Effect of Market-Oriented Reform of Rural Financial Institutions on Promoting County Economic Growth

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Abstract: This study regards the reform of rural credit cooperatives into rural commercial banks as a "quasi-natural experiment." Based on the panel data of 158 counties and districts from 2005 to 2019, it uses the progressive Differences-in-Differences (DID) to systematically evaluate the effect of the reform of rural credit cooperatives on county economic growth. The study finds that the reform of rural credit cooperatives has significantly promoted county economic growth, which is still valid after parallel trend tests, replacement of explained variables, and consideration of sample self-selection. Heterogeneity analysis finds that the reform of rural credit cooperatives can promote county economic growth more obviously in the samples of urban agglomeration, power-expanding counties, non-impoverished counties, and non-agricultural counties in Central Plains. The mechanism analysis finds that the reform of rural credit cooperatives can promote county economic growth through channels such as improving the level of financial development and optimizing the industrial structure. The conclusions of this study not only expand the understanding of existing references on the effect of rural credit cooperatives on county economic growth, but also provide important inspiration for the government to further deepen the reform of rural credit cooperatives and accelerate the pace of rural revitalization.

Keywords: Reform of rural credit cooperatives; County economic growth; Progressive DID

1. Introduction

Stronger counties make the country rich. The development of the county economy is not only an effective way to increase farmers' income and improve the quality of life of farmers, but also an important fulcrum to promote the strategy of rural revitalization. In recent years, China has proposed specific policy arrangements such as "promoting the integrated development of urban and rural areas with a county as the basic unit", "strengthening the county economy," and "comprehensively optimizing the spatial layout of the county", which further clarifies the important role of the county economy in consolidating the effectiveness of poverty alleviation and assisting rural revitalization. Financial institutions play an important role in the process of serving local economic development. Rural credit cooperatives, as the main force of rural finance in China, have undertaken the important task of raising funds for the economic and social development of rural areas for a long period of time. However, rural credit cooperatives have still many outstanding problems in their own construction and service of "three rural" work requirements, such as unclear distribution of property rights, low level of internal and external governance, insufficient governance structure, and insufficient sound operation and management system, which will not only restrict the healthy development of rural credit cooperatives themselves and may also threaten the overall situation of agricultural development, farmers' income increase, and rural stability.

From the perspective of the development history of the rural credit cooperatives, since its establishment, it has successively experienced the stages of mutual assistance and cooperation among farmers, the management of the people's communes, the management of the Agricultural Bank of China, and the management of the People's Bank of China. In 2003, the *Pilot Plan for Deepening the Reform of Rural Credit Cooperatives* was issued, which marked the official opening of the shareholding reform of rural credit cooperatives. The most striking feature of this reform

is that the management of rural credit cooperatives is entrusted to local governments, and at the same time, a provincial rural credit cooperative union was stablished for the management of rural credit cooperatives and agricultural commercial banks. However, with the economic development in rural areas, the outstanding problems of rural credit cooperatives in their own construction and in serving the work requirements of "agriculture, rural areas and farmers" were gradually exposed, such as unclear distribution of property rights, low level of internal and external governance, insufficient governance structure and unsound operation and management system. The above-mentioned problems not only restrict the healthy development of rural credit cooperatives, but also threaten the overall situation of agricultural development, farmers' income increase, and rural stability. In November 2010, the China Banking and Insurance Regulatory Commission further issued the Guiding Opinions on Accelerating the Equity Transformation of Rural Cooperative Financial Institutions, which clearly stated that the rural credit cooperatives and rural cooperative banks that met the access requirements of rural commercial banks should be directly reformed into rural commercial banks. A new round of industrial reform was officially launched for those not meeting the access requirements. The data shows that the number of legal entities of rural commercial banks has increased from 85 in 2010 to 1,596 in 2021, accounting for 2.9% of the total legal entities of rural cooperative institutions in 2010 to 72.7% in 2021. In addition, at the end of 2021, the total assets of rural commercial banks were about RMB36.7 trillion, accounting for about 80.3% of the overall rural cooperative institutions, and the overall net profit was RMB213 billion, an increase of RMB17.7 billion (9.06%) over the same period last year. The rural credit system in China has entered a new stage dominated by rural commercial banks.

Driven by rural commercial banks, rural cooperative institutions have played an increasingly prominent role in the development of the county economy, which is reflected in the fact that they are firmly at the forefront of the entire county banking financial system in terms of employees and business development. Specifically, by the end of 2020, the current number of on-the-job employees in rural cooperative institutions across the country reached 918,000, with total assets of about RMB39.59 trillion, accounting for 12.99% of banking financial institutions. In addition, rural cooperative institutions issued a total of RMB10.08 trillion of loans to small and micro enterprises, of which the balance of inclusive loans to small and micro enterprises was RMB5.18 trillion, accounting for 35% of the national banking industry and ranked first in the total of various banks. In order to deeply evaluate the effect of reform of rural credit cooperatives on county economic growth, this study regards the reform of rural credit cooperatives as a "quasi-natural experiment", and uses the progressive DID method to empirically test the effect of reform of rural credit cooperatives on county economic growth, so as to provide feasible policy recommendations for the further development of rural credit cooperatives and the formulation of policies.

