a material foundation for achieving rural revitalization, and these production factors are influenced by economic, political, and social factors to flow between urban and rural areas under the influence of market mechanisms. Against the backdrop of the deepening promotion of the current rural revitalization strategy, coordinated development between urban and rural areas has become an important discussion topic. Whether urban and rural factors can flow as expected and ensure sufficient supply of rural development factors is an urgent scientific issue to be solved in achieving rural revitalization. A basic characteristic of China's urban-rural economic development is the dual economic structure between urban and rural areas. The widening income gap between urban and rural areas is a highly concerned and in-depth research issue by the government and academia. Under the dual economic structure of urban and rural areas, the resource endowment and allocation of production factors vary between urban and rural areas, affecting labor production efficiency and income, and widening the gap between urban and rural areas in terms of economic development, factor allocation, and labor income. Overall, the factors that affect

the urban-rural income gap include many aspects such as the market and government. In the current stage of economic development in China, labor and production factors are important components of national income distribution. At the same time, represented by social security, government expenditure is a key area and the main part, which is influenced by factors such as institutional design and fund management. The effects of different types of government expenditure and social security on the income distribution of urban and rural residents are also different, and the effect of government regulation is not entirely as expected. However, with the increasing improvement of China's social security system, the positive role of China's social security system with government expenditure as the main body in income inequality is becoming increasingly evident[1-3].

In recent years, the income gap between urban and rural residents in China has narrowed, and the ratio of disposable income between urban and rural residents has continuously decreased. However, objectively, the income gap between urban and rural residents is still relatively large. The current research has enriched the discussion on the current situation and countermeasures of urban-rural factor flow, focusing on exploring urban-rural relations, policy recommendations, and other aspects. However, there is relatively little attention paid to urban-rural factor flow from the perspective of prioritizing rural development. The adjustment of urban-rural relations led by prioritizing rural development is conducive to regulating and allocating the distribution pattern of production factors such as capital and labor between urban and rural areas. It interprets the scientific connotation of prioritizing rural development and its element protection, and designs optimized allocation goals and frameworks for urban-rural elements that are more in line with the current situation of social development, providing scientific reference for rural revitalization practice.

2. Literature review

Early studies on urban-rural development generally believed that a large amount of resources gathered in cities generated economies of scale, focusing on the rapid development of core cities while neglecting the development of suburban areas and rural areas to a certain extent. Urban development at the cost of sacrificing rural areas caused rural areas to remain in a state of poverty and underdevelopment to some extent. But urban and rural areas are an organic whole, a spatial and regional system that connects and influences each other. The flow of production factors between urban and rural areas will change their functions, positioning, and structure, thereby affecting the level of urban and rural development. In the specific practice of social development, most of the measures for urban-rural integration development are to support urban and rural development by adjusting the allocation of factors. The focus of policy formulation is mostly on the investment level of factors such as funds, talent, and land, in order to play the role of rational flow of factors to narrow the urban-rural development gap and achieve the goal of urban-rural integration development. The rural revitalization strategy points out that adhering to the priority development of agriculture and rural areas requires leveraging the advantages of rural labor, natural resources, and other factors, and tilting funds, technology, and other factors towards rural areas.

In the new stage of development, rural priority development places greater emphasis on the free and reasonable flow of urban-rural factors. Various production factors that are lacking in rural development flow from cities to rural areas, and rural income distribution gradually shifts from "distribution according to work" to "distribution according to factors". This is an important way for urban-rural integration development. Rural priority development is based on the rational allocation of rural production factors to achieve the improvement of rural basic functions. Ultimately, achieving urban-rural integration and development. Based on the objective current situation of urban and rural factors and their relative advantages and resource endowments, the goal of complementary elements and urban-rural division of labor is achieved through the exchange and exchange of advantageous

elements between urban and rural areas, thereby achieving the interaction and integrated development of urban-rural spatial and regional systems, promoting the exchange and interaction of resources, population, space, and other functions between urban and rural areas, promoting the complementarity and value realization of production, life, politics, culture, and other functions, and ultimately achieving urban-rural integrated development.

