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Effects of rural collective economy policy on the common prosperity in China: based on the mediating effect of farmland transfer

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The rural collective economy plays a crucial role in achieving the common prosperity of farmers, revitalizing the countryside, and modernizing agriculture in China. This paper analyses the impact and internal mechanism of the policy on the level of common prosperity, using provincial panel data from China from 2011 to 2020. Additionally, it investigates whether the rapid development of the rural collective economy takes into account both economic growth and income distribution. The findings demonstrate that the policy significantly enhances the common prosperity of farmers and rural areas. These conclusions remain valid even after considering the endogeneity problem and conducting robustness tests using the time-varying difference-in-differences model. Furthermore, the intermediary effect model reveals that the increase in the rate of farmland transfer and the proportion of scale operation play crucial roles in transmitting the benefits of the policy to achieve common prosperity. The result of the heterogeneity analysis indicates that the marginal decline of policy effect has a greater impact on the enhancement of rural collective economy in the less developed provinces of the central and western regions in China, compared to the developed provinces of the eastern region. These findings have targeted policy significance for promoting the sustainable development of agricultural and rural areas.

KEYWORDS

rural collective economy policy, common prosperity, farmland transfer, scale operation, sustainable development, time-varying DID model

1 Introduction

At present, China has embarked on endeavors to construct a modern country comprehensively and has entered a recent phase in its pursuit of common prosperity. Common prosperity, characterized by the emphasis on sharing, consultation, and construction, is a form of affluence that aims to strike a balance between social efficiency and equity. The realization of common prosperity is a gradual and dynamic

process, requiring coordinated development and mutual advancement across all sectors (Zhang E. et al., 2023). The greatest challenge in bridging the gap between the rich and the poor and attaining the goal of common prosperity in China lies in the rural areas and among the farmers (Yan and Mohd, 2023). The widening gap is primarily seen in the disparity between urban and rural areas. This gap is primarily attributed to the low incomes of rural residents, rather than the high incomes of urban residents. Additionally, it is worth noting that the disparity within the countryside is not primarily caused by wealthy farmers being excessively rich, but rather by the fact that poor farmers have very low incomes (Li, 2017; Zhu et al., 2019; Zhou et al., 2021; Peng et al., 2022a). At the same time, the rural collective economy development policy plays a crucial role in increasing farmers' income and reducing the disparity between urban and rural areas (Deng et al., 2023). Rural collective economy refers to the economic organization development form in which the collective organization and its members implement various forms of cooperation in production, supply, and marketing under the premise of rational utilization of collective resource elements. Since 2016, as a comprehensive reform, the new rural collective economy policy has carried out comprehensive changes in the property rights system in terms of the development, utilization, and protection of collective assets. As of 2020, China's rural collective assets had an accounting value of 7.7 trillion CNY and collective resource assets covering an area of 4.37 million km², which accounted for 45.5 percent of the country's total land. However, the *per capita* property income of farmers was only 9.1 percent of that of citizens (Zeng et al., 2023). The contribution of net property income to farmers' disposable income growth was only 3.7 percent. To promote common prosperity and rural revitalization, it is crucial to deepen the reform of the collective property rights system, explore effective forms of realizing rural collective ownership, and develop new types of collective organization (Liu et al., 2019).

The progress of China's rural collective economy can be divided into three stages (Deng et al., 2023), as shown in Figure 1. Prior to the reform and opening up, China's rural areas had established a traditional collective organization based on the communalization, which experienced a phase of rapid development (Hong et al., 2023). Following the Third Plenary Session of the 11th Central Committee in 1978, the rural reform resulted in the collapse of the people's commune and the gradual establishment of the family contract responsibility system, which put the enhancement of the collective economy in a dormant state (Zhang et al., 2019). Since the 18th National Congress in 2012, the country has consistently deepened the rural reform and encouraged the establishment of the modern collective organizations (Fang and Zhang, 2021). The advancement of the collective organizations have entered another stage. However, in this stage, the mode of operation and property structure of the collective organizations differ significantly from the previous period. In the past, traditional collective organizations followed a model of "collective ownership and unified management". The ownership and use of collective assets were interconnected, but the distribution of shares among the members was unclear. Additionally, the boundaries among these organizations, grassroots party organizations, and villagers' committees were often indistinct, leading to inefficiencies in their operation (Fang and Zhang, 2021; Zeng et al., 2023).

The modern collective economy exhibits several features, including the property rights system, organizational form, economic strength, and democratic governance (Hou et al., 2023), as shown in Table 1. The completion of the reform of the share-cooperation system is an important aspect, which has resulted in a more defined system of property rights. The institutional premise of the new collective economy is to finalize the reform of the stock cooperative system for collective operating property (Fu et al., 2022). By accurately recognizing the membership of the three-level organizations and specifying the number of organizational personnel at each level, the modern collective economy has established a quantified measure for the collective operating assets (Zhang S. et al., 2023). This serves as the basis for distributing the benefits among organization members and allows them to share in its development achievements. Second, the establishment of shareholding economic cooperatives has led to the creation of independent organizational forms. These collective organizations primarily take the form of stock economic cooperatives. This separation of economic functions from the party building and autonomous functions has effectively enhanced the operational efficiency of the organization (Peng et al., 2021). These organizations, with legal person status, operate intensively, specialize in specific areas, and carry out professional independent operations. They are primarily responsible for the development and expansion of the economy under collective ownership (Xie X. et al., 2023; Hou et al., 2023). Third, the collective organization has diversified its mode of development and considerably strengthened its economic power. Alongside local business activities, the new collective economy involves a unified management of collective assets to facilitate cooperative operations, investments, and leasing contracts. This approach enhances the ability to attract social capital and mitigate market risks (Huo et al., 2022). Moreover, it is meaningful for the collective economy to have a certain level of economic strength and not be a "hollow village" with minimal or no income. Fourth, it has a more efficient organizational and governance structure, particularly in terms of rural governance. Shareholding economic cooperatives have established the shareholders' congresses, boards of directors, and boards of supervisors. These entities employ a decision-making mechanism that relies on democratic voting by shareholders, resulting in more transparent institutional norms for the operation and supervision of power. Additionally, this structure fosters tighter connections between farmers and the collective organization (Qu et al., 2023). The rules and regulations governing collective assets have also been improved, encompassing a better system for the operation and management of these assets, regular inventory reports, and enhanced supervision and utilization capabilities. Consequently, the rural governance system and its capacity has reached a higher level of modernization (Liu and Zhang, 2023).

The three main innovative aspects of this research are as follows: 1) It constructs a common prosperity framework in an innovative way. This paper incorporates the collective economy into the theoretical framework of the analysis of common prosperity, thus enhancing the understanding of the common prosperity in the context of Chinese modernization. 2) It attempts to explore the common prosperity effect of the collective economy by analyzing rural land use, providing a comprehensive analysis of the

mechanism and internal logic of the collective economy in promoting common prosperity. 3) It constructs an index evaluation system of the collective economy using provincial panel data and conducts empirical tests to examine the direct effect, mechanism, and regional heterogeneity of the collective economy pilot policy on common prosperity. It also provides a reference for promoting the development of the collective economy, formulating targeted and differentiated regional policies, narrowing the earning gap, and clarifying the realization path to promote common prosperity.