The marginal contribution of this study is reflected in the following three aspects. First, from the perspective of research content, this study empirically tests the effect of the shareholding system reform of rural credit cooperatives on county economic growth, and conducts a detailed heterogeneity analysis, which further enriches the research on the reform of rural credit cooperatives and county economic development. Second, from the perspective of research methods, it uses the "quasi-natural experiment" of the reform of rural credit cooperatives into rural commercial banks to better observe the exogenous changes in the degree of marketization of financial institutions, and on this basis uses the progressive DID method to alleviate endogenous problems, so as to more scientifically identify the causal effect of the reform of rural credit cooperatives on county economic growth. Third, from a policy perspective, the conclusions of this study provide a reference for further deepening the reform of rural credit cooperatives, promoting the implementation of the rural revitalization strategy, and achieving high-quality economic development. The rest of this paper is organized as follows: The second part is the literature review; the third part is the research design, introducing the data and the model; the fourth part analyzes the empirical results, including benchmark regression results and robustness tests; the fifth part is heterogeneity analysis; the sixth part further examines the effect mechanism of rural credit cooperatives on county economic growth; the last part is the conclusion and policy implications.

2. Literature Review

If prefectures and counties are well-governed, the country will be peaceful. The county economy is not only the combination point of macroeconomics and microeconomics, but also the combination point of urban economy and rural economy. Research on how to promote the high-quality development of county economy is of great significance to China's integrated urban-rural development and rural revitalization. To a certain extent, the development of county economy should be based on its own resource endowment, industrial characteristics, financial system and regional financial development level. Resource endowment is a prerequisite for county economic development. Some scholars, starting from the county's own resource endowment, discussed the economic development under different market resource allocation systems and property rights systems, and found that the improvement of market openness and system quality will be more conducive to economic development [1, 2]. Some scholars studied the effect of industrial structure adjustment on economic growth from the perspective of industrial characteristics. Based on the data of OECD countries, Peneder [3] analyzed and pointed out that the upgrading of industrial structure is an important force to promote macroeconomic growth. Foster-Mcgregor and

Verspagen [4] and Vu [5] evaluated the economic growth process of Asian countries and also found that inter-industry labor mobility could help improve the level of economic development. Based on the study of China's county data from 2000 to 2017, Chen and Zhang [6] found that the PPP project of industrial new cities can significantly promote the county economic growth of China, but this economic effect has a geographical attenuation trend. Other scholars also evaluated the economic growth effect of reform of fiscal and taxation systems. For example, the studies of Liu et al. [7] and Johnson and Godwin [8] found that high-quality fiscal system reforms have a significant role in promoting economic growth. As an important factor affecting county economy, finance has always been a key topic that economists pay attention to. Rioja and Valev [9] and Hassan et al. [10] pointed out that financial development is a catalyst for economic development. Akinci et al. [11] used the economic development data of OECD member countries to confirm the long-term positive relationship between the level of financial development and economic growth. Dong et al. [12] investigated the effect of various financial institutions including rural credit cooperatives, agricultural banks and other commercial banks on economic development, and found that compared with other commercial banks, rural credit cooperatives and agricultural banks had a greater effect on agricultural economic, and the contribution of rural credit cooperatives was sustainable. Zhang et al. [13] used the panel threshold model to analyze the effect and mechanism of rural credit cooperatives on economic growth, and found that the effect of rural credit cooperatives on economic growth has a significant threshold effect, and under different financial and economic foundations, the development of rural credit cooperatives will have varying degrees of "growth" effects on the county economy. Many of the above studies have shown that financial development has a positive effect on the county economy, and rural credit cooperatives are particularly important in the effect of various financial institutions on the county economy.

In recent years, with the official opening of a new round of market-oriented reform of financial institutions, the effect of reform of rural credit cooperatives has gradually attracted the attention of a large number of scholars. Most of the evaluations on the reform of rural credit cooperatives in the existing literature start from two aspects: the operating performance of rural credit cooperatives and the financial support to the local economy. Regarding the discussion on the effect of the reform of rural credit cooperatives on their business performance, some scholars used stochastic frontier methods (SFA) or data envelopment analysis (DEA) to measure the technical efficiency, profit efficiency or cost efficiency of rural credit cooperatives, and found that after the reform of rural credit cooperatives, their operating performance has been significantly improved [14, 15]. Some scholars have also analyzed the effect of the reform on the operational performance of rural credit cooperatives from the perspective of internal governance mechanisms [16, 17], and found that the operational performance of rural credit cooperatives had been significantly improved after the reform. Some scholars have also paid attention to the effect of the reform of rural credit cooperatives on local financial support, and found that due to excessive government intervention, backward market development, and imperfect systems, there was still a lot of room for improvement in the efficiency of rural credit cooperatives in supporting agriculture [18, 19]. Overall, although the market-oriented reform of rural credit cooperatives has provided more financial support for large-scale township and village enterprises or new agricultural economic entities, its effect on small and medium-sized township and village enterprises or ordinary farmers was relatively small or even weakened [20, 21]. More importantly, the analysis of the financial support of the rural credit cooperatives to the local economy should not only examine the effect on agriculture-supporting loans, but also expand its focus and deeply examine its effect on county economic growth.

Therefore, this study takes the reform of rural credit cooperatives as a starting point, regards the reform of rural credit cooperatives into rural commercial banks as a "quasi-natural experiment", and uses the progressive DID method to empirically test the relationship between the reform of rural credit cooperatives and county economic growth, in order to fully understand the economic performance of the reform of rural credit cooperatives, and provide an empirical basis for further improving relevant policies. This study finds that the reform of rural credit cooperatives has significantly improved the level of county economic growth. This conclusion still holds true after a series of robustness tests such as replacing the explained variable, parallel trend test, and propensity score matching. At the same time, there is obvious heterogeneity in the effect of reform of rural credit cooperatives on county economic growth. Further analysis of the mechanism of the reform of rural credit cooperatives on county economic growth shows that the reform of rural credit cooperatives can affect county economic growth by improving the level of financial development and optimizing the industrial structure.

