



Research on the Agricultural "Insurance + Credit" Coupled Model Facilitating the Development of Agricultural Industrialization

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Abstract. Since 2009, when China first proposed "exploring the establishment of an interactive mechanism combining rural credit and agricultural insurance", agricultural insurance and agricultural credit have been playing an increasingly crucial role in supporting the development of the "Three Rural Areas". It is an important tool to drive the agricultural industry towards high-quality development. This study utilizes national panel data from 2009 to 2021 to quantitatively analyze the coupling mode of agricultural "Insurance + Credit" using the coupling coordination degree model. The Two-way fixed effects model further verifies that the coupled and coordinated development of agricultural "Insurance + Credit" has a significant positive impact on agricultural industrialization, and substantial financial for rural revitalization strategy. The article concludes with targeted policy recommendations to optimize the agricultural "insurance + credit" model to better serve agricultural industrialization and rural revitalization.

Keywords: Agricultural Insurance, Rural Credit, Coupling Coordination Degree, Agricultural Industrialization

1 Introduction

The 19th Party Congress in 2017 clearly expressed the importance of the rural revitalization strategy, in which industrial revitalization is placed at the core of rural revitalization. Agricultural industrialization is a necessary way to achieve industrial prosperity. Meanwhile, the 2020 China Development High-Level Forum pointed out that rural finance is one of the three major bottlenecks hindering rural revitalization.

There is a close relationship between rural financial development and industrialization. On the one hand, agricultural industrialization can provide a market for the development of rural finance; conversely, the prosperous development of rural finance can also inject a large number of funds and diversified services into the process of agricultural industrialization, effectively promoting its sustainable development. Liu Minlou and Zong Ying (2003)^[1], through inter-provincial industrial data, found that the scale of rural finance has a notable beneficial impact on agricultural industrialization. The larger the financial scale, the easier it is to promote the growth of township and village

enterprises with strong external financing capacity. Wang Songqi et al. (2012)^[2] find that bank credit contributes to rural economic growth by improving the rural industrial structure and consumption structure. Chen Fang (2018)^[3] argued that agricultural insurance can effectively reduce the financial pressure faced by farmers in the process of production and operation, thus promoting agricultural production activities and accelerating the deep integration and synergistic development of diversified industries in the countryside.

Agricultural insurance and rural credit as China's rural financial development "stabilizer" and "promoter", respectively, show a high degree of similarity and complementarity in many dimensions. The development of both of them combined has become the focal point of rural finance reform in recent years. The increasingly close coupling and synergistic effect between rural credit and agricultural insurance has played an increasingly critical role in promoting agricultural production and rural economic prosperity. Given this background, this paper brings rural credit and agricultural insurance into the same dimension of analysis, through theoretical analysis and Empirical analysis, an in-depth investigation of agricultural "insurance + credit" coupling mode on the impact of industrialization.

2 Mechanism Analysis

The first is the mechanism of interaction between agricultural insurance and rural credit. On the one hand, agricultural insurance alleviates the supply and demand problem in the rural financial credit market through its risk diversification mechanism. First, agricultural insurance can provide risk protection for farmers, reduce the losses of affected farmers, and speed up the resumption of production. Second, agricultural insurance, as an effective financing guarantee, can reduce the lending risk of credit institutions, and thus lower the threshold for obtaining credit support (Hu Shilu, 2020)^[4]. This process not only promotes the deep integration of agricultural insurance in the agricultural credit market but also realizes the further expansion of the scale of agricultural credit and injects more financial vitality into agricultural development (Zheng Jun and Sheng Kangli, 2021)^[6]. On the other hand, rural credit, as an important financing channel, provides farmers with the necessary financial support, which not only motivates farmers to actively take out agricultural insurance to avoid risks, but also further promotes the expansion of their production scale (Zheng Jun and Zhou Yuxuan, 2020)^[5]. In addition, cooperation and information sharing between insurance institutions and credit institutions can effectively lessen the asymmetry of information issue in the agricultural insurance market and improve the operational efficiency of agricultural insurance. The synergistic development of agricultural insurance and rural credit can actively promote the optimization of the agricultural production and business environment, improve the efficiency of regional agricultural technology, and ultimately promote a significant increase in total factor productivity in agriculture (Tang Yong and Lu Taisheng, 2021)^[7].