Some scholars have also explored the dynamic relationship between factor resource allocation and urban-rural income gap. Li Huan and Wu Wenzhi (2019) found that the allocation of financial resources biased towards urban areas exacerbates the urban-rural income gap, and urbanization development has a positive effect on narrowing the urban-rural income gap. Barthel (2021) found that the fund allocation model of financial institutions has expanded the urban-rural income gap. Reasonable allocation of resources can help alleviate the adverse effects of institutional, spatial, and regional barriers, and effectively promote economic development. At the same time, the balanced allocation of urban-rural factor resources has a positive effect on narrowing the urban-rural income gap, promoting rural economic development, and thereby improving the overall consumption level of rural residents. The consumption level of rural residents is closely related to the level of rural development. Some scholars have studied the relationship between the urban-rural income gap and rural residents' consumption. The academic community generally believes that the urban-rural income gap has a negative impact on rural residents' consumption. Ni Chaojun and Wang Yan (2018) found that the widening urban-rural income gap has a significant inhibitory effect on farmers' consumption. Xu Yadong and Zhang Yingliang (2021) found that the urban-rural income gap has a negative impact on rural residents' consumption. Ge Jihong et al. (2022) found that the smaller the urban-rural income gap, the easier it is to promote rural residents' consumption. From the perspective of top-level design, policy documents clearly point out the need to narrow the urban-rural gap, promote urban-rural integration development, and improve the income level of rural residents. However, the urban-rural income gap still exists for a long time, and the overall consumption level of rural residents is also relatively low[4-7].

The flow and allocation of production factors are the foothold of urban-rural interaction. The academic community mostly uses the concepts of cities and rural functions to characterize the close relationship between rural areas and cities. In recent years, there have been more studies on the flow and allocation of factors between cities and rural areas, including the flow of labor, funds, and other aspects. On the one hand, it explores the relationship between factor flow and urban-rural integration and development, including market-oriented urban-rural factor allocation and reasonable flow. Reasonable allocation of production factors and economic resources, and reasonable distribution of national income. In the past, China's development direction with a focus on cities led to the influx of advantageous rural production factors such as labor and natural resources into cities under the traditional market-oriented allocation. The integration and two-way flow of urban-rural production factors are important prerequisites for achieving rural revitalization and urban-rural integration development. In the process of urbanization, rural areas have increasingly frequent interactions and exchanges with cities in terms of funds, markets, medical care, etc., but are influenced by regional space and other factors. The flow of resources and factors is relatively slow. On the other hand, attention should be paid to how to solve the problem of rural factor flow to cities. In the context of the flow of basic factors between urban and rural areas, influenced by the traditional market-oriented factor allocation, the gap between urban and rural economic development in China is still large. The one-way factor flow from rural areas to cities is no longer reasonable, and the failure of market-oriented factor allocation is the main problem faced by urban and rural factor flow. By improving rural infrastructure and institutional construction, we ensure that the funds, technologies, and other factors that flow into rural areas can remain in rural areas, continuously improve the structure and quality of factor allocation, and form rural endogenous development capabilities.

In summary, existing literature has studied the pairwise relationship between urban-rural income gap, factor resource allocation, and rural residents' consumption level, but few scholars have studied the complex relationship between the three. This article is based on a bidirectional fixed effects model and uses provincial panel data to study the relationship between factor resource allocation and urban-rural income gap, providing theoretical reference for narrowing the urban-rural income gap[8-10].

3. Theoretical Analysis and Model Design

Table 1: Descriptive Statistics of Variables Influencing the Income Gap between Urban and Rural Areas (Sample Size 252)

| Influencing factors | Specific indicators | Mean | Standard deviation | Minimum value | Maximum value |
|--|---|---------|--------------------|---------------|---------------|
| Urban-rural income gap | The ratio of disposable income between urban residents and rural residents | 3.279 | 0.555 | 2.401 | 5.645 |
| Agricultural Price Policy | The ratio of agricultural product production price index to agricultural means of production price index | 1.193 | 0.358 | 0.752 | 3.132 |
| Agricultural human capital level | Average years of education for rural employees | 6.768 | 0.957 | 2.643 | 8.330 |
| Natural disaster situation | Affected area of crops | 1020.64 | 912.00 | 4 | 4770.4 |
| Agricultural Industrial Structure | The ratio of economic crop planting area to total crop planting area | 0.562 | 0.094 | 0.301 | 0.740 |
| Proportion of fixed assets investment in agriculture | Ratio of agricultural fixed assets investment to fixed assets investment of the whole society | 0.047 | 0.019 | 0.011 | 0.114 |
| Degree of agricultural modernization | Weighted average of agricultural labor productivity and contribution rate of agricultural scientific and technological progress | 2.899 | 1.829 | 0.382 | 9.157 |
| Agricultural machinery density | Total power of agricultural machinery | 0.532 | 0.414 | 0.131 | 2.697 |