3. Research Design

3.1 Model Setting

As a nationwide reform, the reform of rural credit cooperatives into rural commercial banks is not a one-size-fits-all promotion, but a process of gradual promotion in different regions and batches. In this regard, this study draws on the practice of Beck et al. [22] and uses the progressive DID method to capture the effect of the reform of rural credit cooperatives on county economic growth. Based on the above analysis, the regression equation is set as follows:

$$Y_{it} = \alpha_0 + \alpha_1 treat_{it} + \sum_{j=1}^{N} \beta_j X_{it} + \lambda_i + \gamma_t + \varepsilon_{it} \qquad (1)$$

where, i represents the county (district, city), and t represents the year. Y_{it} is the explained variable, which represents the level of county economic development. $treat_{it}$ represents whether the rural credit cooperatives in county (district, city) i will be reformed into rural commercial banks in year t, and the estimated coefficient α_1 is the focus of this study, that is, the effect of the reform of rural credit cooperatives on the county economy. X_{it} represents the control variable that may affect county economic growth, λ_i and γ_t represent county fixed effects and year fixed effects, respectively, and are used to control individual factors that do not change with time and time factors that do not change with individuals; ε_{it} is a random disturbance item.

3.2 Data Source and Sample Representativeness

The data used in this study are mainly from the China County Statistical Yearbook (2006-2020) issued by the National Bureau of Statistics of China and the Henan Statistical Yearbook (2006-2020) issued by the Henan Provincial Bureau of Statistics. For the missing data, first query and supplement according to China's economic and social big data research platform and statistical yearbooks of each county, and then perform interpolation processing. In the end, this study collects and sorts out the panel data of 2,370 observations in 158 counties (cities, districts) in Henan Province from 2005 to 2019.

This study takes Henan Province as a sample of research for two reasons: First, the Henan Provincial Government attaches great importance to the reform of the rural credit cooperatives system, constantly revises and improves the reform plan of the provincial rural credit cooperatives, and continues to deepen the reform of the rural credit cooperatives at the provincial, city and county levels. In addition, the government is also actively promoting rural credit cooperatives to optimize asset quality and improve their ability to serve local economies. As of 2022, RMB25.7 billion of special bonds have been successfully injected, the province's rural credit cooperatives have collected more than RMB170 billion of non-performing assets, the balance of agriculture-related loans is RMB874.4 billion, and the balance of small and micro enterprise loans is RMB466.2 billion. Second, the reform progress of rural credit cooperatives in Henan Province varies, which is representative in the whole country and provides the possibility to use the progressive DID method for empirical analysis. Specifically, as of 2019, 1,800 rural credit cooperatives in 120 regions of Henan Province have been reformed into rural commercial banks one after another, and 570 rural credit cooperatives have not yet been reformed.

3.3 Variable Selection and Description

1. The explained variable. The explained variable is represented by real GDP per capita. Existing studies generally use GDP or GDP per capita to measure economic growth. However, compared with GDP, GDP per capita represents the economic strength of the average population and the degree of social and economic balance. Heston [23] also pointed out that GDP per capita can effectively avoid errors caused by population factors, so this study uses GDP per capita to represent economic growth. In order to eliminate the influence of price factors, this study uses the GDP price index of the base period of 2005 to deflate GDP per capita.

2. Core explanatory variable. The core explanatory variable of this study is the dummy variable of the treatment group, which takes a value of 1 when the rural credit cooperative is reformed into a rural commercial bank, and takes a value of 0 if the rural credit cooperative has not been reformed.

3. Control variables. In order to avoid the deviation of omitted variables as much as possible and accurately and effectively identify the policy effects of the reform of rural credit cooperatives, this study sets a series of control variables based on relevant theories and literature. As emphasized by classical economic theory and new economic theory, human capital is defined as the quantity and quality of labor force, which is an important production factor that determines economic growth. In this regard, this study uses the number of employed persons to measure the number of labor force and the proportion of the number of ordinary middle school students to the total population at the end of the year to measure the quality of labor force, so as to control the effect of human capital on economic growth. In addition to labor input, this study also includes the proportion of total social retail consumption in nominal GDP, the proportion of total social fixed asset investment in nominal GDP, the proportion of local general budget expenditure in nominal GDP, and the proportion of residents' savings deposits in nominal GDP [24], so as to control the effect of the business situation, investment rate level, government size and savings rate level of the county (district, city) on the economic level. The descriptive statistics of related variables are shown in Table 1.

Looking at the differences in variables between regions where rural credit cooperatives reformed into rural commercial banks (reformed regions) and regions where rural credit cooperatives have not been reformed into rural commercial banks (unreformed regions), it is found that the average GDP per capita of the reformed regions is 2.912, while the average value of GDP per capita in unreformed regions is 2.506, indicating that the reformed regions have a higher level of economic development than the unreformed regions. In terms of other control variables, in addition to labor quality and investment rate, there are significant differences in the average values

of labor force quantity, resident savings level, government size, and business situation between reformed and unreformed regions.

