Agricultural-related Loans and Rural Revitalization ——Data from Yunnan Province

Chen Li[1], Piao Lisa[2], Lu Chong[3]

[1-3]Dianchi College of Yunnan University, Department of mathematics, Kunming, Yunnan, China

Abstract： The No.1 Document of the Central Government was officially released recently, calling for continuous investment of financial and social capital in agriculture and rural areas. Based on Yunnan Province, starting from the five contents of rural revitalization strategy, this paper selects 17 secondary indicators to construct the comprehensive index of rural revitalization in Yunnan Province, meanwhile, constructs the index of agriculture-related loan from the dimensions of scale and efficiency. On this basis, the relationship between these two indices is investigated empirically. The results show that the level of rural revitalization in Yunnan Province continues to improve, and the input level, scale and efficiency of rural loans all positively impact the development of rural revitalization, among which the effect of efficiency is the most significant. At the same time, the input level of rural loans also has a positive impact on industrial prosperity, the basic requirement of rural revitalization.

1. Introduction and Literature Review

In recent years, with the continuous promotion of China's industrial structure upgrading and transformation, even with the global impact of the covid-19 epidemic, China's total and average GDP still maintain a growth rate higher than the global level. On the other hand, as a large agricultural country, the income in urban and rural areas, the degree of development in the east and west still exists a large difference. In response to this, the Party Central Committee put forward the strategic decision of poverty eradication in 2015 and achieved its full victory in 2021. In order to continue to consolidate the achievements of poverty eradication and further realize the overall development of rural areas in China, the State Council of the Central Committee of the Communist Party of China issued the Opinions on the Effective Linkage between Consolidating and Expanding the Achievements of Poverty Eradication and Rural Revitalization in March 2021, emphasizing that the key point to realize the effective linkage between poverty eradication and rural revitalization is to handle the linkage of financial services policies. In the same year, the National Rural Revitalization Bureau, a new agency reformed from the State Council's Poverty Alleviation Office, came into being, and together with the General Office of the Ministry of Agriculture and Rural Affairs, jointly issued the Guidelines for Social Capital Investment in Agriculture and Rural Areas, emphasizing that social capital is an important support force to comprehensively promote rural revitalization and accelerate the modernization of agriculture and rural areas. On February 13, 2023, the No. 1 document of the Central Government was officially released. The document requires solid promotion of rural development, rural construction, rural governance and other key works, and levers financial and social capital to invest in agriculture and rural areas. It can be seen that financial support is of great significance to the rural revitalization. Improving the rural financial system and guiding financial institutions to allocate credit resources to the agricultural and rural areas will be an important driving force to solve the long-standing issues concerning " agriculture, rural areas and farmers " in China.

Sheridan uses empirical data from the United States to demonstrate that the lack of assets is the root of persistent poverty, and the lack of assets includes not only tangible assets such as money, but also intangible assets such as human capital, personal credit, and social networks[1].Yu Chunmiao et al. also pointed out that long-term sustainable development of rural financial support is the important path from poverty alleviation by developing industries to industrial prosperity[2]. Wu Benjian et al. found that financial poverty alleviation is more effective in alleviating long-term poverty and multidimensional poverty by comparing the performance of financial and fiscal poverty alleviation[3]. Using empirical data from all provinces in China, Cai Xing et al. concluded that financial development has a huge impact on promoting rural revitalization, however, there are significant geographical differences[4]. In addition, scholars in China have also conducted studies on the evaluation system and different methods of poverty alleviation. Zhang Ting et al.

*Corresponding author: [1]lilly881225@126.com

constructed three levels of rural revitalization indicators and their corresponding target values through theoretical analysis and Delphi expert scoring method[5]. Liu Jin et al. constructed the evaluation index system of rural revitalization in Sichuan Province[6]. Wang Feiyi researched and discussed the realization path of rural financial services from the perspective of rural revitalization[7]. Zhou Shuang et al. proposed to solve the problem of financial needs in poor areas through credit, insurance and funds of financial institutions[8].