2 Literature review and theoretical analysis

2.1 Literature review

2.1.1 Research on the effects of rural collective economy policy

To date, research on the effectiveness of the pilot policy has primarily focused on the impact of farmers' income increase and rural governance. However, there has been limited attention given to the effects of the collective economy on the common prosperity of farmers and rural areas. Existing studies define the collective economy as a set of production and management activities that are based on collective ownership and target rural resource elements (Wei et al., 2022). The development pattern of China's rural collective economy has evolved over time, starting with the commune system, followed by the family contract system, and eventually incorporating rural market-oriented reforms based on the legacy of the socialist transformation system in the countryside (Ao et al., 2021). The main objectives of the reform of the collective property rights system are to establish a suitable one with Chinese characteristics. The reform aims to create a mechanism for the operation of the collective economy that meets the requirements of the market economy. Additionally, it aims to form a governance system that safeguards the rights of ordinary members (Zou and Wang, 2022). The new rural collective economy, compared to its pre-reform form, follows the requirements of a modern market economy. It establishes a standardized property rights system, governance structure, and operating mechanism. This enables effective participation in market competition, diversified cooperation, revitalization of rural resource elements, and active pursuit of business projects in areas of comparative advantage. The ultimate goal is to achieve sustainable development (Hu et al., 2023). The new rural collective economy retains the functions of rural economic coordination and public service while also incorporating a mechanism to align with the modern property rights system and management system. This allows for effective integration of modern factors of production, making it the primary means of expanding the collective economy in the new era (Zhang and Wang, 2023).

The dynamic mechanism working together to achieve common prosperity is a significant topic in development economics. Previous studies have demonstrated that the reform of collective property rights generally benefits the development and growth of the collective economy, as well as promotes the common prosperity of farmers (Xu et al., 2019). In terms of institutional design, most studies follow the analysis framework of "transparent property

rights + property rights incentives". According to Coase's modern property rights theory, transparent property rights can improve the efficiency of economic entities. A transparent property rights system is essential for optimizing the allocation of collective property and increasing asset value (Zhang J. et al., 2022). Additionally, the reform entrusts quantified collective operating assets to collective members in the form of shares or equity, which effectively enhances farmers' motivation for production and operation. This, in turn, activates the significant stock assets in rural areas through effective institutional incentives (Li et al., 2023).

2.1.2 Research on rural collective economy and common prosperity

The growth of the rural collective economy is an important factor in promoting the common prosperity. Firstly, it leverages its high degree of organization and wide radiation range to effectively guide the inflow of social resources into rural areas and promote the integrated development of urban and rural areas. Secondly, it activates the potential of various production factors in rural areas, improving the efficiency of resource allocation and promoting the upgrading of the agricultural industry, ultimately increasing farmers' income levels. Furthermore, it encourages villagers to participate in rural industrial development through various forms such as land and capital investment, creating employment and entrepreneurial opportunities, and gradually achieving common prosperity for the majority of farmers. In depth, the farmland serves as the lifeblood of the majority of farmers, providing them with a means of survival and employment. Therefore, activating land resources is a critical step in enhancing the internal strength of rural development, promoting farmers' income growth, and ultimately achieving prosperity for all (Xue and Zhen, 2018). However, the fragmentation and low efficiency of farmland operation in China hinder the high-quality development of agriculture (Zuo et al., 2015). Additionally, this reform facilitates the release of land operation rights, leading to a significant expansion in the scope of land transfer and a substantial increase in scale and speed. This reform contributes to promoting appropriate land operation in China (Zhang F. et al., 2022). Large-scale operation is the key to improving agricultural efficiency. The upgrading of agricultural efficiency can effectively drive the increase of farmers' income, which is indispensable for achieving common prosperity. Third, land transfer and population outflow are both causal and concomitant factors (Yao et al., 2010). The enhancement of new collective economy can facilitate the transfer of land operation rights and the movement of farmers to other industrial sectors (Yu et al., 2022). Implementing modern agricultural production methods like farmland trusteeship can optimize the allocation of production factors such as labors and land, and encourage the shift of surplus farmers to non-agricultural fields. Additionally, the urbanization of farmers can effectively contribute to the level of common prosperity (Wei et al., 2023). Previous studies have explored the impact of the collective economy on farmers' income, rural governance optimization, and the reduction of the urban-rural gap, which offers valuable theoretical insights (Wan and Zhou, 2005; Zhan et al., 2013; Zhang et al., 2018; Jiang M. et al., 2019). However, there is still scope for further exploration in this field. Firstly, there are few literature available on the concept of

common prosperity from the viewpoint of the collective economy. Secondly, there is a lack of systematic analysis and empirical testing of the mechanisms through which the collective economy influences common prosperity.

2.2 Theoretical analysis and research hypothesis

In rural areas, the existence of income inequality is a problem that cannot be ignored. Although the overall income of farmers is constantly improving, the income gap between different farmers is widening. This gap is not only reflected between individuals, but also between different regions. This income gap will lead to the relative poverty of some farmers, which is not conducive to the balanced development of rural areas and violates the principle of common prosperity (Yi et al., 2023). As far as the rural collective economic policy is concerned, its impact on common prosperity is comprehensive. The specific direction of this impact depends on the combined effect of the economic growth effect (prosperity effect) and the income distribution effect (common effect).

2.2.1 The “prosperity effect” of the rural collective economy policy (economic growth)

The development of the new rural collective economy has a positive impact on income growth. On one hand, it provides opportunities for farmers to find employment within their own communities, reducing the expenses associated with seeking work elsewhere and ultimately increasing their effective income. On the other hand, it creates new avenues for farmers to augment their income, such as through wage income and property income. To sum up, the prosperity effect of the rural collective economy can be manifested in three main aspects: 1) Enhancement of operating income through marketization and scaling. The development of the collective economy provides support and platforms for individual farmers to enter the market, improving their ability to withstand market risks and participate in market competition. This guarantees that individual farmers can independently enter the market and generate profits (Li and Yang, 2023). Additionally, it promotes the appropriate transfer of farmland to other entities, enhancing the level of agricultural production and management through intensification, specialization, organization, and socialization. This also facilitates the efficient flow and combination of agricultural factors of production, modern technology, and equipment, leading to the transformation of the traditional agricultural concept (Zhang and Qian, 2023). 2) Enhancement of wage income (personal capacity). Previously, some farmers expressed concerns about the infringement of their land contract management rights, the rights of residential bases, and the right of collective asset revenues after moving to the city due to the lack of clarity regarding collective asset property. As a result, there was a strong desire for the establishment of a modern type of collective organization (Cai et al., 2021). However, after the reform, the surplus labor force in rural areas enjoys basic security and no longer has worries about participating in the urbanization process. This allows individuals to freely choose their occupation and lifestyle between the city and the countryside, while also having the reassurance of collective asset rights (Zhou et al., 2020). This reality of being “rest assured in the city” enhances the survival and development of farmers and increases

non-farm wage income. 3) Enhancing property income (dividends). The enhancement of the collective economy can be achieved by clarifying the property rights of collective assets and defining the ownership relationship between the collective and its members (Yang et al., 2023). This will impact the total income of farmers by protecting and strengthening the right to increase property income.

Hypothesis 1 (H1). The rural collective economy policy can contribute to the growth of farmers’ income, thereby having a positive economic growth effect (prosperity effect).