Table 1. Descriptive statistics

Variable name	Reformed regions			Unreformed regions		
	Number of samples	Average	Standard deviation	Number of samples	Average	Standard deviation
GDP per capita	1660	2.912	1.927	514	2.506	1.495
Labor force quantity	1375	3.689	0.517	402	3.796	0.586
Labor quality	1270	0.061	0.014	363	0.061	0.017
Resident savings level	1268	0.527	0.208	364	0.579	0.206
Government size	1659	0.115	0.060	514	0.12	0.058
Investment rate	1419	0.751	0.320	438	0.731	0.278
Business situation	1660	0.396	0.304	514	0.356	0.148

4. Analysis of Empirical Results

4.1 Benchmark Regression Results

This study first estimates the direct effect of the reform of rural credit cooperatives on regional economic growth. Rural credit cooperatives have different characteristics in the reform time and regions, which provides a "quasi-natural experiment" condition for this study. For this, this study adopts the progressive DID method (model (1)) to evaluate the net effect of the reform of rural credit cooperatives to promote county economic growth and the regression results are reported in Table 2. Column (1) is the estimated result of the full sample. When only county fixed effects and year fixed effects are included, the coefficient of the core explanatory variable is significantly positive. Column (2) further adds control variables, and the coefficient is 0.201. Compared with Column (1), the coefficient of the core explanatory variable has not changed significantly in size or significance level, which preliminarily proves that the reform of rural credit cooperatives has significantly promoted regional economic growth. In addition, considering that county administrative units such as municipal districts are significantly different from counties in terms of economic, social and financial management, in the last two columns, this study narrows down the sample to county samples (There are a total of 158 counties (cities, districts) in Henan Province, and 54 municipal districts (including 1 province-directed city) were excluded from the county sample, and only 104 counties were analyzed.). From the regression results, the estimated coefficient of the DID item is larger in the county sample, which shows that the reform of rural credit cooperatives has a greater effect on county economic growth. The possible reason is that compared with municipal districts, the economic base of counties is poorer, and the policy of the reform of rural credit cooperatives is more satisfying to the financial needs of "agriculture, rural areas and farmers" in counties, which in turn has a more obvious role in promoting the county economy.

Table 2. Benchmark regression results

Variable	Full sample		County sample	
	(1)	(2)	(3)	(4)
	0.240***	0.201***	0.278***	0.205***
	(0.0773)	(0.0669)	(0.0889)	(0.0685)
Labor force quantity		0.268		0.249
		(0.423)		(0.439)
Labor force quality		-0.455		-0.144
		(2.016)		(2.068)
Resident savings level		-2.111***		-2.198***
		(0.443)		(0.460)
Government size		-9.633***		-9.371***
		(1.485)		(1.575)
Investment rate		-0.483***		-0.501***
		(0.169)		(0.177)
Business situation		-0.592		-0.76
		(0.743)		(0.761)
County fixed effect	Control	Control	Control	Control
Year fixed effect	Control	Control	Control	Control
Sample size	2174	1413	1575	1365
R²	0.714	0.889	0.782	0.889

Notes: ①***, ** and * indicate significance at the statistical level of 1%, 5% and 10%, respectively; ②The cluster standard errors at the county level are in brackets. The table below is the same.

4.2 Robustness Check

1. Parallel trend test and dynamic effect. In the benchmark analysis, we used the double difference method to evaluate the policy effect of the reform of rural credit cooperatives. However, because the samples targeted by this method lacked complete randomness, it was only a "quasi-natural experiment" rather than a "natural experiment". Strict Conditions of Use and Premise Assumptions - The assumption of parallel trends between treatment and control groups is met before the policy occurs. In this regard, this study draws on the practice of Ferrara et al. [25], uses the event analysis method to test parallel trends and examines the dynamic effects of policies, so as to ensure the reliability of the effect of the reform of rural credit cooperatives on economic growth. In this study, the year dummy variables of 6 years before the reform of rural credit cooperatives and 6 years after the reform of rural credit cooperatives are used as explanatory variables for regression. Figure 1 is the parallel trend test and dynamic effect diagram of the effect of the reform of rural credit cooperatives on the county economy. Before the restructuring of the rural credit cooperatives, the estimated coefficients of the core explanatory variables were not significantly different from 0, which indicated that there was no significant difference between the treatment group and the control group before the restructuring, satisfying the assumption of parallel trends; after the restructuring of the rural credit cooperatives, the treatment group Compared with the control group, the GDP per capita of 2019 was significantly increased and the trend was relatively stable, which shows that the reform of rural credit cooperatives has indeed had a significant promotion effect on county economic growth, and this promotion effect has long-term effects.
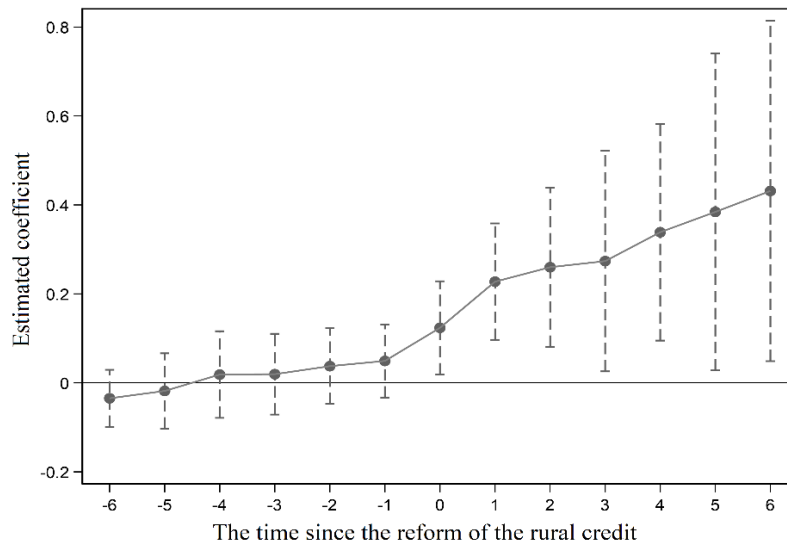

Figure 1. Parallel trend test and dynamic effect

Note: Figure 1 shows the estimated coefficient $\beta_{s\ of\ DID\ it\ in\ formula\ (2)}$, and the dotted line indicates the 95% confidence interval.

