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Investigating the Impact and New Opportunities of Policy on the Development of Agricultural Cooperatives in China

Xiaojian Qin[1, *], Xuelong Yu[2]

[1]Anhui Agricultural University, Hefei, China
[2]Anhui Agricultural University, Hefei, China
[*] Corresponding author: Xiaojian Qin (Email: qxj211211@gmail.com)

Abstract: The 31st session of the 12th National People's Congress Standing Committee passed the revised "Law of the People's Republic of China on Farmers' Professional Cooperatives" which came into effect on July 1, 2018. This law has introduced a series of supportive policies to promote the standardization and optimization of the cooperative environment. It has positive implications for the agricultural development in various provinces. This paper takes the cooperative as a unit of analysis, and explores the development of agriculture from both macro and micro perspectives in an integrated manner.

Keywords: Policy Implications; Farmers' Cooperatives; Law on Farmers' Professional Cooperatives.

1. Literature Review

Deng Hengshan (2016) theoretically argued the essence of cooperatives and empirically investigated their nature through a set of random sampling data. He found that the material support provided by the "Cooperative Law" for cooperatives is more detrimental than beneficial and suggests an adjustment in institutional construction. [1]Zhao Yushi (2019) sought new strategies to cope with development bottlenecks and promote agricultural modernization. Using classical cooperative theory and government behavior theory as the theoretical basis, he concluded that new rural cooperatives can be categorized into four types: led by large farmers, led by village committees, led by agricultural enterprises, and led by the government. Each type varies in the extent of government intervention. The research also identifies various challenges faced by the government, such as structural imbalances, multiple management levels, village hollowing, and lack of institutional frameworks. [2]Liu Dahong et al. (2019) reflected on the hindrances and legislative feedback on China's micro-economic organizations' development. They employed qualitative research and inductive reasoning to conclude that the structure and content of China's "Cooperative Economic Organization Law" draw from the legislative experiences of corporate legal persons in China, such as the connections between the "General Principles of Civil Law" and the "Company Law". [3]Yang Xudong et al. (2022) researched farmers' professional cooperatives under the backdrop of rural revitalization. They suggest promoting cooperative development through three avenues: creating a “Talented Individual Model”, planning by talented individuals, and so on. [4]Zhou Wengen et al. (2022) explored the localization of farmers' cooperatives in China and proposed standards that align with China's national conditions, such as conforming to international cooperative principles, refining legal guidance, aligning with the needs of agricultural modernization, and adopting flexible approaches based on local conditions. [5]Liang Qiao et al. (2019) analyzed domestic and foreign literature on cooperatives and found a shift in focus from internal functions to external roles. They also discussed the income-enhancing effects of cooperatives, including supply chain extension, conversion to higher value-added, and addressing poverty and product safety. [6]Luo Gan (2020) found that the mismatch between poverty alleviation resources and needs led to wastefulness in cooperatives. The study suggests establishing binding interests and improving petitioning mechanisms, alongside multilateral supervision and grassroots party organization leadership, to enhance cooperatives' poverty alleviation functions. [7]Pan Jin (2019) recommended that data on cooperative development should be fully analyzed from multiple perspectives to clarify relevant indicators. Additionally, both rewards and penalties should be applied to ensure the legitimacy of cooperative members and maintain an optimal equity structure. [8]Ren Dapeng et al. (2022) discussed the governance deadlock in rural cooperatives and proposed legal improvements such as utilizing the contractual nature of statutes to fill the gaps in Cooperative Law, implementing voting to remove non-compliant members, and forcibly buying and handling the shares of uncooperative members. [9]After thoroughly analyzing the above mechanisms and macro theories, the author believes that the development of cooperatives should be analyzed from both micro and macro perspectives. This study begins to investigate the changes in the number of model cooperatives in various provinces in recent years, combined with macro data and trends for inference.