2.2.2 The “common effect” of the rural collective economy policy (income distribution)

In addition, the growth of collective economy also allows villages to have more funds to invest in public services and infrastructure, which is a good supplement and improvement to the financial investment. These funds can be used to improve rural infrastructure, provide public services, and further promote the balanced development of rural society. Thus, the common effect of the rural collective economy policy is mainly manifested in the following three aspects: 1) Balancing the income distribution. The collective economy has made efforts to optimize the income distribution structure. Through the establishment of a property rights system for collective assets and an income distribution system (Chen and Shen, 2021), they have achieved certain improvements. On the one hand, the collective assets are personified, addressing the issue of embezzlement. On the other hand, the traditional practice of distributing income solely based on work has been transformed into a combination of distribution based on contribution and dividends based on shares. As a result, the distribution pattern for farmers has undergone significant changes (Zhang et al., 2021). 2) Optimising the provision of public products. Rural infrastructure construction in rural areas lags behind that of the cities, resulting in the insufficiency of public services and lower levels of social welfare and social security (Wang Y. et al., 2022). Under this background, collective organization plays a crucial role in expanding the scale of rural public accumulation. The public accumulation enhances the capacity to provide rural public goods, thereby improving the welfare of farmers (Zang et al., 2020). For instance, villages with well-developed collective economies can utilize a significant portion of their collective earnings to enhance primary and preschool education as well as healthcare services at the village health center (Murtagh et al., 2023). Moreover, they can offer increased financial support for elderly residents in the realm of old-age protection. 3) Enhancing the level of democratic governance. The collective economy aims to empower its members to participate in the management of public affairs in their villages. The transformation from “farmers” to “shareholders” is facilitated by granting collective members’ rights to participate in, manage, and supervise common assets through property rights arrangements (Peng et al., 2023). Additionally, it establishes a “three-chamber” system of shareholders’ congresses, boards of directors, and supervisory boards in joint-stock economic cooperative organizations, providing farmers with a formal way to express their interests. These measures contribute to the improvement of democratic decision-making mechanisms in villages and the standardization of rural governance (Liu et al., 2022), ultimately enhancing the public decision-making capacity of farmers and increasing the efficiency of collective decision-making in villages.

Hypothesis 2 (H2). The enhancement of the rural collective economy can help reduce the income gap among the residents, thereby having an income distribution effect (common effect).

2.2.3 The indirect mechanism of rural collective economy policy on promoting common prosperity

The new rural collective economy has utilized innovative organizational and operational methods such as the “land cooperative” model to unleash the scalability and agglomeration effects of farmland, thereby improving land utilization rates and agricultural production efficiency, reducing production costs, and promoting rural economic development and the common prosperity of farmers. Specifically, existing literature studies have shown that by increasing the rate of land transfer and promoting large-scale operations, the collective economy can contribute to the common prosperity of rural areas. 1) Enhancing the willingness of land transfer. It is noted that farmers in developing countries tend to be risk-averse and hesitant to make decisions regarding land transfer (Huang et al., 2017). This is particularly true in China, where farmers in small farm economies exhibit higher levels of risk aversion compared to other economic entities (Wang M. et al., 2022). The modern collective organization, with its strong market connections, can provide farmers with a more stable demand base, helping them effectively manage transaction risks and uncertainties associated with farmland transfer (Huo and Chen, 2021). This, in turn, reduces the risk and boosts farmers’ confidence in engaging in such transactions. 2) Improving the income from farmland transfer. It is essential to address the disadvantages faced by individual farmers in the competitive market. These disadvantages arise from insufficient operational scale and the lack of scientific and effective negotiation methods. In order to achieve higher quality and prices, modern collective organizations can play a crucial role (Xie L. et al., 2023). These organizations, with their scale and standardized advantages, act as intermediaries and agents in the transfer of farmland. By reducing information asymmetry and breach of contract, they can effectively compensate for the bargaining disadvantage faced by individual farmers during the transfer process (Jiang L. et al., 2019). This allows farmers to obtain the premium income and enhances their overall income level. 3) Promoting large-scale operation. Rural collective organizations have the potential to encourage farmers to consolidate their land holdings, shifting from small individual farmers to larger consolidated holdings. Additionally, these organizations can facilitate farmland transfers between farmers, leading to the concentration of land under large households. From a cost-saving perspective, the new collective economic organizations can lower farmers’ production costs by providing productive services (X.H. Bao et al., 2014). For instance, through joint purchasing of agricultural materials, they can obtain materials at a lower price and resell them to farmers, reducing the average production cost. In terms of technical services, collective economic organizations offer farmers technical guidance and training to enhance their overall management skills and agricultural production efficiency (Zou et al., 2014). This, in turn, reduces production and management costs and enables the realization of scale effects.

Hypothesis 3 (H3). The collective economy aims to enhance the common prosperity of farmers by utilizing intermediary effects, such as increasing the rate of land transfers and promoting large-scale operations.

We have constructed the impact path mechanism of the new rural collective economy on the common prosperity, as shown in Figure 2.

3 Materials and methods

3.1 Data sources

This paper uses the panel data of provincial-level administrative regions in mainland China from 2011 to 2020. In terms of the explained variables, the basic index data for measuring the level of common prosperity come from the Statistical Yearbook of China and the statistical yearbook of each province over the years. In terms of core explanatory variables, the list of rural collective economy pilot provinces is retrieved from the website of the Ministry of Agriculture and Rural Affairs. The data of natural resources, fiscal expenditure, labor force quality and industrial structure in the control variables are obtained from the China Statistical Yearbook, China Rural Statistical Yearbook, and provincial statistical yearbook over the years. Missing values are filled in using linear interpolation and moving average methods.

In this research, “*per capita* disposable income of each province” and “urban-rural income ratio of each province” are used to represent the income level and urban-rural income gap of the residents, and the comparable income is converted by the deflator of each province in corresponding years. Among them, the measurement index of natural resources elements “rural *per capita* farmland area” data is obtained by dividing the “rural farmland area” of each province by “rural permanent population at the end of the year”; The index of capital elements “*per capita* fiscal expenditure level” and “*per capita* fixed investment” is the income of “local general public budget expenditure” and “regional total fixed asset investment” divided by “permanent resident population at the end of the year”. The average years of education of the labor force is represented by the *per capita* years of education over the age of 6 in each province. The specific calculation formula is quality of the labor force = (primary school education level×6+ junior high school education level×9+ senior high school education level×12+ college education level or above×16)÷total population income over the age of 6. The determination of the index of industrial structure element involves the calculation of the ratio between the added value of the secondary industry and the gross regional product. Furthermore, the Variance Inflation Factor (VIF) is tested among the explanatory variables, and the results indicate that all VIF values are below 3, which is significantly lower than the threshold of 10. This suggests that multicollinearity is at an acceptable level.