Secondly, the agricultural "insurance + credit" coupled model has contributed to the development of agricultural industrialization in the following two ways. First, it is promoting the intensification and specialization of agricultural production. Accelerated urbanization has led to the shrinkage of rural arable land and the gradual transformation of extensive agriculture into intensive production. For such family farms, specialized farmers' cooperatives, and other new types of agricultural businesses, they can not do without adequate capital supply for support, and the agricultural "insurance + credit" coupled model can provide a large amount of funds. Especially leading enterprises can contribute positively to highlighting the regional features of agriculture and the agricultural products processing industry, continue to introduce more modern characteristics of agricultural technology, improve the technical level and production efficiency of agricultural business subjects, and promote the development of agricultural production to specialization and intensification. Second, improve the development of the agricultural industry chain. Each subject in the agricultural industry chain can get financial support and risk protection through the agricultural "insurance + credit" coupled model. Financial institutions can build a bridge of cooperation between agricultural producers and agricultural product processing enterprises through innovative service modes, constructing a more complete agricultural industry chain, reducing the credit risk exposure among various links of the industry chain, and significantly enhancing the overall effect of the industry chain. Fig. 1 shows the mechanism of the coupling model between agricultural insurance and rural credit.

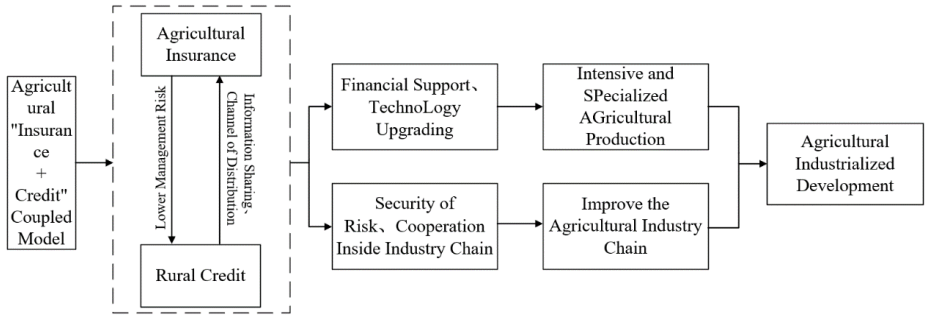


Fig. 1. Conceptual graph.

Agricultural industrialization is established based on modern agricultural production and management methods, and its advancement is inextricably linked to rural finance support, and the input of production factors, and agricultural "insurance + credit" coupled model can provide a large amount of financial support and risk protection. Therefore, this paper puts forward the hypothesis that the agricultural "insurance + credit" coupled model can effectively promote the development of agricultural industrialization.

3 Design of Research

3.1 Selection and Weighting of Indicators

Entropy weighting method can produce more objective results by estimating the weights of the indicators based on the amount of information. The entropy value can objectively reflect the importance of each indicator and other advantages. Thus, the final indicator weights are determined using the entropy weight method.

3.1.1 Core Explanatory Variables.

Metrics refer to Lisa Fu's (2022)^[8] study and apply the entropy method for weight calculation. The system of indicators representing the development level is constructed as shown in Table 1.

Table 1. Construction of the index system.

Subsystems	Variable type	Unit (of measure)	Weights
Agricultural insurance	Agricultural premium income	million yuan	0.23
	Agricultural insurance density	Yuan/person	0.26
	Depth of agricultural insurance	%	0.253
	Expenditures on agricultural insurance claims	million yuan	0.257
Rural credit	Agricultural loans	billions	0.76
	Percentage of agriculture-related loans	%	0.24

3.1.2 Explained Variable.

Referring to the relevant research on agricultural industrialization, this paper constructs the index system of agricultural industrialization from three aspects: agricultural scale, agricultural specialization, and industrial efficiency. Agricultural scale operation is an important way to realize agricultural industrialization, and specialized farmers' cooperatives are an important carrier of agricultural scale operation. The operational efficiency of agricultural industrialization organizations largely depends on whether the leading enterprises can play a demonstration-led role in cooperative relationships, especially the major national leading enterprises of agricultural industrialization, which can directly reflect the level of the development of agricultural industrialization in various regions (Yang Minghong and Sun Jijiong, 2008)^[10]. This paper chooses the following rating indicators as reference factors based on the information provided above. The construction of the index system as shown in Table 2.