2. PSM-DID. In addition, the benchmark regression results may also have a sample selection bias. In order to reduce the bias of DID estimation and overcome the systematic differences in the economic growth trends of reformed regions and other unreformed regions, this study further uses propensity score matching difference-in-difference method (PSM-DID) for robustness testing in order to effectively identify the effect of the reform of rural credit cooperatives on the county economy growth. When using the PSM-DID method, first use the Logit model to estimate the propensity score of the rural credit cooperatives in each county year by year, then select the control group that is closest to the treatment group according to the propensity score, and keep the control variables of the two groups of samples without significant difference before the reform as much as possible, reducing sample selection bias. Specifically, this study uses the radius matching method to estimate, and first conducts a balance test and a common support test to ensure the applicability of the PSM-DID method. The results are shown in Figures 2. It can be seen from the left side of Figure 3 that the standard deviations of all variables after matching are significantly smaller than those before matching, and they are all less than 10%, which shows that there is no systematic difference between the treatment group and the control group after matching, passing the balance test.

From the right side of Figure 3, it's found that most of the samples in the treatment group and the control group are within the common value range, and the samples basically meet the common support hypothesis. Next, this study eliminates the samples outside the common support domain, and re-estimates the effect of the reform of rural credit cooperatives on county economic growth. The regression results are shown in Table 3. The results show that the estimated coefficients of the core explanatory variables are all significantly positive no matter the

radius matching method or the kernel matching method is used to estimate, which further confirms that the reform of rural credit cooperatives has a significant role in promoting county economic growth.
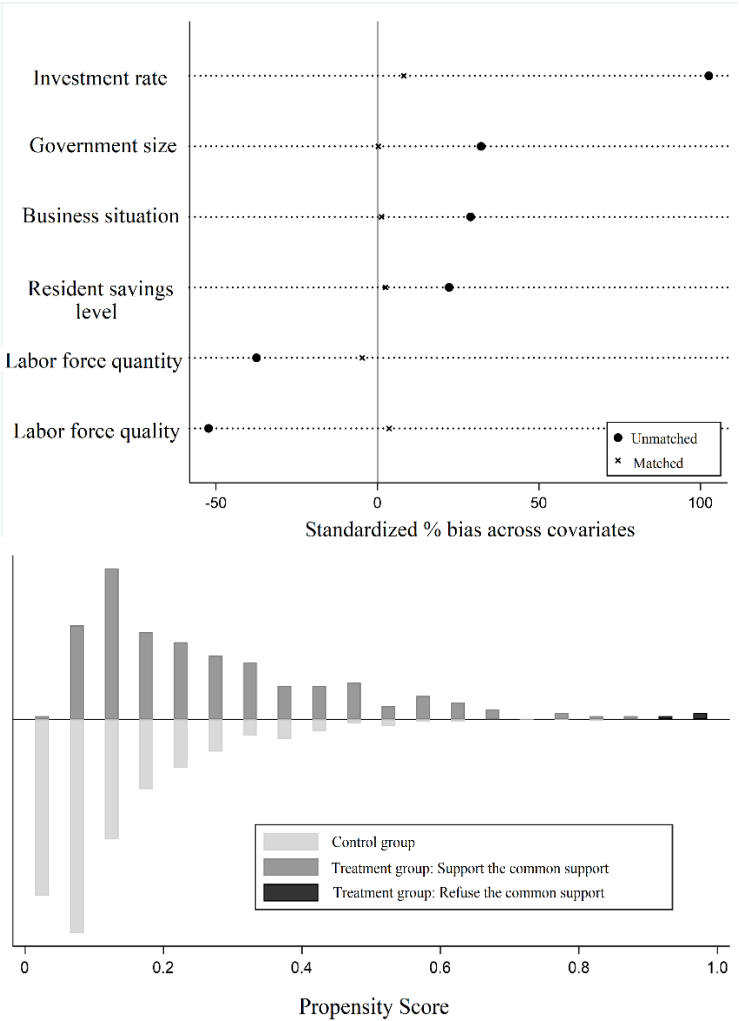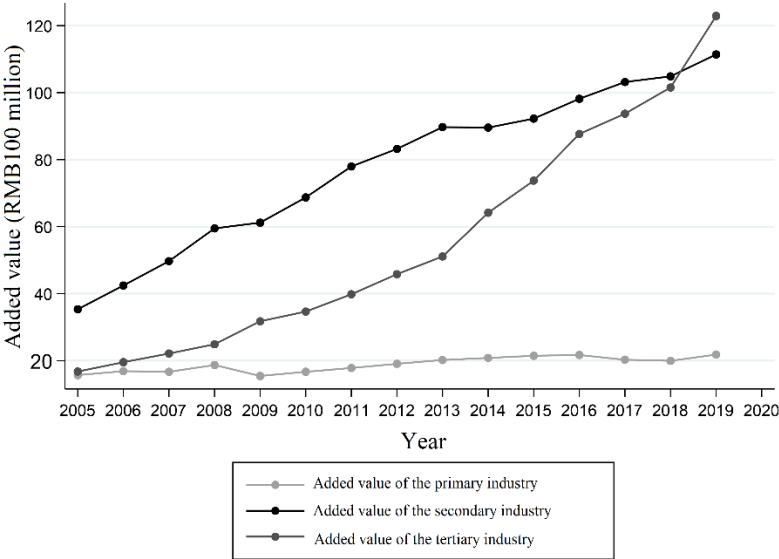