1) Data source and variable selection

Based on existing literature and the characteristics of this study, this article uses panel data from 12 provincial-level administrative regions in western China (Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang) from 2000 to 2020. This article selects the following indicators to measure the impact of urban-rural factor flow in the western region: (1) agricultural policy indicators: fiscal support for agriculture policies, agricultural technology investment, (2) agricultural and rural development indicators: rural residents' income level, agricultural human capital level, planting industry structure, per capita capital level, (3) urban-rural relationship indicators: urbanization level. The data for the above indicators are all sourced from the corresponding annual "China Statistical Yearbook", "China Rural Statistical Yearbook", and various regional statistical yearbooks. The descriptive statistical results of each indicator data are as follows in Table 1.

2) Model design

The provincial panel data used in this article can comprehensively and effectively study the impact of independent variables on the persistence of income inequality between urban and rural residents. The advantages of using panel data are: (1) avoiding errors caused by data bias in observation; (2) Reduce the multicollinearity of the model; (3) Effectively separating and controlling differential individual effects that hinder observation; (4) Weakening the impact of time effects on model

parameter estimators to maximize the effectiveness of the estimation. Based on the above discussion, we will use provincial panel data from 2000 to 2020 to empirically examine the influencing factors of urban-rural income gap. To enable the regression coefficients to clearly express the influence relationship between variables, this article establishes a panel data model in logarithmic form:

$$Incomeratio_{it} = \alpha_{it} + \beta_1 Pri_{it} + \beta_2 Edu_{it} + \beta_3 Dam_{it} + \beta_4 Agr_{it} + \beta_5 Inv_{it} + \beta_6 Mod_{it} + \beta_7 Mac_{it} + \varepsilon_{it}$$

Among them, $i=1, 2, \dots, 28$ and $t=2000, 2001, \dots, 2020$ respectively represent the provinces and time dimensions in the national sample, and the dependent variable Income is the urban-rural income gap. This article will use models to regress the urban-rural income gap to determine their respective influencing factors and degrees. α Is the intercept term of the regression model, and β is the estimated parameter of each explanatory variable, ε Is a random perturbation term. The specific meaning of the explanatory variable is as follows: Pri: agricultural price policy; Edu: Agricultural human capital level; Dam: Natural disaster situation; Agi: Agricultural Industrial Structure; Inv: the proportion of fixed assets investment of the whole society in agriculture; Mod: degree of agricultural modernization; Mac: Density of agricultural machinery[11-13].

4. Empirical testing

1) Testing the main influencing factors of urban-rural income gap

Table 2: Regression results of the main influencing factors model for urban-rural income gap based on the perspective of the western region

| Influencing factors | Mixed regression | Individual fixed effects | Bidirectional fixed effect |
|--|----------------------|--------------------------|----------------------------|
| Agricultural Price Policy | -0.123 (0.105) | -0.537** (0.187) | -0.338** (0.149) |
| Agricultural human capital level | -0.642*** (0.179) | -0.0859 (0.0852) | -0.120 (0.105) |
| Natural disaster situation | 0.0564 (0.0837) | 0.0238 (0.0306) | -0.0684** (0.0252) |
| Agricultural Industrial Structure | 0.175* (0.0922) | -0.343** (0.135) | -0.0919 (0.142) |
| Proportion of fixed assets investment in agriculture | 0.0274 (0.0875) | -0.101 (0.0576) | -0.0864** (0.0391) |
| Degree of agricultural modernization | -0.402** (0.152) | -0.167 (0.116) | 0.265* (0.124) |
| Agricultural machinery density | 0.0836 (0.214) | -0.365* (0.171) | -0.691*** (0.180) |
| Constant term | -0.153 (0.121) | -0.558*** (0.157) | -0.140 (0.186) |
| R ² | 0.5760 | 0.8255 | 0.8774 |
| sample size | 252 | 252 | 252 |
| Regional effects | Uncontrolled | Controlled | Controlled |
| time effect | Uncontrolled | Uncontrolled | Controlled |
| Note: *, **, *** respectively indicate significant at the 10%, 5%, and 1% levels; The numbers in parentheses represent robust standard error. | | | |

As shown in Table 2, the Bidirectional fixed effect shows that agricultural price policies have a significant negative impact on the urban-rural income gap (estimated coefficient is -0.338, and significant at the 5% level), that is, the more conducive agricultural price policies are to increasing farmers' income and helping to narrow the urban-rural income gap. Specifically, as the agricultural

price policy in the western region leans towards farmers, urban funds flow to rural areas, farmers' income increases, and the urban-rural income gap decreases.