Table 2. Construction of the index system.

Index system	Variable name	Measurement	Weights
Industrialization of agriculture (AID)	Agricultural scaling up	Number of specialized farmers' cooperatives	0.238
		Number of State Key Leading Agricultural Enterprises	0.088
	Agricultural specialization	Cultivated land per person employed in agriculture (ha/person)	0.222
		Total power of agricultural machinery per hectare (kW/ha)	0.106
		Labor productivity in the primary sector (million yuan/person)	0.163
	Industrial Efficiency	Per capita production of major agricultural products (kg/person)	0.183

3.1.3 Selection of Control Variables.

According to the relevant studies of previous scholars, it is known that economic development, the degree of opening to the outside world, urban and rural demographics, and government financial support have a greater impact on agricultural industrialization, so this study selects the four indicators shown in Table 3 as the control variables, and the specific variables are introduced as follows:

Table 3. Control variable selection and description.

Variable type	Variable name	Variable symbol	Measurement
Control variable	Agricultural fiscal expenditure	fis	Local fiscal expenditure on agriculture (billions of yuan) in logarithmic terms
	Economic development level	pgdp	GDP per capita (yuan per person) in logarithmic terms
	Urbanization level	urb	Urban population/total regional population (%)
	Opening-up degree	open	Total exports and imports/gross regional product (%)

3.1.4 Data Description.

The national panel data of 30 provinces excluding Tibet for the period of 2009 to 2021 are selected as the sample in this paper. The raw data involved in the paper are all sourced from China Statistical Yearbook, China Rural Statistical Yearbook, and China Financial Statistical Yearbook. Among them, the data on the number of agricultural leading enterprises are obtained from the list of key leading enterprises of agricultural industrialization monitored and qualified by the Ministry of Agriculture and Rural Development, and the blank years are obtained by smoothing the transition. Table 4 displays the descriptive statistics for the variables.

Table 4. Descriptive statistics of variables.

Variable	Obs	Mean	Std. Dev.	Min	Max.
AID	338	21.248	9.89	5.745	62.879
D	338	0.293	0.089	0.075	0.542
fis	338	6.144	0.608	4.058	7.2
pgdp	338	10.635	0.449	9.289	11.837
urb	338	54.945	9.233	29.884	74.629
open	338	9.052	13.301	0.011	76.981

3.2 Coupling Coordination Degree Model

In recent years, with the increasing attention to the "Three Rural Issues", the coupling coordination degree model has been widely used in related research as an effective tool to analyze the interaction between multiple systems and the level of coordinated development.

Therefore this paper through the coupling coordination model, measures agricultural "insurance + credit" coupling coordination degree D as an explanatory variable. The index reflects the development of agricultural insurance and rural credit coupling coordination.

$$D = \sqrt{C * T} \quad (1)$$

$$T = \alpha\mu_1 + \beta\mu_2 \quad (2)$$

In the above equation, D is the degree of coupling coordination, T is the comprehensive coordination index, α and β are the weights of the two subsystems of agricultural insurance and rural credit. It is considered that agricultural insurance and agricultural credit are equally important, so $\alpha=\beta=0.5$ is selected.

3.3 Double Fixed Effect Model

When dealing with panel data, the first step is to select the applicable model type. By performing the Hausman test and time effect test, the results show the presence of individual and time effects. Therefore, in this paper, we model the Double fixed effect model as follows:

$$\ln AID = \alpha_i + \beta_0 \ln D_{it} + \beta_1 \sum \theta X_{it} + \varepsilon_{it} + \gamma_t \quad (3)$$

In the equation, AID is the comprehensive rating index system of agricultural industrialization development constructed above, α_i is the individual effect, γ_t is the time effect, D_{it} is the degree of coordination of the coupling of agricultural "insurance + credit" as the explanatory variable, X_{it} is the control variable selected in this paper, and ε_{it} is the individual perturbation term.