3.2 Selection of variables

3.2.1 Explained variables

Common prosperity encompasses two components: the prosperity effect and the common effect. Drawing from existing literature, this study assesses the level of common prosperity in each province using the social welfare function proposed by Cheong et al. (Cheong et al., 2022). The formula is as follows:

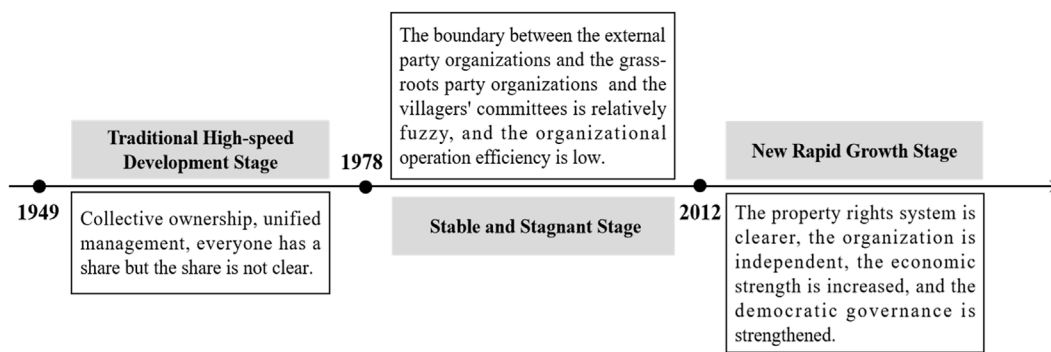


FIGURE 1 Different stages of the rural collective economy in China.

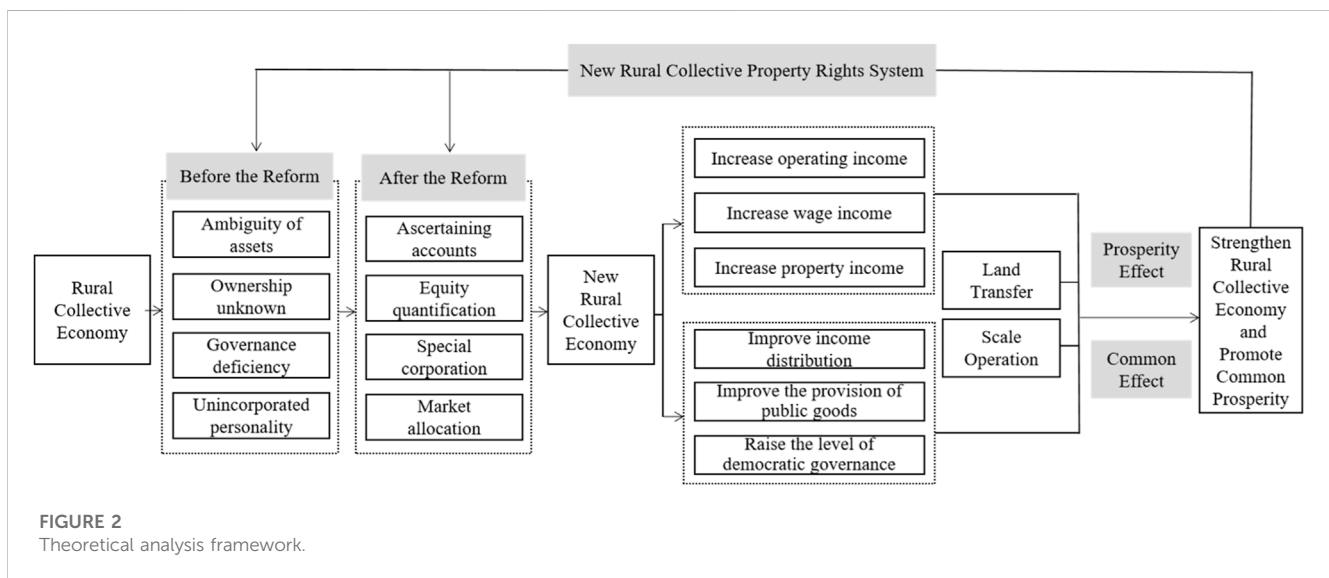


FIGURE 2 Theoretical analysis framework.

$$CP_{it} = Prosp_{it} \times \exp(-Uargn_{it}) \quad (1)$$

In Formula (1), CP_{it} represents the common prosperity index; $Prosp_{it}$ refers to the actual *per capita* disposable income level of the provinces in different years, which represents the level of “prosperity”; $Uargn_{it}$ represents the ratio of urban-rural income in different provinces in different years, and its negative function represents the degree of “common”.

3.2.2 Core explanatory variables

The rural collective economy is considered as the core explanatory variable in this study. However, due to its complex nature, it cannot be accurately measured using a single index. Previous studies have focused on its fundamental meaning and have developed an index system to assess the development level of the rural collective economy in different regions. Following the previous research (Yue et al., 2023), this paper selects evaluation indicators from three main aspects: economic growth, social stability, and governance effectiveness. The specific evaluation indicators are presented in Table 2. In terms of measurement methods, the entropy

method is chosen as it objectively determines the weight of each indicator based on the degree of variation in these values. Compared to other methods like the analytic hierarchy process, the entropy method provides better objectivity. Hence, it is used to calculate the index in each province.

3.2.3 Mediating variables

Farmland transfer and scale operation are identified as the mediating variables in this theoretical analysis. According to the review, it is indicated that the advancement of the new collective system in rural areas has the potential to enhance the overall wellbeing of farmers and regions. This can be accomplished by stimulating land transfer and encouraging the implementation of large-scale operations. To further investigate this co-enrichment effect, the mechanism is examined through two pathways: promoting farmland transfer and encouraging scale operation. The transfer rate of rural household contracted farmland in each province is used to measure farmland transfer, while the proportion of farmland (more than 20,000 m²) in the total land area of the rural operation scale is used to measure scale operation (Xue and Zhen, 2018; Jiang M. et al., 2019).

TABLE 1 Comparison between traditional and new rural economy.

Aspects	Traditional rural collective economy	New rural collective economy
Property rights system	Assets are collectively owned, everyone has a share, but the share is not transparent	Assets are owned by the collective and quantified to its members in the form of shares
Organizational form	People’s communes, township collective enterprises, etc	Economic cooperatives, stock economic cooperatives, etc
Economic strength	Mainly to carry out activities in the local, narrow market scope, weak business capacity	Diversified development models and improved ability to attract capital
Governance structure	Centralized decision-making, the operation and management of collective assets is not standardized or transparent	The decision-making mechanism is democratic, and the management system of collective assets is relatively complete

TABLE 2 Evaluation index system of the new rural collective economy.

Index of categories	Secondary indicators	Attribute of indicator
Economic growth	Collective operating income <i>per capita</i> (ten thousand CNY)	+
	Collective dividend <i>per capita</i> (ten thousand CNY)	+
Stability of System	Village average public welfare infrastructure investment (ten thousand CNY)	+
	Public service fee per village (ten thousand CNY)	+
Management Effectiveness	The proportion of villages with new rural collective organizations (%)	+
	Number of land contract disputes per village (piece)	-

3.2.4 Control variables

To ensure the common prosperity is not influenced by other factors, this study chose the subsequent control variables: 1) Natural resources. Natural resources, such as land, minerals, water, and forests, play a crucial role in geographical settings. Among these, land is particularly significant as it serves as a means of production for most regions and farmers, ensuring their survival and income. Therefore, this paper uses “*per capita* cultivated land area” as the measurement index for natural resource endowment. 2) Capitals. The level of fiscal expenditure and fixed asset investment reflects the capital factor endowment in different regions and has an impact on farmers’ income. Since 1978, there has been a consistent upward trend in fiscal expenditure. However, due to various reasons, the growth levels of fiscal expenditure and fixed asset investment differ across regions. This study employs “*per capita* fiscal expenditure level” and “*per capita* fixed investment level” as the measurement indicators for capital factors. 3) Labor forces. The labor force is a crucial input variable that affects income levels, not only in terms of quantity but also in terms of quality. At the regional level, the labor force’s quality exerts a substantial influence on the economic growth of a region and serves as a vital component for achieving sustainable development. In order for farmers to achieve the goal of increasing income and becoming prosperous, it is essential to focus on improving their marginal productivity. Therefore, this paper adopts the “average years of education of the labor force” as the measurement index for labor force elements. 4) Industrial structures. According to previous studies, the focus on resources allocation in the industrial adjustment policy has aided in enhancing the industrial framework, particularly fostering the swift expansion of the secondary and tertiary sectors. This growth has resulted in the creation of numerous employment opportunities that can influence the rural population. Consequently, this study selects “the

proportion of the added value of the secondary industry” as the measurement index for industrial structure factors. Table 3 is the definition and descriptive statistics of the variables.