The situation of natural disasters has a significant negative impact on the urban-rural income gap (estimated coefficient is -0.0684, and significant at the 5% level), that is, the more severe natural disasters, the smaller the urban-rural income gap. Specifically, the larger the disaster area in the western region, the greater the investment of national finance or social capital for disaster relief and relief. This leads to a decrease in the impact of the disaster on farmers' income, even exceeding the original income growth rate, thereby narrowing the urban-rural income gap.

The proportion of fixed assets investment in the whole agricultural society has a significant negative effect on the urban-rural income gap (the estimated coefficient is -0.0864, and significant at the 5% level), that is, the higher the agricultural fixed assets investment, the more conducive to narrowing the urban-rural income gap. Specifically, the greater the investment in fixed assets in rural areas, the more complete rural infrastructure construction, and the more advanced agricultural facilities are, which are more conducive to increasing farmers' income and narrowing the urban-rural income gap.

The degree of agricultural modernization has a significant negative impact on the urban-rural income gap (with an estimated coefficient of 0.265 and significant at the 10% level), that is, the higher the degree of agricultural modernization, the smaller the urban-rural income gap. Specifically, the higher the degree of agricultural modernization, the more advanced the agricultural production methods are. Whether from the perspective of reducing costs or increasing production, it is beneficial for farmers to increase income and further narrow the urban-rural income gap.

The density of agricultural machinery has a significant negative impact on the urban-rural income gap (with an estimated coefficient of -0.691 and significant at the 1% level), that is, the higher the density of agricultural machinery, the smaller the urban-rural income gap. Specifically, the higher the density of agricultural machinery, the higher the degree of mechanization in agricultural production, which is beneficial for increasing crop yield per unit of land and reducing dependence on labor. Farmers can have more opportunities to engage in work outside of agriculture to increase their income and further narrow the urban-rural income gap[14-15].

2) Robustness test

In order to further test the robustness of the analysis results, this article adopts two methods for robustness testing. One is to use the common method of lagging the independent variable one period to regress the dependent variable; The second is to use non parametric regression for model estimation. Although the parametric method is the mainstream of econometric regression, its model setting relies heavily on assumptions and may result in significant setting errors. The non parametric estimation method has been improved by not making specific assumptions about the data distribution of the model, and is applicable to different types of populations, which can lead to more general conclusions. Referring to the method proposed by Chen Qiang (2014), an Epanechnikov kernel function that minimizes the mean square error (IMSE) of the integration was used, and SE was implemented using Bootstrap sampling 50 times.

As shown in Table 3, agricultural price policies have a significant negative impact on the urban-rural income gap, natural disasters have a significant negative impact on the urban-rural income gap, the proportion of fixed assets investment in the whole society of agriculture has a significant negative impact on the urban-rural income gap, the degree of agricultural modernization has a significant negative impact on the urban-rural income gap, and the density of agricultural machinery has a significant negative impact on the urban-rural income gap. Changing the estimation method does not affect the sign and significance of the regression coefficients of the main variables, proving the robustness of this study.

Table 3: Regression robustness test results of the main influencing factors model based on the perspective of the western region for urban-rural income gap

| Influencing factors | Hysteresis first-order bidirectional fixed effect | Nonparametric estimation |
|--|---|---------------------------|
| Agricultural Price Policy | -0.311** (0.125) | -0.0989** (0.0256) |
| Agricultural human capital level | -0.128 (0.0891) | -0.325*** (0.0484) |
| Natural disaster situation | -0.0654** (0.0286) | 0.000238*** (0.000036) |
| Agricultural Industrial Structure | 0.0505 (0.140) | 1.441*** (0.289) |
| Proportion of fixed assets investment in agriculture | -0.130** (0.0447) | 0.347** (0.111) |
| Degree of agricultural modernization | 0.275*** (0.058) | -0.184*** (0.0210) |
| Agricultural machinery density | -0.575*** (0.154) | 0.874*** (0.134) |
| Constant term | 0.147 (0.195) | |
| R ² | 0.8772 | 0.7637 |
| sample size | 252 | 252 |
| Regional effects | Controlled | Controlled |
| time effect | Controlled | Controlled |
| Note: *, **, *** respectively indicate significant at the 10%, 5%, and 1% levels; The numbers in parentheses represent robust standard error. | | |