4 Results

4.1 Estimated Results

Drawing on Cui and Zhao Danyu (2023)^[9], municipalities directly under the central government usually exhibit higher levels of economic development, more significant depth of industrial integration, and more open foreign economic patterns, which may pose potential systematic biases to the results of the regression analysis compared to other provinces. Therefore, this paper conducts a fixed-effects regression analysis after excluding the data of four municipalities from the original sample set, and Table 5 presents the regression results.

Table 5. Regression results.

Variable	(1)	(2)	(3)	(4)	(5)
	Ln AID	Ln AID	Ln AID	Ln AID	Ln AID
lnD	1.0764*** (0.0453)	0.8587*** (0.0809)	0.8968*** (0.1179)	0.0821** (0.0272)	0.0649*** (0.0200)
fis		0.1749*** (0.0400)	0.2360*** (0.0306)	0.1602** (0.0654)	0.0592 (0.0963)
pgdp		-0.4625*** (0.0767)	-0.2850** (0.1016)	0.5905*** (0.0992)	0.6571*** (0.0853)
urb		0.0266*** (0.0034)	0.0305*** (0.0011)	-0.0086 (0.0056)	-0.0118* (0.0058)
open		-0.0030** (0.0014)	-0.0082*** (0.0005)	0.0015* (0.0007)	0.0023*** (0.0006)
_cons	4.3294*** (0.0599)	6.4608*** (0.6946)	4.2515*** (1.0341)	-3.7484*** (0.6727)	-3.7646*** (0.5635)
N	338	338	338	338	338
r2	0.6266	0.6868	0.7298	0.8763	0.8957
Province	No	No	No	Yes	Yes
year	No	No	Yes	No	Yes

Note: Standard errors in parentheses.

From the results of the benchmark regression of the model, the coefficients of the regression results are positive and passed the significance level test. Table 5 (5) columns of the double fixed-effects regression model, the estimated coefficient is 0.0649, that is, at the 1% level, when the agricultural "insurance + credit" coupling coordination degree increases by 1%, the degree of agricultural industrialization increased by

0.0649%. Compared with columns (1) (2) (3) (4) in the table, the promotion effect decreases, but the goodness-of-fit is 0.8957, which is better, verifying that the coupled and coordinated development of agricultural “insurance + credit” can significantly promote the development of agricultural industrialization.

From the regression results of control variables, the coefficients of *fin* in columns (2) (3) (4) are positive, and all of them are significant at 5% significance level, indicating that the agricultural industrialization benefits from financial assistance. However, the regression coefficient in the two-way fixed-effects model in column (5) is 0.0592, but it fails the significance test, probably because there is the problem that the current financial fund allocation mechanism is not reasonable and efficient, which restricts the effect of financial support for agriculture to a certain extent. The level of economic development (*pgdp*) has a considerably positive regression coefficient after controlling for individual effects and passes the significance level test of 1% under the two-way fixed effect model. It shows that the coupling impact of agricultural insurance and rural finance is stronger in regions with higher levels of economic development, which supports the improvement of agricultural industrialization levels and is consistent with the predicted outcomes. The level of urbanization (*urb*) is significantly positive before controlling for individual effects, but the coefficient is negative and fails the significance test under the double fixed effects model, indicating that the effect of the level of urbanization on agricultural industrialization is unknown. The level of urbanization reflects the urban and rural population changes, the increase in the level of urbanization, on the one hand, rural population migration to the city, may lead to a relative shortage of rural labor force, thus inhibiting the development of the agricultural industry; another aspect, it will drive the level of development of the region's secondary and tertiary industries, which will increase the investment from all sides, expand the income of agricultural products. The degree of openness to the outside world (*open*) is significantly positive under the double fixed model, indicating that the increase in the level of openness to the outside world tends to significantly enhance the attraction of the region to high-end labor force and high-quality industrial resources, and this enhancement effect has played a positive role in the promotion of regional economy, especially in promoting the revitalization of industries in rural areas.