In summary, relevant researches have been conducted in recent years on the influence of financial input on rural revitalization, the construction of rural revitalization index and the model of rural financial investment. But most studies prefer to more qualitative analyses, some few quantitative researches focus on the whole country, lacking specific analysis of a particular province. In addition, for the assessment of financial input capacity, there are mainly two methods, one is to take the amount of deposits and loans together from the agricultural credit cooperatives, the other is to take the total amount from all financial institutions. Both of these calculation methods ignore the fundamental influencing factor of agriculture-related loan, thus there may be bias in the measurement of agriculture-related financial level. As a western frontier province in China, Yunnan Province is relatively backward in economic development and has a heavy burden of rural revitalization. Therefore, it is urgent and important to thoroughly study the development level of rural revitalization and the influence of financial investment on rural revitalization in this region.

2. Mechanistic analysis and research path

2.1. The mechanism of how financial input affecting rural revitalization

The 19th Party Congress put forward five specific requirements for rural revitalization, namely, industrial revitalization, ecological livability, rural civilization, effective governance and affluent living, and rural financial investment will affect these five dimensions, thus promoting the revitalization of rural areas. Although Yunnan Province is rich in natural and has highland characteristic agricultural products, the added value of rural industrial products is low, water conservancy infrastructure construction is still lagging behind, agricultural machinery and other facilities still cannot fully meet the industrial needs. The traditional finance has the problem of financial exclusion[9], it is difficult to put funds to the relatively backward rural areas. The financial investment for rural areas, such as agricultural loans, can solve the problem of agricultural industry development due to the lack of credit, which is the most basic requirement of rural revitalization strategy and the driving force for rural areas.

Most of the villages in Yunnan Province are located in remote and backward mountainous areas, with imperfect infrastructure, poor living environment conditions and insufficient ecological protection awareness, all of which will reverse inhibit the development of rural revitalization. Put capital into environment reconstruction through financial investment can promote rural economy in the direction of green and healthy and attract talents by creating better human conditions.

Knowledge, talent and rural revitalization are closely linked. The more backward area is, the lower education level, and the more lacking of rural civilization. Invest in education in rural areas, educate the farmers, cultivate high-quality teams with knowledge of technology and management, improve the overall education level and boost the development of rural industries.

Rural governance is a necessary condition of rural revitalization. On one hand, the implementation of financial inclusion will promote the transparency of rural market information, so as to force the reform of rural grassroots organization and continuously improve the construction of rural rule of law and moral governance; on the other hand, it will guide the inflow of capital to develop and strengthen rural collective economy, vigorously develop rural special industries, enhance the value of industrial chain and increase economic income.

Affluent living is the underlying aim of the rural revitalization strategy, and the most difficult and onerous task remains in rural areas. The investment of credit funds has prompted the modernization of agriculture, and the construction of rural civilization, ecological protection and legal construction has also been comprehensively improved, enabling more rural residents to work hard and get rich.

2.2. Research path of this paper

Based on the previous analysis, rural financial inputs theoretically affect industrial revitalization，ecological livability and other aspects in rural areas of Yunnan Province to varying degrees. The capital input mainly comes from financial institutions' loans targeting to rural, agricultural and farm household. Therefore, this paper measures the level of rural-related loan inputs from two perspectives: the relative scale and efficiency of rural-related loans in local and foreign currencies of financial institutions in Yunnan province, and uses the comprehensive index of rural revitalization as the research object to specifically examine whether rural-related loans play a role in the development of rural revitalization. Research path is shown in Figure 1.