Figure 2. Balance test and common support hypothesis

Figure 3. Comparison of the added value of the primary, secondary and tertiary industries

Table 3. PSM-DID

Variable	(1)	(2)	(3)	(4)
	Radius matching	Radius matching	Kernel matching	Kernel matching
	0.233***	0.159***	0.159*	0.115*
	(0.0783)	(0.0533)	(0.0815)	(0.0616)
Control variable	Not control	Control	Not control	Control
County fixed effect	Control	Control	Control	Control
Year fixed effect	Control	Control	Control	Control
Sample size	915	915	694	694
R²	0.766	0.866	0.741	0.845

Note: The matching radius for radius matching is 0.05.

3. Replace the explained variable. Since there may be subjective survey bias in the statistical process of GDP, the effect of reform of rural credit cooperatives on promoting county economy may be caused by variable selection. In this regard, this study adjusts the variables that measure the level of economic growth to verify the robustness of the research conclusions. Economic development is the core element to promote the growth of fiscal revenue; therefore, as an important source of fiscal revenue, general public budget revenue is often used to measure the level of economic growth. Table 4 shows the regression results of using the general public budget income per capita instead of the real GDP per capita as the explained variable. The coefficient of the DID item is significantly positive at the level of 1%, indicating that the reform of rural credit cooperatives into rural commercial banks can significantly increase the general public budget income per capita; at the same time, the regression coefficient under the county sample is greater than that under the full sample, which is basically consistent with the benchmark result, thus further enhancing the reliability of the conclusion, i.e., the effect of the reform of rural credit cooperatives on promoting the county economy.

Table 4. Effect of the reform of rural credit cooperatives on general public budget income per capita

Variable	Full Sample		County Sample	
	(1)	(2)	(3)	(4)
	225.5*** (64.55)	308.2*** (83.34)	294.2*** (75.57)	322.0*** (85.46)
Control variable	Not control	Control	Not control	Control
County fixed effect	Control	Control	Control	Control
Year fixed effect	Control	Control	Control	Control
Sample size	2171	1411	1573	1363
R²	0.585	0.696	0.652	0.693

5. Heterogeneity Analysis

The previous analysis shows that the reform of rural credit cooperatives can significantly promote the growth of county economy. In this section, the study further analyzes whether there is environmental heterogeneity in this effect. Existing studies have shown that the construction of urban agglomerations, the policy of expanding county power and the initial level of economic development are important factors affecting county economic growth [26]. In this regard, we examine the heterogeneous effect of the reform of rural credit cooperatives from the above three dimensions.

5.1 Urban Agglomeration Construction

Existing literature shows that the financial system of urban agglomerations can give full play to its financial functions and promote the "quality" and "quantity" of the region's economy. Then, compared with non-urban agglomerations, will the reform of rural credit cooperatives further enhance or inhibit the economic development of urban agglomerations? In this regard, referring to the practice of Chen and Zhang [6], this study divides the sample into two sub-samples of "belonging to the urban agglomeration of the Central Plains (In 2003, in the Outline of Planning for the Comprehensive Construction of a Moderately Prosperous Society in Henan Province formulated by the Henan Provincial Committee of the Communist Party of China, it was mentioned that the economic uplift belt of the urban agglomeration in the Central Plains is centered on Zhengzhou, including urban agglomeration areas such as Luoyang, Kaifeng, Xinxiang, Jiaozuo, Xuchang, Pingdingshan, Luohe and Jiyuan.)" and "not belonging to the urban agglomeration of the Central Plains," and then performs regression on these two sub-samples respectively. The regression results are shown in Table 5 Columns (1) and (2). It's found that the reform of rural credit cooperatives has promoted the economy of the counties in the urban agglomeration of the Central Plains. The possible reason is that, as an important force in the rural financial system, the reform of rural credit cooperatives mainly relies on financial support for agriculture, while the urban agglomeration of the Central

Plains has a superior location with a strong ability to gather financial resources and radiate financial services, so as to give full play to the driving role of the reform of rural credit cooperatives on the county economy.

Table 5. Heterogeneity analysis

Variable	(1) Urban agglomerations of the Central Plains	(2) Non-urban agglomerations of the Central Plains	(3) Power-expanding counties	(4) Non-power-expanding counties
	0.241**	0.051	0.220**	0.183***
	(0.0924)	(0.0653)	(0.108)	(0.062)
Control variable	Yes	Yes	Yes	Yes
County fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Sample size	622	791	611	802
R²	0.905	0.906	0.893	0.94

5.2 Policy of Expanding County Power

Is there any difference in the effect of the reform of rural credit cooperatives on promoting the economy of counties that have implemented the policy of "expanding county power" and those that have not implemented this policy? In this study, according to "whether the sample belongs to the power-expanding county (Source: https://www.henan.gov.cn/2007/08-30/593039.html.)" as the grouping standard of the county implementing the power-expanding policy, the samples are divided into the sample of the power-expanding county sample and the non-power-expanding county sample. Also use sub-sample for regression, the regression results are shown in Columns (3) and (4) of Table 5. The regression results show that the reform of rural credit cooperatives has a significant positive effect on the economic growth of the power-expanding counties and non-power-expanding counties, but the effect on promoting the economic growth of the expanding counties is more obvious. A possible explanation for this is that the policy of "power-expanding counties" as an administrative system reform indicates that financial resources are concentrated in counties to a certain extent. This expansion of the quantity of financial resources and the addition of the reform of rural credit cooperatives to improve the efficiency of financial resource allocation jointly realize the role of financial development in promoting economic growth.