Figure 3 illustrates the scatter plot and linear fitting relationship between the development level of collective economy and the common prosperity index in 31 provinces of China from 2011 to 2020. As observed in Figure 3, the fitting trend shows a positive slope, indicating that the common prosperity index exhibits a gradual rise in tandem with the advancement of the level of the collective economy. This implies a significant positive correlation between the two variables.

3.3 Model

In order to verify the effect of the rural collective economy policy on the common prosperity, a basic test model is established:

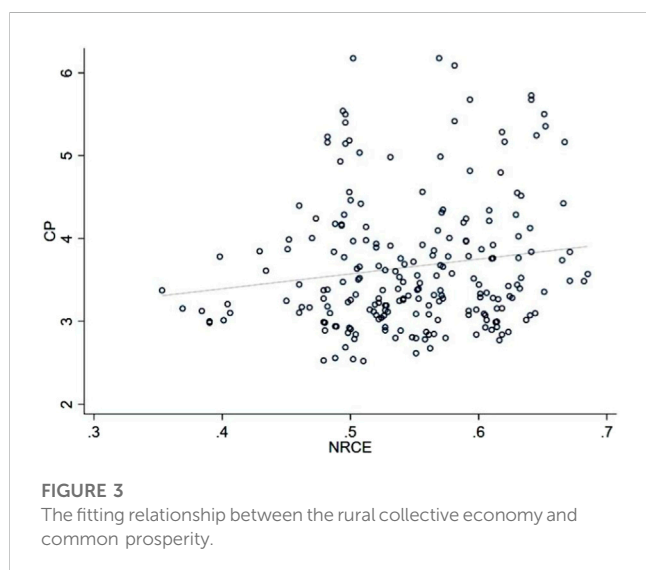
$$CP_{it} = \alpha + \beta Nrc_{it} + \gamma X_{it} + \lambda_i + \eta_t + \varepsilon_{it} \tag{2}$$

In Equation 2, *i* and *t* denote different provinces and years, respectively. CP represents the Common Prosperity Index; *Nrc* signifies the level of collective economy, and *X* represents the control variables. The parameters to be estimated are α , β , and γ , while λ and η represent province fixed effect and year fixed effect, respectively. ε is the random disturbance term.

The improvement of the common prosperity is expected to provide financial support and stimulate the enhancement of the collective economy. However, the estimation results of Eq. 2 may be biased due to endogenous problems caused by simultaneous causality. To address this, the pilot policy of the collective economy is treated as a quasi-natural experiment. The impact of the policy on common prosperity can be assessed by adopting the

TABLE 3 Variable definition and descriptive statistics.

Variable name	Variable abbr	Metrics	Mean	Standard deviation
Common prosperity	CP	Common prosperity index	3.659	0.790
Level of income	Dinc	Per capita disposable income	9.393	0.310
Urban-rural gap	Uarg	The ratio of urban-rural income	2.609	0.377
Collective economy	Nrce	rural collective economy development index	0.547	0.066
Pilot reform provinces	Refo	Whether to be a collective reform pilot province	0.208	0.407
Reformed villages	Vill	The proportion of villages that have completed the reform	0.248	0.365
Farmland transfer	Rltr	The rate of farmland transfer	0.312	0.131
Scaled operation	Plsm	The proportion of land in scaled operation	0.066	0.094
Land resources	Rala	Rural <i>per capita</i> arable land area	3.091	2.307
Fiscal expenditure	Pfbe	Per capita public finance budget expenditure	2.179	0.976
Fixed investment	Finp	Fixed investment <i>per capita</i>	0.189	0.064
Human capital	Educ	Years of education for the workforce	9.027	0.521
Industrial structure	Indu	Proportion of added value of secondary industry	0.428	0.071



difference-in-differences (DID) model to examine the actual outcomes of the pilot policy. The DID model effectively eliminates heterogeneity and incremental changes in individuals that occur before and after policy implementation, allowing for a clear assessment of the net effect of policy implementation on individuals (Peng et al., 2022b). However, the ordinary DID model is only applicable when all individuals in the treatment group are influenced by the policy at the same time. It cannot be used if individuals in the treatment group receive the treatment at different time points. For instance, the pilot provinces of the collective economy are implemented in batches. Therefore, inspired by classic literature (Beck et al., 2010), this paper employs time-varying DID model for estimation. The pilot year and subsequent years are assigned a value of 1, while years before the pilot are assigned 0. The provinces without the pilot are also assigned

0 for all years. According to this definition, the treatment provinces and control provinces will be automatically generated, and the double differences between pre-pilot and post-pilot are also included, similar to the interaction term between the policy impact dummy variable and the treatment period dummy variable in the ordinary DID method. In this paper, the time-varying DID benchmark model is set as follows.

$$Y_{it} = \alpha + \beta DID_{it} + \gamma X_{it} + \mu_i + \lambda_t + \epsilon_{it} \tag{3}$$

In Equation 3, *i* and *t* represent the corresponding province and year respectively. Y_{it} represents the level of common prosperity of individuals in different provinces. The key independent variable DID_{it} represents the pilot of the rural collective economy policy. X_{it} signifies a series of control variables that control for the influence of other factors on farmers' income level and earning gap. Additionally, the baseline panel regression in this research uses a bi-directional fixed effects model. This includes the inclusion of annual fixed effects λ_t to control for the impact over time, such as the impact on all provinces caused by a specific year. Regional fixed effects μ_i control for characteristics that do not change over time but may affect the effectiveness of reform. ϵ_{it} represents the random error term. To address possible endogeneity, heteroscedasticity, and autocorrelation, the standard errors are clustered at the provincial level. DID_{it} represents the policy effect of the new collective economy. β is a difference in differences statistic that captures the net effect of the pilot on farmers' income. If β is statistically significant and consistent with the anticipated orientation, it denotes that the rural collective economy has considerably enhanced the financial wellbeing of farmers and narrowed the income gap, reflecting the "common prosperity" effect of the reform. If β is significant but not consistent with the expected direction, it indicates that the collective economy significantly reduces the income level and widens the gap; If β is not significant, it indicates that the collective economy has no significant impact on income.

TABLE 4 Benchmark regression results I.