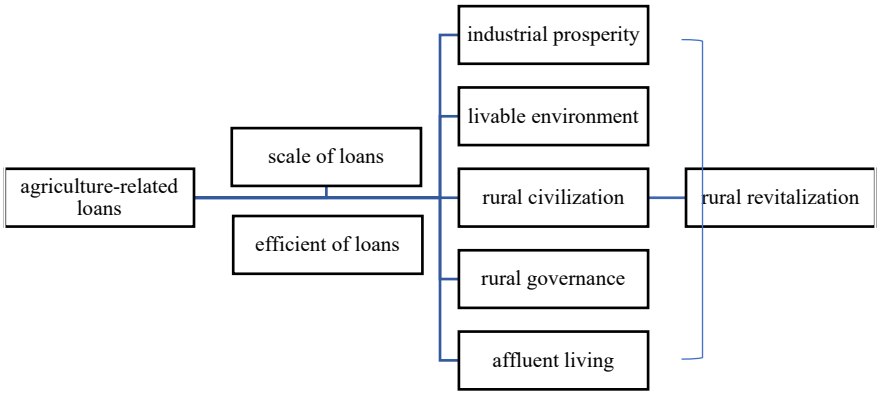

Figure 1 Path of impact: agriculture-related loans on the rural revitalization

3. The level of rural revitalization and agriculture-related loans in Yunnan Province

3.1.Data sources and measurement methods

This paper selects different indicators under the five dimensions of rural revitalization from 2006 to 2021, as well as data related to agricultural loans. The data are obtained from China Statistical Yearbook, China Urban and Rural Construction Statistical Yearbook, China Rural Statistical Yearbook, China Population and Employment Statistical Yearbook, Wind information, etc. Some missing data is interpolated or regressed to refill.

Among the existing literature, Guo Haojie et al. developed a set of evaluation index system for rural revitalization in Yunnan Province, combining the Delphi method with the AHP method together[10]. Since the AHP method is a subjective assignment, in order to avoid the interference caused by artificial scoring, this paper adopts the entropy value method[11-12], which is an objective assignment based on the information of data itself to measure the index of rural revitalization level. Further, the same method is also applied in calculation of the level of agriculture-related loans. The specific steps of the entropy method are as follows.

Step 1, the Normalization process. Considering that the units of each indicator are not completely uniform, all kinds of sub indicators are converted from absolute to relative quantities before the calculation of comprehensive indicators. Since the index system constructed in this paper are all positive indicators (see later for details of the index system), the following algorithm is adopted for normalization.

$$y_{ij} = \frac{x_{ij} - min(x_{ij}, x_{2j}, \cdots, x_{nj})}{max(x_{ij}, x_{2j}, \cdots, x_{nj}) - min(x_{ij}, x_{2j}, \cdots, x_{nj})} \quad (1)$$

where i represents chronological order, j represents sub indicators$(i = 1,2, \cdots n; j = 1,2, \cdots m)$;

x_{ij}, y_{ij} represent the original and normalized data, respectively.

Step 2, calculate the entropy value e_j of each sub indicator.

$$e_j = -k \sum_{i=1}^{n} p_{ij} \ln(p_{ij}), \quad j = 1,2, \cdots m \quad (2)$$

where $k = 1/\ln(n)$, $k > 0$;

$p_{ij} = y_{ij} / \sum_{i=1}^{n} y_{ij}$, represents the value proportion of an indicator in current year;

the entropy value $e_j \geq 0$.

Step 3, calculate the weight of each sub indicator w_j.

$$w_j = d_j / \sum_{j=1}^{m} d_j, \quad j = 1,2, \cdots m \quad (3)$$

where $d_j = 1 - e_j$, denotes the information entropy redundancy, i.e., the information utility value, and the larger the value the higher the weight of the corresponding indicator.

Step 4, calculate the composite scores of indicators in different years.

$$s_i = \sum_{j=1}^{m} w_j y_{ij}, \quad i = 1,2, \cdots n \quad (4)$$

3.2 Evaluation system construction and measurement results of rural revitalization

3.2.1.Construction of Rural Revitalization Evaluation System

Taking the five major contents of rural revitalization strategy as fundamental basis, referring to the existing scholars' research in constructing the revitalization system, as well as combining the main indicators covered in the Yunnan Provincial Rural Revitalization Strategic Plan (2018-2022), and considering the principles of data availability, comprehensiveness and consistency, 17 secondary indicators were selected to evaluate the development level of rural revitalization, as shown in Table 1.