5.3 Initial Level of Economic Development

The initial level of economic development is one of the important factors affecting economic growth. Then, can the reform of rural credit cooperatives be more beneficial to counties with poorer initial economic development levels? In this regard, this study divides the samples into whether they belong to the impoverished counties and whether they belong to agricultural counties for analysis. First, this study divides the full sample into two sub-samples of impoverished counties (Source: http://fpb.henan.gov.cn/2020/02-28/1298017.html) and non-impoverished counties. The regression results are shown in Columns (1) and (2) of Table 6. It can be seen that the estimated coefficients of the DID items are significantly positive at the 5% level for both impoverished and non-impoverished counties, but the coefficient value for non-impoverished counties is larger, which shows that the reform of rural credit cooperatives has a significant effect on promoting the economic growth of impoverished counties, but the effect on economic growth of non- impoverished counties is greater.

In addition, this study also considers using other classification methods to measure the initial economic development level of counties. In fact, due to the weak industrial foundation and high proportion of agriculture in rural areas and counties in Henan Province [27], their economic development level is relatively backward, which provides better conditions for this study to measure the initial economic development level. In this regard, this study divides the sample into agricultural counties and non-agricultural counties to test the heterogeneity effect of the reform of rural credit cooperatives. The regression results are shown in Columns (3) and (4) of Table 6. In non-agricultural counties, rural credit cooperatives have a significant effect on driving their economic growth, while the reform of rural credit cooperatives has no significant effect on the economic growth of agricultural counties. Based on the above analysis, it's found that there are significant differences in the effect of the reform of rural credit cooperatives on promoting the county economy growth with different initial economic development levels, and its effect on promoting the county economy with a better initial economic development level is stronger. The reason may be that compared with the counties with the initial economic development level, the relative lack of general resources, low fiscal revenue, and limited ability to absorb financial resources, etc. restrict the effect of the reform of rural credit cooperatives on driving their economic development.

Table 6. Heterogeneity analysis

variable	(1) Impoverished counties	(2) Non-impoverished counties	(3) Agricultural counties	(4) Non-agricultural counties
	0.107**	0.205**	0.0214	0.224***
	(0.0447)	(0.0871)	(0.0576)	(0.0759)
Control variable	Yes	Yes	Yes	Yes
County fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Sample size	689	724	429	984
R^2	0.956	0.909	0.968	0.896

6. Mechanism Analysis

The above analysis has confirmed that the reform of rural credit cooperatives into rural commercial banks can significantly promote county economic growth. In this section, this study will focus on the mechanism behind it. Specifically, this section discusses the possible mechanism of the reform of rural credit cooperatives promoting county economic growth from the perspectives of financial development level and industrial structure.

6.1 Reform of Rural Credit Cooperatives and Financial Development Level

Classical financial development theory holds that financial development can promote capital accumulation and technological innovation, meet corporate financing needs, and promote economic growth [28]. Theoretically speaking, after the rural credit cooperatives are reformed into rural commercial banks, the operating autonomy is expanded, which is essentially a process of marketization of rural financial institutions. According to the theory of financial deepening, financial marketization can improve the efficiency of resource allocation, raise the financial development level and business performance, and promote economic development. In view of this, this study proposes the first possible mechanism: Rural credit cooperatives are reformed into rural commercial banks to improve the financial development level of counties, stimulate the vitality of the financial market, and promote the growth of the county economy.

In the empirical analysis, this study draws on the practice of Muhammad et al. [29] to select the efficiency of financial development, the scale of financial development, and the usability of financial services as proxy variables for the financial development level. Specifically, the efficiency of financial development is the ratio of total loans to total deposits of county financial institutions, the scale of financial development is the ratio of total loans to regional GDP of county financial institutions, and the usability of financial services is measured by two indicators such as per capita deposits and loans of financial institutions. Columns (1)-(4) of Table 7 present the regression results of the reform of rural credit cooperatives on the financial development level. It can be seen from the regression results that the reform of rural credit cooperatives has significantly optimized the efficiency of financial development, expanded the scale of financial development, and improved the deposit and loan levels per capita in counties. This shows that, on the one hand, the reform of rural credit cooperatives has given full play to the advantages of financial integration, increased the support of financial institutions for the local economy, and met the loan needs of enterprises, thereby improving the business performance of enterprises and promoting the growth of the county economy. On the other hand, after the rural credit cooperatives were reformed into rural commercial banks, their businesses became more diversified, and financial products and services effectively met the credit needs of the county real economy and improved the development level of the county economy. To sum up, after the reform of rural credit cooperatives, the level of county financial development has been continuously improved, thus promoting the rapid development of the county economy.