Common prosperity	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Collective economy	0.637*** (0.129)	0.605*** (0.113)	0.605*** (0.115)	0.540*** (0.123)	0.401*** (0.128)	0.311*** (0.110)
Land resources		0.328*** (0.066)	0.357*** (0.072)	0.391*** (0.078)	0.279*** (0.077)	0.171* (0.088)
Fiscal expenditure			0.280** (0.122)	0.288** (0.120)	0.284*** (0.107)	0.266*** (0.097)
Fixed investment				-3.151** (1.340)	-3.702*** (1.319)	-3.460*** (1.154)
Human capital					0.952*** (0.229)	0.735*** (0.203)
Industrial structure						-0.036*** (0.009)
Constant	3.484*** (0.271)	2.520*** (0.207)	1.820*** (0.419)	-2.310*** (0.429)	-5.799** (2.076)	-1.926 (1.825)
Provincial effect	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	296	296	296	296	296	296
R-squared	0.329	0.408	0.441	0.459	0.522	0.558

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

4 Empirical results

4.1 Benchmark regression results

In this study, Eq. 2 is used to analyze the impact of the rural collective economy on the common prosperity. The regression results can be found in Table 4. Model 1) represents the estimation without incorporating any control variables, while models (2) to (6) include additional factors such as natural resources, financial expenditure, labor force, and industrial structure. According to the Hausman test, it is recommended to use a fixed effect model for the ordinary panel model. Furthermore, the individual time effect regression F test rejects the null hypothesis of “no time effect”, representing that the time effect should be included in the model. Therefore, a bidirectional fixed effect model with individual time effects is selected for panel regression in this section. The estimation results indicate that the coefficient of the collective economy remains consistently positive as control variables are gradually added. This suggests that the collective economy contributes to the enhancement of the common prosperity level. The findings highlight the importance of actively guiding the development of the collective economy, which involves increasing operational income, wage income, and property income for rural residents. This strategy facilitates bridging the divide between urban and rural progress, fostering economic advancement, and attaining a fairer distribution of income, ultimately resulting in an enhancement of overall prosperity.

Regarding the variables under control, it can be noticed that the availability of farmland resources, the level of public financial

expenditure, and the quality of labors all exert positive influences on the extent of common prosperity. This implies that when striving for common prosperity in rural areas and among farmers, it is crucial to consider the significant roles played by natural resources, capital, and labor. Conversely, factors such as the proportion of fixed investment and the structure of the industry have adverse effects on common prosperity. Based on the prevailing circumstances, during the processes of industrialization and urbanization, certain issues persist, such as the detriment to farmers’ interests and the further widening of the income gap due to excessive promotion of capital infusion into countryside. These findings offer valuable insights for shaping public policies aimed at diminishing the income disparity and mitigating inequality.

The theoretical analysis conducted above provides evidence of the two main effects of the modern collective economy on the level of common prosperity: the “prosperity effect” and the “common effect”. This study aims to investigate the specific impact of the new collective economy on the common prosperity by considering the “prosperity effect” and “common effect” as explanatory variables. The “prosperity effect” is measured by the *per capita* disposable income adjusted for inflation, while the “common effect” is evaluated through the ratio of income between urban and rural areas. The obtained results can be observed in Table 5. Model (7) and model (8) demonstrate the statistical significance of the modern collective economy, regardless of the inclusion of control variables, with a significance level higher than 5%. The positive coefficient suggests that the new collective economy contributes to the enhancement of *per capita* disposable income, reflecting an

TABLE 5 Benchmark regression results II.

Variables	Per capita disposable income		The ratio of urban and rural incomes	
	Model 7	Model 8	Model 9	Model 10
Collective economy	0.337*** (0.007)	0.089*** (0.024)	-0.206*** (0.019)	-0.068** (0.032)
Land resources		0.082*** (0.019)		-0.047*** (0.017)
Fiscal expenditure		0.102*** (0.020)		-0.032* (0.016)
Fixed investment		0.375 (0.368)		-0.780** (0.346)
Human capital		0.166*** (0.050)		-0.029 (0.042)
Industrial structure		-0.028*** (0.003)		0.012*** (0.003)
Constant	9.323*** (0.001)	8.536*** (0.460)	2.660*** (0.005)	2.721*** (0.443)
Provincial effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Sample size	296	296	296	296
R-squared	0.373	0.861	0.222	0.468

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

“increase effect”. Additionally, model (9) and model (10) reveal that the collective economy policy has a significant negative impact on the urban-rural income ratio, irrespective of control variables’ incorporation. This implies that as the new collective economy progresses, the urban-rural income disparity decreases, indicating a more equitable distribution of income among residents. Furthermore, the ongoing improvement in the level of the collective economy fosters increased prosperity in the rural economy, leading to gradual income growth for farmers.

4.2 Robustness tests

4.2.1 Time-varying DID model

If there is a correlation between explanatory variables and error terms in the model, it may lead to inaccurate and inconsistent model estimates. To address potential endogeneity issues stemming from simultaneous causality in the benchmark model’s estimation results, this paper proposes supplementing the model with a time-varying did model to alleviate these issues. Before utilizing this approach, it performs a hypothesis test on parallel trends to ensure that the evolving pattern of the common prosperity in both the treatment regions and the control regions is essentially similar prior to implementing the pilot policy of the collective economy. Thus, this paper incorporates the dummy variable as the implementation variable for the reform. The sample values are

assigned based on the year of the provincial pilot of the new collective property reform approved by the central government. The sample is considered as the reform pilot before its establishment, denoted by 0. After its establishment, the sample is assigned a value of 1 from the date of establishment. The test result, as depicted in Figure 4, indicates that the estimated coefficients prior to the implementation of the pilot policy for the collective economy do not exhibit statistical significance. This implies that there is no substantial disparity in the changing trend of the common prosperity level between the treatment group and the control group before the policy implementing, thereby meeting the criteria for the parallel trend hypothesis.

The estimation of the time-varying DID model reveals that the pilot policy has a noteworthy effect on the degree of common prosperity, as shown in Table 6. The pilot policy contributes to improving the local common prosperity to some extent. This discovery also shows that augmenting the collective economy has a role in enhancing the level of common prosperity, thereby validating the strong findings of this research.

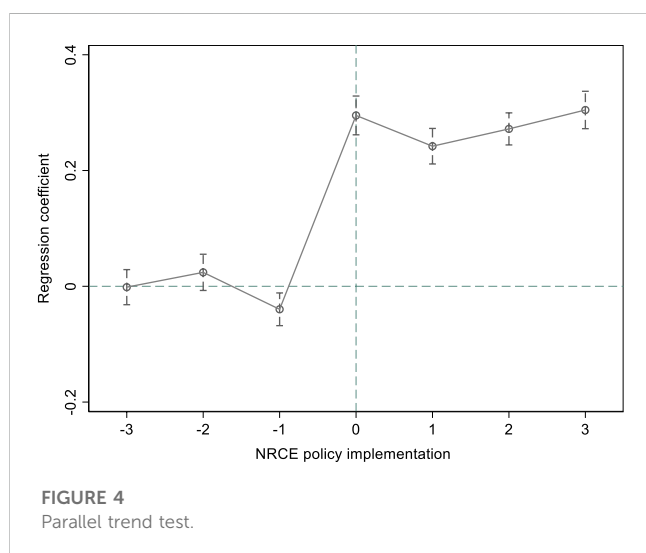
4.2.2 Advance the policy implementation time

This study also includes a counterfactual test. Specifically, it assumes that the pilot provinces of the new rural collective economy were established 2–3 years earlier. If the coefficient of the dummy variable is significantly positive during this period, it suggests that the increase in the common prosperity level of the pilot provinces

TABLE 6 Robustness test results.