3) Heterogeneity analysis

Table 4: Regression robustness test results of the main influencing factors model based on the income gap between urban and rural areas from the perspective of northwest and southwest regions

| Influential factors | Northwest Province | Southwest Province |
|--|----------------------|--------------------|
| Agricultural Price Policy | -0.527*** (0.101) | -0.171 (0.168) |
| Agricultural human capital level | -0.118** (0.0424) | -0.319 (0.189) |
| Natural disaster situation | -0.0430 (0.0675) | -0.031 (0.027) |
| Agricultural Industrial Structure | -0.751* (0.301) | 0.026 (0.095) |
| Proportion of fixed assets investment in agriculture | -0.0167 (0.0635) | -0.122 (0.077) |
| Degree of agricultural modernization | 0.316 (0.158) | 0.164 (0.265) |
| Agricultural machinery density | -0.200 (0.269) | -0.837* (0.340) |
| Constant term | -0.149 (0.442) | -0.310 (0.198) |
| R ² | 0.8807 | 0.9098 |
| sample size | 126 | 126 |
| Regional effects | Controlled | Controlled |
| time effect | Controlled | Controlled |
| Note: *, **, *** respectively indicate significant at the 10%, 5%, and 1% levels; The numbers in parentheses represent robust standard error. | | |

As shown in Table 4, for the northwest region, agricultural price policies have a significant negative impact on the urban-rural income gap (with an estimated coefficient of -0.527 and significant at the 1% level), indicating that agricultural price policies are more conducive to increasing farmers' income and helping to narrow the urban-rural income gap. Specifically, as the agricultural price policy in the western region leans towards farmers, urban funds flow to rural areas, farmers' income increases, and the urban-rural income gap decreases.

The level of agricultural human capital has a significant negative impact on the urban-rural income gap (with an estimated coefficient of -0.118 and significant at the 5% level), that is, the higher the level of agricultural human capital, the more it helps to narrow the urban-rural income gap. Specifically, advanced agricultural technologies in the northwest region are better promoted and utilized, and the abilities and willingness of agricultural practitioners play an important role. The higher the level of education, the higher the level of farmers' adoption of new technologies, cost control of agricultural production, ability to obtain information, and environmental awareness, thereby enhancing their ability to become wealthy, increasing rural residents' income, and narrowing the urban-rural income gap.

The agricultural industrial structure has a significant negative impact on the urban-rural income gap (with an estimated coefficient of -0.751 and significant at the 10% level), that is, the higher the proportion of economic crop planting area, it helps to narrow the urban-rural income gap. Specifically, due to the higher operating income benefits of cash crops compared to grain crops, the proportion of cash crop cultivation for the purpose of increasing income is gradually increasing. The increase in the planting area of economic crops in the northwest region promotes the improvement of farmers' income levels and further narrows the urban-rural income gap.

For the southwest region, the density of agricultural machinery has a significant negative impact on the urban-rural income gap (estimated coefficient is -0.837, and significant at the 10% level), that is, the higher the density of agricultural machinery, the smaller the urban-rural income gap. Specifically, the terrain in the southwestern region is mostly mountainous areas that are not conducive to crop growth. In order to improve agricultural production efficiency, the higher the density of agricultural machinery, the higher the degree of mechanization of agricultural production, which is conducive to increasing crop yield per unit of land and reducing dependence on labor. Farmers can have more opportunities to engage in non agricultural work to increase income and further narrow the urban-rural income gap.

5. Conclusion and suggestions

This chapter analyzes the influencing factors of urban-rural income gap in the western region by establishing a regression model and selecting a bidirectional fixed effect model. The research conclusion is as follows: on the one hand, as for the entire western region, agricultural price policies have a significant negative impact on urban-rural income gap. This requires the western region to formulate reasonable agricultural product price policies that are conducive to the growth of farmers' income, while fully respecting the laws of market economy. At the same time, the government strictly regulates the cost market of agricultural product raw materials, and timely intervenes in the agricultural product raw material market that seriously deviates from normal conditions, promoting the increase of farmers' income and narrowing the urban-rural income gap.