4.2 Robustness Test

4.2.1 Discussion on Endogenous Problems.

The coupled coordination of agricultural insurance and rural credit, the core explanatory variable in the above model, may have a two-way causality endogeneity problem. Therefore, this paper applies the two-stage least squares method (2SLS), specifically introduces the lagged period of the explanatory variables as instrumental variables to test the model, which ensures the exogeneity of instrumental variables and effectively circumvents the emergence of the problem of weak instrumental variables. The regression results are shown in Table 6.

Table 6. Endogenous test regression results.

Variable	(1)	(2)
	firstlnD lnD	second Ln AID
lnD		0.2069*** (0.0735)
L.lnD	0.6879*** (0.0408)	
fis	0.0568* (0.0321)	0.1639*** (0.04106)
pgdp	0.3180*** (0.0599)	0.4793*** (0.0771)
urb	-0.0091** (0.0038)	-0.0079* (0.0045)
TRA	0.0004 (0.0009)	0.0016 (0.0011)
Constant	-3.5818*** (-7.48)	-2.3515*** (0.720)
Observations	312	312
R-squared		0.962

Note: Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

It is found that after controlling for the endogeneity problem, the regression coefficient of the coupling coordination between agricultural insurance and rural credit is still positive at the 1% significance level. This indicates that agricultural "insurance + credit" coupled model still has a very obvious effect on the promotion of agricultural industrialization, which consistent with the conclusions above

4.2.2 Replacement of Explained Variable.

To avoid the effects of specific assignment methods, the agricultural industrialization (AID) is replaced with the agricultural industrialization score (AID_I) calculated using the coefficient of variation coefficient method. As an objective method of assigning weights, the core logic is to quantify the weights based on the degree of variation between the actual observed values and the pre-determined ideal values of each indicator. The results of the calculation of the indicators shown in Table 7.

Table 7. Weights of indicators under variation coefficient method (AID_I).

System of indicators	Variable name	Secondary indicators	Weights
industrialization of agriculture	Agricultural scaling up	Number of specialized farmers' cooperatives	0.193
		Number of State Key Leading Agricultural Enterprises	0.110

Agricultural specialization	Cultivated land per person engaged in agriculture (ha/person)	0.207
	Total power of agricultural machin- ery per hectare (kW/ha)	0.123
	Labor productivity in the primary sector (million yuan/person)	0.185
Industrial Ef- ficiency	Per capita production of major agri- cultural products (kg/person)	0.182

The variation coefficient method was used to recalculate the agricultural industrialization level score, replacing the original explanatory variables for additional tests, the regression results are shown in Table 8.

Table 8. Regression results with replacement of explained variable.

Variable	(1)	(2)	(3)	(4)	(5)
	Ln AID_I	Ln AID_I	Ln AID_I	Ln AID_I	Ln AID_I
lnD	1.0109*** (0.0438)	0.8264*** (0.0783)	0.8645*** (0.1227)	0.0656* (0.0313)	0.0448* (0.0228)
fis		0.1357*** (0.0387)	0.2011*** (0.0232)	0.1470** (0.0606)	0.0606 (0.0903)
pgdp		-0.4043*** (0.0742)	-0.2141* (0.1006)	0.6229*** (0.0946)	0.6767*** (0.0877)
urb		0.0250*** (0.0033)	0.0291*** (0.0013)	-0.0122** (0.0054)	-0.0147** (0.0056)
open		-0.0020 (0.0014)	-0.0075*** (0.0005)	0.0014* (0.0007)	0.0021*** (0.0007)
cons	4.2752*** (0.0579)	6.1498*** (0.6727)	3.7872*** (1.0643)	-3.8066*** (0.6651)	-3.8141*** (0.5453)
N	338	338	338	338	338
r ²	0.6129	0.6742	0.7270	0.8721	0.8951
Province	No	No	No	Yes	Yes
year	No	No	Yes	No	Yes

Note: Standard errors in parentheses.

Column (5) of Table 8 shows that the coefficient of the coupling coordination between agricultural insurance and rural credit under the two-way fixed-effects model is 0.0448 and passes the test of the significance level of 10%. That is, the more coordinated the development of the two subsystems, the higher the level of agricultural industrialization, which is in line with the expected hypothesis. Therefore, the conclusion is valid.