Table 1 Evaluation system of rural revitalization in Yunnan Province

Five major contents	Secondary indicators (units)
Industrial prosperity	Total grain production (million tons) Total power of agricultural machinery (million kilowatts) Total output value of agriculture, forestry, husbandry and fishery (billion yuan) Rural employees (10,000 people)
Livable environment	Number of public toilets (seats) Greening coverage (%) Number of rural health technicians per 10,000 people (persons) Water supply penetration rate (%)

Rural Civilization	Population coverage of rural TV programs (%) Rural broadband access users (million) Rural residents' per capita expenditure on education and entertainment (yuan)
Rural governance	Number of village and township construction management agencies (number) Village management full-time staff (people) Number of townships with master plans (number)
Affluent living	Per capita disposable income of rural residents (yuan) Per capita consumption expenditure of rural residents (yuan) Per capita residential floor area (square meters)

3.2.2.The level of rural revitalization

According to the calculation process of entropy value method, the information entropy of each secondary index is calculated by using the value of each index in Yunnan Province for each year from 2006 to 2021. Results are shown in Table 2.

Table 2 Information entropy, information utility values and weighting coefficients

Sub indicators	Information entropy e_j	Utility value d_j	Weight w_j
Total grain production	0.9169	0.0831	4.86%
Total power of agricultural machinery	0.9307	0.0693	4.05%
Total output value of agriculture, forestry, husbandry and fishery	0.8947	0.1053	6.15%
Rural employees	0.9288	0.0712	4.16%
Number of public toilets	0.9152	0.0848	4.96%
Greening coverage	0.907	0.093	5.44%
Number of rural health technicians per 10,000 people	0.9239	0.0761	4.45%
Township water supply penetration rate	0.8703	0.1297	7.58%
Population coverage of rural TV programs	0.9222	0.0778	4.54%
Rural broadband access users	0.8246	0.1754	10.25%
Rural residents' per capita expenditure on education and entertainment	0.8226	0.1774	10.37%
Number of village and township construction management agencies	0.9368	0.0632	3.69%
Village management full-time staff	0.9166	0.0834	4.88%
Number of townships with master plans	0.959	0.041	2.39%
Per capita disposable income of rural residents	0.8924	0.1076	6.29%
Per capita consumption expenditure of rural residents	0.8932	0.1068	6.24%
Per capita Residential floor area	0.8338	0.1662	9.71%

Further, the overall development level of rural revitalization in Yunnan Province from 2006-2021 was measured based on the values in Table 2. Results are shown in Table 3 and Figure 2.

Table 3 Entropy value method to measure the level of rural revitalization

Year	The level of rural revitalization	Year	The level of rural revitalization
2006	0.0879	2014	0.3941
2007	0.0568	2015	0.4462
2008	0.0913	2016	0.5114
2009	0.1439	2017	0.5908
2010	0.2171	2018	0.6856
2011	0.2525	2019	0.746
2012	0.3006	2020	0.8203
2013	0.3329	2021	0.9697

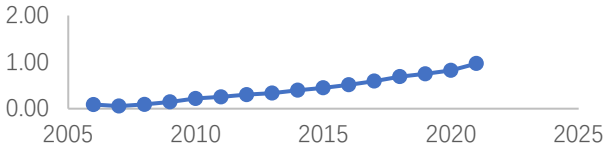

Figure 2 Changes in the level of rural revitalization in Yunnan Province, 2006-2021

Based on the results in Table 3, it can be concluded that the level of rural revitalization in Yunnan Province has steadily increased in the past 20 years. Combined with the trend in Figure 2, it can be found that along with the China's rural revitalization strategy in 2017, the level of rural revitalization shows an accelerated upward process.