Natural disasters have a significant negative impact on the urban-rural income gap. This requires the government to promptly assess the situation of agricultural production entities in the affected areas, allocate funds for disaster relief, relief, and post disaster reconstruction, and ensure that farmers' income is not severely affected by natural disasters, reducing the widening income gap between urban and rural areas caused by natural disasters.

The proportion of fixed assets investment in agriculture has a significant negative effect on the urban-rural income gap. This requires relevant government departments to attach importance to agricultural fixed assets investment, constantly improve agricultural and rural infrastructure construction, improve farmers' production efficiency and enthusiasm, promote farmers' income increase, and narrow the urban-rural income gap by introducing investment in advanced agricultural facilities.

The degree of agricultural modernization has a significant negative impact on the urban-rural income gap. This requires the western region to vigorously enhance the degree of agricultural modernization, change traditional agricultural production methods, start from production, processing, sales and other links, promote the improvement of agricultural modernization, and promote farmers' income increase from the perspective of reducing costs or increasing output, further narrowing the urban-rural income gap.

The density of agricultural machinery has a significant negative impact on the urban-rural income gap. This requires the western region to attach importance to the improvement of agricultural machinery level, replacing traditional agricultural production methods with machinery, which is conducive to increasing crop yield per unit of land, reducing dependence on labor, and allowing farmers to have more opportunities to engage in non agricultural work to increase income, further narrowing the urban-rural income gap.

On the other hand, from a regional perspective, in the northwest region, agricultural price policies have a significant negative impact on the urban-rural income gap. This requires the northwest region to formulate reasonable agricultural product price policies that are conducive to the growth of farmers' income. At the same time, the government strictly regulates the cost market of agricultural raw materials, and timely intervenes in the agricultural raw material market that deviates seriously from normal conditions, promoting the increase of farmers' income and narrowing the urban-rural income gap.

The level of agricultural human capital has a significant negative impact on the urban-rural income gap. This requires the northwest region to continue to increase rural basic education, improve farmers' education level, and promote the better promotion and use of advanced agricultural technologies in the northwest region. The higher the education level, the higher the level of farmers' adoption of new technologies, control of agricultural production costs, ability to obtain information, and environmental awareness. This will make their ability to become rich stronger, increase rural residents' income, and narrow the urban-rural income gap.

The agricultural industrial structure has a significant negative impact on the urban-rural income gap. This requires the northwest region to moderately increase the planting area and yield of economic crops to promote the improvement of farmers' income level, and further narrow the urban-rural income gap, while ensuring the production of food crops, in order to increase farmers' income and align with the market.

As for the southwest region, the density of agricultural machinery has a significant negative impact on the urban-rural income gap. The terrain in the southwest region is mostly mountainous areas that are not conducive to crop growth, which requires improving agricultural production efficiency, increasing the density of agricultural machinery, promoting the mechanization of agricultural production, increasing crop yield per unit of land, reducing production costs and dependence on labor, so that farmers can have more opportunities to engage in non agricultural work to increase income, and further narrowing the urban-rural income gap.

6. Research Shortcomings and Prospects

There are some shortcomings in this study. Firstly, the determination of influencing factors is

highly subjective, and the explanation of the reasons for the urban-rural income gap and its component changes may not be comprehensive. In the future, more indicators can be included to examine the impact of different indicators on the urban-rural income gap and design a scientific indicator system. Secondly, the sample for this article is 12 provinces in the western region from 2000 to 2020, with relatively limited provinces and time periods. In the future, the research area can be expanded or the time period can be extended to explore the impact mechanism of urban-rural income gap in a wider region over a longer period of time. The original intention of this empirical analysis is to attempt to narrow the urban-rural income gap, influencing factors, and mechanisms of action, and further improvement is needed in the future.

So, what is the reason for the widening income gap between urban and rural areas, while China's economy can continue to grow rapidly? Will the continuous expansion of fiscal support for agriculture slow down the income gap between urban and rural areas in China? Especially in recent years, the government has significantly increased social security expenditures. What impact will this adjustment have on the urban-rural income gap? These are all worth further research and exploration.

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