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2. Research Background Section Headings

2.1. Sub-section Headings

Agricultural cooperatives serve as a micro-economic organizational form in the agrarian sector, comprised of a collective of farmers who voluntarily collaborate to manage

farmlands and advance agricultural production. Historically, agricultural cooperatives have been lauded in China as vital mechanisms for rural and agricultural reform and development. However, as time has evolved, they have encountered a series of obstacles necessitating a rethinking of their growth trajectories.

2.2. Challenges

The enlargement and development of agricultural cooperatives face several critical impediments. First, there is a prominent issue of insufficient funding and technological backing. The lack of adequate financial resources hinders the farmers from successfully executing their operational activities, exacerbated by insufficient technological support from governmental and other institutional agencies. Second, the gradual urbanization and industrialization processes have led to a draining of human resources available to the cooperatives. Lastly, the opportunity for development has occasionally been co-opted by local governments and officials for personal gains, leading to inequitable development and a decline in social trust.Page Numbers

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2.3. Future Prospects

Despite these challenges, the potential for agricultural cooperatives remains promising. Governments can elevate their supportive role by enhancing financial backing, introducing technology-friendly policies, and fortifying legal aid to create a more conducive environment for the cooperatives' sustainable development. Additionally, the adoption of digitized administrative processes can strengthen oversight, safeguard the legal rights of cooperatives, and mitigate corruption and cronyism.By investigating these components, especially the influence of policy frameworks, this study aims to provide deeper insights into the challenges and opportunities facing agricultural cooperatives, thereby contributing to the broader goal of agricultural modernization.

3. Research Methodology

3.1. Empirical Analysis

3.1.1. Hypothesis

It is postulated that subsequent to the legal amendments enacted in July 2018, there should be a discernible enhancement in the overall level of agricultural development within individual provinces when compared to their own prior status. This study restricts its focus exclusively to shifts within the agricultural domain, hypothesizing that these policy adjustments should substantially improve the development level of agricultural cooperatives across the various provinces.

3.1.2. Setting and Hypotheses

The number of model agricultural cooperatives in a given province is used as an indicator to measure the developmental level of cooperatives in that province. Given that the policy provides multifaceted and multilevel support for agricultural cooperatives, it is hypothesized that the policy's implementation should markedly elevate the level of cooperative development and increase the number of cooperatives that meet the model standards. Furthermore, an improvement in the developmental level of cooperatives is also likely to promote their clustering and upgrading via mergers. This study assumes the latter to be true. Therefore, a policy evaluation model can be established to discern which scenario is more likely by examining the coefficients of the interaction terms.

3.1.3. Data Collection

The number of model agricultural cooperatives as identified by agricultural authorities serves as the primary data. Sources for these data include the "China Business Management Statistical Yearbook," the "China Rural Cooperative Economy Statistical Yearbook," and the "China Rural Policy and Reform Statistical Yearbook," all of which are issued by the National Bureau of Statistics of China. The total output value for each province in 2020 serves as a measure of the speed of agricultural development and can be used as a variable to distinguish the intrinsic developmental speed of agricultural cooperatives in different provinces.

3.1.4. Statistical Analysis Using Stata

Traditional DiD (Difference-in-Differences) models require data from both a treatment group and a control group. However, since the policy is implemented universally, there are no clearly defined treatment and control groups. Nevertheless, different regions have varied adaptability to the same policy, resulting in varying degrees of policy impact across regions. Therefore, a Continuous DiD strategy may be considered. [10]By comparing the number of officially recognized model cooperatives before and after policy implementation in areas more and less conducive to development (thus creating a 'double difference'), we can identify the historical impact of the revised cooperative law on the development of cooperatives in various provinces and its role in advancing agricultural modernization.

Graph 1. tendency of relevant political development

In conjunction with the temporal trends depicted in statistical graphs and the timing of policy implementation, the period for policy execution is set for the years 2019 and 2020. A time dummy variable d is consequently generated, with other years taking the value of zero. Provincial agricultural GDP is utilized as a standard metric for gauging the level of agricultural development in various localities. Unlike the standard DID (Difference-in-Differences) model, the numerical magnitude of this variable itself serves as an

indicator of regional variations across provinces. When multiplied by the time dummy variable, an interaction term is formed. The coefficient of this interaction term can be employed to assess policy effects.