3.3.Composition and measurement of the agriculture-related loans

3.3.1.Composition of the agriculture-related loans

Based on the previous contents of this paper, in order to analyze the impact of agriculture-related loans on rural revitalization more deeply, further research is conducted from two perspectives, namely, the scale and the efficiency of agriculture-related loans. The relative scale of farm-related loans is calculated by the ratio of the balance of farm-related loans to GDP of Yunnan Province, which indicates the amount of farm-related loans invested per unit of gross economic output; the efficiency of farm-related loans is calculated by the ratio of the balance of farm-related loans to the amount of savings deposits of urban and rural residents, which indicates the amount of farm-related loans converted from per unit of savings.

3.3.2.Measurement of the agriculture-related loans

Using the entropy method as before to calculate the weights of agriculture-related loan scale and efficiency, the results are 60.08% and 39.92%, respectively. Further, the comprehensive level of agriculture-related loans for each year from 2006 to 2021 was calculated, as shown in Table 4.

Table 4 Entropy value method to measure the level of agriculture-related loan inputs

Year	The level of Agricultural-related loan	Year	The level of Agricultural-related loan
2006	0.17921	2014	0.28875
2007	0.18402	2015	0.3096
2008	0.19646	2016	0.31726
2009	0.29085	2017	0.31585
2010	0.30254	2018	0.29669
2011	0.28662	2019	0.28735
2012	0.28855	2020	0.29905
2013	0.28369	2021	0.30403

4. The impact of agriculture-related loan inputs on rural revitalization

4.1.Model Setting

Considering that there may be a two-way causal relationship between the level of rural revitalization and the level of rural-related loans, and that the development status of rural revitalization in the previous period may affect the current period, this paper chooses to use GMM to study the influence of rural-related loans on rural revitalization, while adding a one-period lag of rural revitalization to the explanatory variables. The constructed model is:

$$rural_t = \beta_0 + \beta_1 \cdot Rural_{t-1} + \beta_2 \cdot finance_t + \beta_3 \cdot control_{it} + \varepsilon_t \quad (5)$$

Where $Rural_t$ is the dependent variable to be studied in the model, denotes the level of rural revitalization; $rural_{t-1}$ is the level of rural revitalization in previous period; $finance_t$ denotes the level of agricultural-related loan inputs, and is the core explanatory variable; $control_{it}$

represents a series of control variables; ε_t denotes the random disturbance.

4.2 Variable description and descriptive statistics

4.2.1.Variable Description

(1) Control variables

①Economic development level. The indicator is selected as GDP per capita in Yunnan Province, which is denoted as lngdp. The logarithm is taken to eliminate the possible heteroskedasticity in the time series data. Theoretically, the total economic volume grows over time and will positively contribute to the level of rural revitalization.

②Village construction inputs. The indicator is selected as the amount of village road and bridge inputs in Yunnan Province and taken as logarithm as well, which is denoted as lnroad. theoretically, village road construction will promote local revenue and boost the economy, but there is also a possibility that the improvement of road traffic will lead to loss of people and thus have a negative effect on village revitalization.

③Tourism development level. The indicator is the total tourism revenue of Yunnan Province and is logarithmic, denoted as lntravel. Yunnan Province is a large tourism province and is relatively rich in rural tourism resources, but it remains to be tested whether the development of tourism brings positive spillover effects to rural areas or not.

④Demographic Structure. The indicator is the old-age dependency ratio, also known as the elderly dependency coefficient, which refers to the ratio of the number of elderly people to the number of working-age people in a given population, usually expressed as a percentage, denoted as odr. The higher the old-age dependency ratio, the higher the pressure on old-age in the region. So, theoretically, the increase of this indicator will theoretically inhibit the increase of the rural revitalization, in an inverse relationship.

(2) Explanatory and explanatory variables

①The current level of agriculture-related loan, denoted as $finance$, is the core explanatory variable of the model.

②The previous phase of rural revitalization level, recorded as $L.rural$.

③The current level of rural revitalization, recorded as $rural$.