Common prosperity	Advance policy timing	Change the explained variable	Exclude municipalities	Winsorization
	Model 11	Model 12	Model 13	Model 14
Collective economy	0.504 (0.386)		0.449*** (0.102)	0.324** (0.139)
Reformed villages		0.568*** (0.119)		
Constant	1.938 (1.215)	1.827* (0.987)	-1.925*** (0.358)	-2.544** (1.116)
Control variable	Yes	Yes	Yes	Yes
Provincial effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Sample size	296	296	256	296
R-squared	0.302	0.594	0.571	0.522

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels.



may be attributed to other policies or economic and social factors rather than the enhancement of the collective economy. Conversely, if the coefficient is not significant, it represents that the incremental contribution to common prosperity comes from the policy effect of the pilot program. To further validate these findings, it incorporates a reconstructed reform variable into the original regression model. The results from Model 11 demonstrate that the coefficient of the pilot variable becomes insignificant, indicating that the counterfactual hypothesis is not valid and providing additional support for the robustness of the previous findings.

4.2.3 Change the core explanatory variable

The research analyses the impact of altering the explanatory factor on the collective economy development index utilized for assessing the level of the collective economy. Instead of relying on the preceding index, the proportion of villages that have successfully implemented the reform of the new collective property system is

considered. To ensure the validity of the findings, a robustness test is conducted subsequent to modifying the core explanatory variable. Notably, the result demonstrates that even with this modification, the coefficient of the collective economy remains significantly positive, providing further confirmation of the research conclusion.

4.2.4 Exclude municipalities

Considering the unique administrative sequence and internal management of municipalities directly under the Central Government, as well as the significant differences in rural labors employment, land transfer policies, and the level of the collective economy compared to other provinces, there is a possibility of bias in the estimation. Hence, this paper excludes the data from Beijing, Shanghai, Tianjin, and Chongqing, and utilizes the remaining sample data for parameter estimation. The results obtained from Model 13 indicate that the collective economy policy has a significant impact on the enhancement of the level of common prosperity, thereby establishing a stable research conclusion.

4.2.5 Winsorization

To account for the potential impact of extreme values on estimation results, this study applies tailing processing at the 1% statistical level to the explained variables and core explanatory variables before conducting parameter estimation. The estimation results for the core explanatory variables remained largely unchanged, further confirming the robustness of the research findings.

4.3 Heterogeneity analysis

There are spatial and temporal differences in the basis of the collective economy, including the ability of industrial integration and the strength of policy support in provinces with different geographical locations. This discrepancy in development creates regional disparities in the role played by the collective economy in

TABLE 7 Results of heterogeneity analysis.

Common prosperity	Eastern regions	Central regions	Western regions
	Model 15	Model 16	Model 17
Collective economy	0.125*	0.491***	0.315**
	(0.067)	(0.173)	(0.156)
Constant	1.543	1.269	1.117
	(1.116)	(0.788)	(0.684)
Control variable	Yes	Yes	Yes
Provincial effect	Yes	Yes	Yes
Year effect	Yes	Yes	Yes
Sample size	109	79	108
R-squared	0.492	0.717	0.554

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

promoting the common prosperity. To investigate this phenomenon, this study divides the research samples into three regions. The regression findings, presented in Table 7, indicate that the impact is most pronounced in the central region, followed by the western region, and finally the eastern region. Several potential reasons can account for this result. Firstly, the central and western regions are rich in natural resources and vast land, but at the same time they face many challenges, such as inconvenient transportation, poor information, backward technology, and other issues. The new rural collective economy has optimized resource allocation and improved agricultural production efficiency by introducing modern agricultural technology and management models, which has had a positive impact on local economic development. In contrast, the eastern region, endowed with a robust economic foundation and distinct advantages regarding developmental conditions, experiences various factors that influence the common prosperity. Hence, the impact of the collective economy in these regions is relatively less prominent. Moreover, poverty-stricken counties and villages in China significantly concentrate in the central and western regions, which are the primary targets of poverty alleviation efforts. The strength of the collective economy policy has significantly reduced the urban-rural gap and the social inequality, highlighting the inclusive nature of this economic model. Additionally, the developing regions have more abundant collective land resources compared to the eastern regions. The collective economy’s healthy increase can generate rents or dividends for farmers, incentivizing them to partake in the achievements of collective economic growth. This promotes overall prosperity and shared wealth among farmers and countryside.

4.4 Mechanism analysis and further discussion

4.4.1 Setting of mediation effect model

Through the above analysis, this research aims to verify the beneficial impact of the enhancement of rural collective economy on

the increase of common prosperity level. The main focus is to identify the key paths of improvement. The present investigation aims to explore how the mediating effect of farmland transfer and scale operation contribute to the advancement of common prosperity in the new collective economy. Additionally, the paper constructs a mediating effect model to further validate the previously proposed research hypotheses:

$$Y_{it} = \theta_1 + cX_{it} + \varepsilon_{it} \tag{4}$$

$$M_{it} = \theta_2 + aX_{it} + \varepsilon_{it} \tag{5}$$

$$Y_{it} = \theta_3 + c'X_{it} + bM_{it} + \varepsilon_{it} \tag{6}$$

Among them, Y and X are explained and explanatory variables respectively, while M represents the intermediary variable, namely, the rate of farmland transfer and the proportion of scale operation. When a, b and c are significant, if $a \times b$ and c' have the same sign, then there is an intermediary effect; if they have different signs, then it is a masking effect. c' and c represent the direct effect and total effect of the collective economy on the common prosperity of countryside and farmers respectively. If c is significant and at least one of a and b is not significant, it is necessary to further test whether $a \times b = 0$ is rejected. If it is rejected, it indicates the presence of an intermediary effect. A complete mediating effect occurs when there is a presence of mediating effect and c' lacks significance. Conversely, if c' holds significance, it indicates a partial mediating effect.

4.4.2 The estimated results of the intermediary effect model

Table 8 and Table 9 present the findings of the test conducted on the mediation mechanism. The estimated outcomes of Eq. 5 are displayed in Table 8, while Table 9 showcases the estimated results of Eq. 6. In Table 8, the coefficients pertaining to the collective economy are all significantly positive, indicating that it has contributed to improving the common prosperity. Additionally, the reform of the rural collective property system has led to an increase in the *per capita* disposable income of farmers and a reduction in the income gap. Shifting focus to Table 9, both the estimated coefficients for farmland transfer and scale operation are

TABLE 8 Mediating effect judgment I.