4.3 Heterogeneity Analysis

Due to the wide geographical area of China, different regions not only differ in economic level but also differ in agricultural development. So during our research, the

differences in geographical characteristics and social environment constitute factors that cannot be ignored. In this paper, the national region is divided into three regions: east, center, and west, as shown in Table 9. In order to explore the geographical differences in the impact of the coupling and coordination of agricultural insurance and agricultural credit on agricultural industrialization, we independently implemented a two-way fixed-effects regression analysis for these three regional sub-samples.

Table 9. Central, East and West regional divisions in China.

Region	Provinces and municipalities included
Eastern Region	Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, Guangxi, Hainan
Central Region	Shanxi, Nei Monggol, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, Hunan
Western Region	Sichuan, Guizhou, Yunnan, Shaanxi, Gansu, Ningxia, Qinghai, Xinjiang

Table 10. Regional Heterogeneity Regression Results.

	(1) Eastern Region	(2) Central Region	(3) Western Region
	Ln AID	Ln AID	Ln AID
lnD	0.3483*** (0.0936)	-0.1530 (0.1298)	-0.1645 (0.1072)
fis	0.1019 (0.0709)	-0.1060 (0.0986)	0.2177* (0.1303)
pgdp	0.5873*** (0.1325)	0.4426*** (0.1617)	1.1624*** (0.2005)
urb	-0.0095 (0.0077)	-0.0026 (0.0103)	-0.0001 (0.0180)
open	0.0017 (0.0013)	0.0090 (0.0066)	0.0248*** (0.0092)
_cons	-3.3737** (1.3584)	-1.2997 (1.5173)	-10.0387*** (2.0184)
N	117	117	104
r2	0.9807	0.9686	0.9447
r2_a	0.9754	0.9600	0.9279
Province	Yes	Yes	Yes
year	Yes	Yes	Yes

Note: Standard errors in parentheses.

From the analysis results in Table 10, the impact of the coupling coordination level of agricultural "insurance + credit" on agricultural industrialization in different regions shows different characteristics. Only the eastern region passes the significance test, and the regression coefficient is 0.3483 at the 1% significance level, which is higher than

the national level. This indicates that the coupling mode of agricultural "insurance + credit" in the eastern region will promote agricultural industrialization.

The central and western regions did not pass the significance test and the regression coefficients of the core explanatory variables were negative, indicating that the coupling model of agricultural insurance and rural credit has little impact on the development of agricultural industrialization. The reason for this is that the western region may not be suitable for the development of agriculture due to the geographical environment, and the effective arable land is insufficient. In the central region, although the land resources are rich, the climate environment is suitable, the foundation of agricultural development is good, and the primary industry accounts for a high proportion, but compared with the eastern region, the scale of agricultural insurance and rural credit are small, and the overall level of financial development is insufficient, which makes the coupling effect of agricultural insurance and rural credit poorer. At the same time, given that the eastern region has more agricultural "insurance + credit" pilot areas, the synergistic development of agricultural insurance and rural credit in this region shows a more significant synergistic effect and promotes the role of agricultural insurance and rural credit, but also from the side to reflect the effect of agricultural "insurance + credit" model to support agriculture. This also reflects the fact that the current agricultural "insurance + credit" model of supporting agriculture has more room for improvement.

5 Conclusions and Recommendations

Using the Double Fixed Effect model, this study derives the following primary conclusions from panel data covering 26 Chinese provinces between 2009 and 2021. Increasing the degree of coordination of agricultural "insurance + credit" coupling can effectively promote the level of agricultural industrialization. However, the coupling effect between the two is low and there are large differences between regions, so the following recommendations are made:

(1) Increase financial subsidies and enhance the efficiency of financial support for agriculture. The previous empirical results show that financial support can greatly contribute to the development of agricultural industrialization. Therefore, it is recommended to strategically adjust the financial resource allocation strategy and increase the financial inclination to the development of rural industry, which can not only enhance the overall effectiveness of financial support for agriculture, but also promote the synergy between agricultural insurance and agricultural credit, and further activate and efficiently utilize rural financial resources. At the same time, establish and improve the performance evaluation and supervision system to ensure the optimal allocation and efficient use of financial resources.