Table 7. Mechanism analysis: Financial development level

Variable	(1) Financial development efficiency	(2) Financial development scale	(3) Deposit balance per capita	(4) Loan balance per capita
	0.0524***	0.0474***	0.263***	0.224***
	(0.0146)	(0.0103)	(0.0620)	(0.0568)
Control variable	Yes	Yes	Yes	Yes
County fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Sample size	1362	1365	1568	1363
R^2	0.286	0.452	0.921	0.750

6.2 Reform of Rural Credit Cooperatives and Industrial Structure

The rationalization and upgrading of the industrial structure will accelerate the flow of production factors, improve labor productivity, and achieve rapid growth of the county economy. In fact, industrial development in county areas usually faces problems such as long investment return period, low expected income level, and many unstable factors [30]. This long-term and high-risk nature is contrary to the operating principles of safety, liquidity and profitability pursued by financial institutions, which ultimately makes it difficult to effectively meet the loan needs of county enterprises. After the rural credit cooperatives were reformed into rural commercial banks, under the market positioning of "serving counties and serving 'agriculture, rural areas and farmers'," the large outflow of funds from rural commercial banks has been effectively controlled, and credit funds have not only been invested heavily in local rural economic entities and the primary industry, and rationally allocated to the secondary and tertiary industries that can bring higher returns. In order to verify this statement, this study calculates the average value added of the primary, secondary, and tertiary industries in the county sample in each year from 2005 to 2019, and plots the comparison of the average values in Figure 3. In terms of time trends, the added value of the primary, secondary and tertiary industries show an overall upward trend, and the added value of the secondary and tertiary industries is significantly greater than that of the primary industry. Based on this, this study proposes a second possible mechanism: the reform of rural credit cooperatives promotes county economic growth through industrial structure transformation and upgrading.

Table 8 reports the regression results of the reform of rural credit cooperatives on different industries in counties. It can be found that the reform of rural credit cooperatives has had a significant negative effect on the development of the primary industry, but it has a significant promotion effect on the development of the secondary and tertiary industries, and the promotion effect on the secondary industry is greater than that of the tertiary industry. The possible reason is that compared with the primary industry, the secondary and tertiary industries have a short investment cycle and a high return on investment. Therefore, driven by the "political championship," local governments mobilize rural commercial banks to provide more credit support to the secondary and tertiary industries, which promoted economic growth. To sum up, the reform of rural credit cooperatives curbs the outflow of funds, optimizes the industrial structure, and promotes the development of county economy.

Table 8. Mechanism analysis: Industrial structure

Variable	(1) Added value of the primary industry	(2) Added value of the secondary industry	(3) Added value of the tertiary industry
	-1.174**	8.844*	8.251**
	(0.575)	(5.275)	(3.737)
Control variable	Yes	Yes	Yes
County fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Sample size	1365	1365	1365
R²	0.771	0.711	0.688

7. Conclusions and Policy Implications

The development of county economy is not only an important driving force to seize the strategic basis of expanding domestic demand and facilitating the national economic cycle, but also a key support to promote rural revitalization and realize the integrated development of urban and rural areas. Exploring the effect of the reform of rural credit cooperatives on county economic development is of great significance for building a policy system that promotes county economic development. Based on the panel data of 158 counties (districts and cities) from 2005 to 2019, this study uses the progressive DID method to study the effect of the reform of rural credit cooperatives on economic growth. The research results show that, first, the reform of rural credit cooperatives has significantly improved the level of regional economic development, and this effect has a greater effect on counties. This basic conclusion still holds true after a series of robustness tests. Second, the heterogeneity analysis finds that the reform of rural credit cooperatives has a more significant role in promoting the economic growth of the urban agglomeration of the Central Plains, power-expanding counties, non-impoverished counties, and non-agricultural counties. Third, the reform of rural credit cooperatives promotes county economic growth by improving the level of financial development and optimizing the industrial structure.

The conclusion of this study not only complements the existing literature that mainly focuses on the effect of the reform of rural credit cooperatives on their own business performance and financial support for agriculture, but also provides new ideas for relevant departments to implement the reform policy of rural credit cooperatives. First, the reform of rural credit cooperatives into rural commercial banks can indeed significantly promote county economic growth. Therefore, the reform of rural credit cooperatives in county areas should be further deepened to

ensure that county rural commercial banks do not deviate from the positioning of "supporting agriculture and supporting small businesses" and serving counties. Second, regarding the heterogeneity shown by the reform of rural credit cooperatives on economic growth, that's, the effect of the reform of rural credit cooperatives on county economic growth is more significant in economically developed areas, the government should appropriately increase policy and financial support for rural credit cooperatives in economically underdeveloped areas, give full play to the main role of the government, provide a good institutional environment and business environment for the development of rural credit cooperatives, and better serve the "agriculture, rural areas and farmers". Third, based on the mechanism of the reform of rural credit cooperatives to promote county economic growth, on the one hand, it's necessary to promote the deep integration of digitalization and reform of rural credit cooperatives, encourage rural businesses to take a distinctive and differentiated development path, focus on improving service quality and innovative research and development, increase people's access to and enjoy financial products, financial resources and financial services, and meet diversified financial needs, thereby increasing the utilization rate of financial resources and coverage of financial services; on the other hand, all regions should continue to transform traditional industries, cultivate and strengthen characteristic industries, promote the optimization and upgrading of industrial structure and the integrated development of three industries, while giving full play to their comparative advantages in various regions, pay attention to reasonable division of labor and regional coordination, so as to promote county economic growth and accelerate the pace of rural revitalization.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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