Direct regression did not yield satisfactory statistical significance; therefore, the logarithmic transformation was applied to both the dependent and independent variables to mitigate data skewness. After clustering by province, the following table 1 was generated:

Table 1. Xtreg lnglory yt1 d,fe cluster(id)

lnglory	coefficient	Robust std. Err.	t	P>|t|	[95% conf.]	[interval]
yt1	-.0421973	.0392043	-1.08	0.291	-.1223791	.0379846
d	.3376183	.3161193	1.07	0.294	-.3089184	.9841549
_cons	8.183018	.0266383	307.19	0.000	8.128536	8.237499

The initial results remained sub-optimal. Consequently, we employed difference techniques on the explanatory variable that captures regional variations, aiming to mitigate excessive variability. The results of the regression analysis are depicted in the following table 2:

Table 2. Xtreg dlnglory yt2 d,fe cluster(id)

lnglory	coefficient	Robust std. Err.	t	P>|t|	[95% conf.]	[interval]
yt2	-.0371114	.0752566	-0.49	0.626	-.1910284	.1168055
d	-.0562409	.0317194	-1.77	0.087	-.1211144	.0086326
cons	.0734462	.0218852	3.36	0.002	.028686	.1182064

The goodness-of-fit significantly improved, yet the core variables lacked robust significance, particularly in a clustered regression setting. Further analysis was conducted to investigate the cause, yielding the regression results depicted in the subsequent table 3.

Table 3. Xtreg dlnglory yt1 d,fe cluster(id)

lnglory	coefficient	Robust std. Err.	t	P>|t|	[95% conf.]	[interval]
yt2	-.0371114	.0752566	-0.49	0.626	-.1910284	.1168055
d	-.0562409	.0317194	-1.77	0.087	-.1211144	.0086326
_cons	.0734462	.0218852	3.36	0.002	.028686	.1182064

3.1.5. Conclusions and Analysis

The model yields the following conclusions: The goodness-of-fit of the model is commendable, and the core variables are significant at a 5% level. Given that both the dependent and independent variables are log-transformed in this double-log linear model, the coefficient b can be interpreted as elasticity, implying that a 1% increase in X leads to a 5% decrease in Y. The conclusion drawn here is that for every 1% improvement in a province's level of agricultural development, the number of government-recognized exemplary agricultural cooperatives decreases by 5%, while promoting the upgrading and consolidation of cooperatives.

As the government and the economy focus on agricultural development, multifaceted and multilevel support for agricultural cooperatives has intensified. Consequently, the implementation of such policies is likely to significantly enhance the development level of cooperatives and encourage their agglomeration and upgrading. Interestingly, the upgrading of cooperatives and the elimination of "shell" cooperatives lead to a certain reduction in the number of exemplary cooperatives. This study, centered on cooperatives as the unit of analysis, effectively combines macro-level agricultural development with micro-level organizational perspectives and applies these insights to provincial panel data analysis. This provides research material for the development of micro-economic entities within the context of rural revitalization.

3.2. Fieldwork and Qualitative Research

3.2.1. Economic Benefit Analysis of the Policy

The policy has facilitated the production and development of agriculture, leading to a steady increase in the total output value of agriculture, forestry, fisheries, and livestock. However, the overall change in grain production is limited, likely impacted severely by the pandemic. This also indirectly reflects the superiority of China's policy response to emergencies. Overall, while the Gross Domestic Product (GDP) has steadily increased, production costs have stabilized, indicating the policy's beneficial impact on agricultural production.