(2) Deepening the degree of opening up of the agricultural sector to the outside world and promoting the optimization and upgrading of the structure of the agricultural industry. The previous empirical results show that the degree of opening up to the outside world has a significant positive effect. First, actively introducing foreign advanced agricultural technology, equipment and management experience can help improve the scientific and technological content and efficiency of China's agricultural production and

promote the process of agricultural modernization. Secondly, we have continued to optimize the business environment, clarified the key areas for social capital investment, and stimulated investment vitality, which has provided a good investment environment and broad development space for agricultural industrialization. Thirdly, we have accelerated the development of the whole agricultural industry, determined the dominant position of characteristic industries, explored the multifunctionality of agriculture, and attracted domestic and foreign capitals to the countryside through the development of the processing industry of agricultural products, the rural service industry and other related industries, so as to realize the diversified and large-scale development of the industrialization of agriculture.

(3) Promoting the development of the coupled model of agricultural "insurance + credit" according to local conditions. From the results of the analysis of the heterogeneity, the degree of coordination of the coupling between different regions also has a large gap. From the actual situation, according to the different resource endowments and economic development levels of each region, we should explore the differentiated agricultural "insurance + credit" coupling mode. Relying on its economic and technological advantages, the eastern region should continue to innovate agricultural "insurance + credit" coupling products and agricultural financial service programs and enhance service efficiency and coverage through technological empowerment. The central region should gradually expand the scale of agricultural insurance and rural credit, and expand and deepen the pilot policy of the "insurance + credit" model, to attract more inflows of external capital, thereby stimulating the intrinsic vitality and growth potential of the rural economy. The Western region should continue to optimize the financial and tax subsidy policies, and at the same time, make use of the Internet platform to strengthen the publicity of local characteristic industries and leisure agriculture, to attract more credit funds and insurance resources to the western agricultural sector, forming a virtuous circle and promoting the transformation and upgrading of agriculture and high-quality development in the western region.

References

1. Liu Minlou, Zong Ying. Discussion on Industrial Policy for Small and Medium-sized Enterprises in China. *Contemporary Finance and Economics*, 2003, (4):101-103.
2. Wang Songqi, Guo Jiangshan. An empirical analysis of financial support for rural economic growth-Based on the structural perspective. *Financial Review*, 2012(6):1-11.
3. Chen Fang. Problems facing rural financial system reform and system construction in the process of rural revitalization. *Exploration*, 2018(03):163-169.
4. Hu Shilu. Dilemma and Countermeasures for the Development of Characteristic Agricultural Industrialization Based on Financial Support. *Agricultural Economy*, 2020, (07):96-98.
5. Zheng Jun, Zhou Yuxuan. Financial subsidy system innovation of agricultural insurance service rural revitalization strategy--A game analysis based on "agricultural management subject-insurance company-government". *Journal of Nanjing Audit University*, 2020, 17(05):61-71.

6. Zheng Jun, Sheng Kangli. Research on synergistic efficiency of agricultural insurance and agricultural credit in the context of rural revitalization strategy. *Journal of Shandong Agricultural University (Social Science Edition)*, 2021, 23(01):8-17+37+185.
7. Tang Yong, Lu Taisheng. Agricultural Credit, Agricultural Insurance and Agricultural Total Factor Productivity Growth--Based on the Perspective of Interaction Effect. *Journal of Harbin University of Commerce (Social Science Edition)*, 2021, (03):116-128.
8. Fu Lisa, Wang Sangui, Qin Tao. Income-generating effect of agricultural insurance and its mechanism. *China Population-Resources and Environment*, 2022, 32(12):153-165.
9. Zhao Danyu, Cui Jianjun. Re-measurement, spatio-temporal differences and influencing factors of multidimensional urban-rural gap. *Journal of South China Agricultural University (Social Science Edition)*, 2023, 22(05):112-127.
10. Yang Minghong, Sun Jiqiong. Analysis of Spatial Distribution and Influencing Factors of Agricultural Industrialization Development--Taking State Key Leading Enterprises of Agricultural Industrialization as an Example. *Financial Science*, 2008(07):103-110.

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