Variables	Farmland transfer		Scale operation	
	Model 18	Model 19	Model 20	Model 21
Collective economy	0.312***	0.285**	0.564***	0.151***
	(0.151)	(0.140)	(0.032)	(0.047)
Constant	3.061***	4.572***	5.624***	3.749***
	(0.419)	(0.635)	(0.481)	(0.763)
Control variable	No	Yes	No	Yes
Provincial effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Sample size	296	296	296	296
R-squared	0.186	0.287	0.388	0.547

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

significantly positive. This implies that an increase in the rate of farmland transfer and the implementation of large-scale operation are beneficial for enhancing the common prosperity of rural areas and farmers. Furthermore, the results presented in Table 9 show that the estimated coefficient for the new collective economy decreases after the inclusion of intermediary variables, in comparison to the coefficient in the baseline regression. This suggests that farmland transfer and scale operation act as mediating variables. These mediating effects are found to be statistically significant. Hence, it can be concluded that farmland transfer and its large-scale operation play pivotal roles in influencing the common prosperity of countryside and farmers within the collective economy. The mechanism tests provide support for the confirmation of hypothesis H3.

After conducting further analysis, it becomes evident that the conditions of the collective economy in Model (19) and Model (21) presented in Table 8 correspond to parameter a in Eq. 5 and exert a notable positive influence. Similarly, the coefficient of farmland transfer in Model (23) and the coefficient of scale operation in Model (25) in Table 9 correspond to parameter b in Eq. 6 and both show a significant positive relationship. Additionally, the coefficients of the new collective economy in Model (23) and Model (25) in Table 9 (corresponding to c' in Eq. 6) are positive and significant. Moreover, the mediating effect accounts for approximately 18.6% and 9.4% of the total effect, indicating that about 18.6% and 9.4% of the effect of the collective economy on the growth of the common prosperity level is indirectly realized through the promotion of farmland transfer and scale operation.

5 Conclusion and limitations

Based on the objective of achieving sustainable development for farmers and rural areas in China, this paper explored the theoretical rationale and mechanism of the rural collective economy on the common prosperity. It analyzed the growth effect and distribution effect, and conducts empirical tests using China's provincial-level panel data from 2011 to 2020. The conclusions are as follows: First,

TABLE 9 Mediating effect judgment II.

Variables	Common prosperity			
	Model 22	Model 23	Model 24	Model 25
Collective economy	0.470***	0.218***	0.380***	0.191***
	(0.145)	(0.058)	(0.107)	(0.044)
Land transfer	0.313***	0.203*		
	(0.112)	(0.107)		
Scale operation			0.282***	0.195***
			(0.085)	(0.048)
Constant	2.527***	3.089	1.126	2.036
	(0.335)	(2.477)	(0.833)	(1.481)
Control variable	No	Yes	No	Yes
Provincial effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Sample size	296	296	296	296
R-squared	0.406	0.579	0.481	0.548

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

the pilot policy of the collective economy has a significant positive impact on the common prosperity, as evident from both baseline regression analysis and time-varying DID method. Second, while the promotion of the collective economy effectively raises the income of rural residents, its ability to reduce income disparity is somewhat limited. The pilot policy of the modern collective economy has clarified the rights of collective property. However, there is still a gap between fully utilizing the market's role in resource allocation and achieving the goal of property rights incentive. Third, analysis of the mechanism influencing the common prosperity of farmers and countryside indicates that the new collective economy notably increases the rate of land transfer and the proportion of large-scale operation. These factors have positive effects on enhancing the level of common prosperity. Consequently, it is imperative to promote farmland transfer and scale operation. Additionally, factors such as *per capita* farmland area, level of public financial expenditure, and labor quality exhibit evident positive effects on the common prosperity of farmers and countryside.

Based on the previous analysis, several policy implications are suggested:

First, it recommends leveraging the comparative advantages of the rural collective economy to promote the common prosperity. It emphasizes the significance of adapting to local conditions when bringing these advantages into play. Many villages in China have already established new rural collective organizations. Moving forward, each region should carefully consider the development direction of collective organization based on its own characteristics. This involves managing the relationship between the collective organizations and other market entities, integrating them into the modern agricultural management system, and facilitating their integration into the suitable rural economic system. Additionally, the region should utilize collective organization as a platform for

building comprehensive village service center. These centers would serve as hubs for regional, non-profit, and public services, resulting in agglomeration effects. They will serve as platforms for farmers to engage in cooperative efforts, facilitating the transfer of high-quality resources to countryside and the movement of the industrial chain. Additionally, they will play crucial roles in connecting farmers with modern agricultural practices.

Second, it is essential to improve the implementation capacity of collective property rights and ensure proper follow-up of policy implementation. On the one hand, different regions should prioritize the revitalization of land resources and the expansion of special industries. This can be achieved by selecting capable leaders for the collective economy development, exploring market-oriented operation paths that align with regional characteristics, and focusing on increasing the incomes of rural residents. Specifically, efforts should be made to enhance income from farmland transfers and large-scale operations, as this is also a key aspect of the reform. On the other hand, localities should optimize the mechanism for distributing collective interests. This involves improving both internal and external distribution of village collective benefits. It is crucial to continuously expand the power of collective members' shares and clarify concepts related to compensated withdrawal, mortgages, guarantees, and inheritance. Additionally, there should be attempts to revitalize both collective and individual assets, supplement and expand the basic rural business system, and ensure that collective gains benefit farmers in a more equitable way.

Third, the enhancement of the new collective economy should be supported by an optimized environment. Policymakers should focus on these aspects. On the one hand, they need to increase financial support for rural public services at all levels and implement a differentiated approach to financial inputs. This means tailoring financial assistance to the specific needs of each village, taking into account their unique development and resource integration. To achieve this, a long-term mechanism can be designed that combines government financial inputs and policy support for specific villages. On the other hand, local governments should enhance risk management for the collective economy. This includes conducting risk assessments for industrial projects and effectively evaluating the value of equity holdings. This necessitates local governments to actively monitor the assets and liabilities of the collective economy and prioritize the prevention and resolution of rural debt risks. It is essential to prevent local conglomerates and external capital from misusing collective assets under the guise of forming an alternative type of rural collective economy. Special attention should be given to mitigating the risk associated with collective land transfers. Additionally, multifaceted measures should be implemented to safeguard and promote the collective economy, ensuring the overall prosperity of farmers and the countryside.

However, this paper has certain limitations. It is challenging to collect data specifically related to the reform of rural collective economy. The statistical yearbooks of each province, the China Statistical Yearbook, and professional statistical yearbooks have slight differences in data due to different statistical calibers. This article primarily utilizes data from the China Rural Statistical Yearbook. If data for a particular indicator is unavailable, the

statistical yearbooks of each province and data from various professional statistical yearbooks are selected. Furthermore, to address missing statistical data for certain years in some yearbooks, this paper employs interpolation or moving average methods to fill in the gaps. Besides, there is potential for more in-depth exploration and analysis of regional heterogeneity. This paper establishes the mechanism of China's rural collective economy policy in promoting the level of common prosperity. However, it is essential to note that the collective economy varies across different regions, which implies that the mechanisms involved may also differ. Therefore, it is expectable to conduct further exploration of rural areas in various regions. Achieving high-quality development of the collective economy necessitates a more comprehensive investigation of the underlying mechanisms and empirical analysis.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding authors.

Author contributions

FJ: Conceptualization, Formal Analysis, Funding acquisition, Methodology, Resources, Validation, Writing—original draft, Writing—review and editing. YJ: Data curation, Formal Analysis, Writing—original draft. JP: Conceptualization, Investigation, Writing—review and editing. YL: Funding acquisition, Software, Writing—original draft. WW: Resources, Validation, Writing—original draft. ZZ: Data curation, Funding acquisition, Writing—review and editing.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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