3.2.2. Ecological Benefit Analysis of the Policy:

From the perspective of pesticide and diesel pollution, data from the National Bureau of Statistics for the years 2017-2020 indicate a significant reduction in pesticide usage. This is attributed to scientifically designed ratios and the phasing out of excessive pesticide use, which, to some extent, reduces soil and agricultural product contamination by heavy metals. Additionally, the decrease in agricultural diesel usage has contributed to lowering air pollution, aligning with the Two Mountains theory and boosting ecological benefits.

3.2.3. Social Impact of the Policy:

Data from the National Bureau of Statistics for the years 2017-2020 show a steady increase in the per capita disposable income of rural residents. Although the Gini coefficient for disposable income has not reached an ideal level, there has been incremental progress. This suggests that the policy plays a crucial role in reducing income inequality and maintaining social stability.

3.2.4. Sustainability Analysis of the Policy:

In summary, the policy has led to reduced costs, increased productivity, effective environmental pollution control, and steady improvement in living standards. This promotes the advancement of sustainable agricultural development and

accelerates the realization of agricultural modernization.

4. New Opportunities of Development in Agricultural Cooperatives:

4.1. Robust Development of Digitized Rural Areas and E-commerce in the Countryside

The government plays a pivotal role in bolstering the development of digital industrial models. With the aim of enhancing the sustainability of cooperatives, governmental bodies can initially provide targeted support to qualified and promising cooperatives. This would enable them to leverage the benefits of high-level integration and well-structured logistics systems, thereby augmenting their profitability in advance. As a case study, Xingsheng Youxuan began constructing its proprietary logistics system, named Abida, in 2015, and successfully built a five-tiered service base stretching from cities to rural communities. The company’s fully integrated logistics enabled it to grow contrary to economic trends during the pandemic and attract substantial investment, exceeding $5 billion in nine rounds of financing between September 2018 and July 2021. By occupying early supply chain advantages, cooperatives can secure significant economic gains in the long term and position themselves as strong competitors in a capital-intensive market.

4.2. Advancement of Financial Services and Mechanisms

4.2.1. Elevating the Level of Financial Services:

Addressing the imbalance in the loan structure for farmers is essential. Despite the emergence of quality cooperatives, the cyclical and uncertain nature of agricultural investment often limits access to loans for genuinely needy parties. This hampers the expansion of high-quality organizations and hinders modern agricultural development. The financial mechanisms should thus be refined to offer more rational financial services to qualified farmers, moving beyond collateral-based credit assessment to more flexible and diversified financing models.

4.2.2. Leveraging Community Reputational Mechanisms

To reduce the transactional costs in financial dealings, rural cooperative revenues should be revitalized by incorporating financial market elements and converting community resources into assets. This enhances farmers’ rights and fosters integrated rural-urban development.

4.3. Optimization of Talent Development Pipeline

Cooperatives, as significant economic organizations in rural areas, should diversify their talent pool to ensure policy implementation and innovative growth. Government agencies, academic institutions, and research organizations should complement each other's efforts in talent investment. Initiatives like setting up specific academic positions or research topics aligned with cooperatives can facilitate technology assimilation and innovative mechanisms. This strategy could utilize the youthful energy of the newer generation of rural officials, as exemplified by the experience of a village secretary in Anhui Province, to lay a solid foundation for increased income for farmers and rural revitalization.

4.4. Synergistic Integration of Cooperatives and Other Organizations

4.4.1. Cooperatives and Modern Farms

Members of cooperatives can either collaborate or lease arable land to establish flexible and stable production bases. These arrangements align well with local conditions and are conducive to the integration of modern technologies and innovative projects. Additionally, farms could explore multiple revenue streams through educational activities, thereby adding value and contributing to green, organic farming.

4.4.2. Cooperatives and Agro-Innovation Parks

Taking inspiration from models like the Ant Forest, cooperatives with the requisite resources can offer high-quality contract plots to consumers, each equipped with an "identity card" that allows consumers to witness the full growth cycle of the crops. Such an approach provides transparency and fosters trust, thus invigorating the micro-economy of the rural area.

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