The specific values of the explanatory and explained variables were taken using the data in Table 3 and Table 4. The data of control variables were collected through the National Bureau of Statistics, the Yunnan Provincial Statistical Yearbook, wind, etc.

4.2.2.Descriptive statistics of variables

A statistical description of the main variables mentioned above is shown in Table 5.

Table 5 Descriptive statistics of variables

Name	Minimum value	Maximum value	Average value	Standard deviation	Median
rural	0.003	0.170	0.096	0.056	0.119
finance	0.179	0.317	0.277	0.046	0.290
lngpd	9.101	10.963	10.087	0.571	10.176
lnroad	11.399	14.502	12.968	0.899	13.061
lntravel	6.103	9.309	7.774	1.082	7.772
odr	10.560	16.230	11.954	1.555	11.580

4.3.Analysis of the empirical results

The endogeneity problem is that the endogenous variables are correlated with the model error values. In order to avoid biased estimation due to possible serious endogeneity problems, the systematic GMM method is used in this paper to obtain more robust estimation results.

When using GMM estimation, the following three issues need to be noted: ①Wald chi-square test is used to test whether the GMM model is meaningful, if the model passes the Wald chi-square test ($p<0.05$), it means that the model is meaningful, and vice versa; ②model R-square value to analyze the model fit; ③over-identification Hansen J test was used to test the exogeneity of the

instrumental variables, the original hypothesis was "all instrumental variables are exogenous", if the p-value is greater than or equal to 0.05, then all instrumental variables are exogenous, and the instrumental variables were selected reasonably. The GMM estimation results are shown in Table 6.

Table 6 Summary of model regression results

	①rural	②rural	③rural	④ industry
Constants	-0.482** (-5.642)	-0.484** (-5.749)	-0.448** (-4.430)	-0.482** (-5.642)
finance	0.090** (3.660)	-	-	0.090** (3.660)
fin-scale	-	0.058** (3.741)	-	-
fin-eff	-	-	0.502** (2.788)	-
L.rural	0.786** (7.662)	0.783** (7.734)	0.839** (6.883)	0.786** (7.662)
lngdp	0.078** (7.547)	0.078** (7.682)	0.074** (5.996)	0.078** (7.547)
lnroad	-0.003* (-2.362)	-0.003* (-2.370)	-0.004* (-2.255)	-0.028** (-7.806)
lntravel	-0.028** (-7.806)	-0.028** (-7.886)	-0.029** (-6.785)	-0.003* (-2.362)
odr	-0.003** (-2.840)	-0.003** (-2.902)	-0.003* (-2.089)	-0.003** (-2.840)
R^2	0.996	0.996	0.995	0.996
Adjust R^2	0.993	0.993	0.991	0.993
Wald χ^2	p=0.000	p=0.000	p=0.000	p=0.000
Hansen J test	p= 0.608	p=0.617	p=0.539	p=0.608

* p<0.05, ** p<0.01; t-values in parentheses.

Table 6 contains four sets of regression results. Overall, all groups passed the Wald chi-square test, indicating that all four groups of regression models were constructed in a meaningful way. In addition, for the issue of exogeneity of instrumental variables, the results of Hansen J test show that all accept the original hypothesis, indicating that the selection of instrumental variables is reasonable. Specific analyses of the coefficients and significance are as follows.

Group① is the baseline regression obtained with the rural revitalization level as the explanatory variable, the level of agriculture-related loan and lagged one-period rural revitalization as the explanatory variables, with lngdp, lnroad, lntravel, and odr as the control variables. The results show that the regression coefficient of the core explanatory variable, agriculture-related loan input level, is 0.09, which positively and significantly affects the level of rural revitalization, in line with theoretical expectations. The regression coefficient of GDP per capita is 0.078, which positively and significantly affects the level of rural revitalization, as expected; the regression coefficient of elderly population ratio is -0.003, which negatively affects the development of rural revitalization, as expected; the regression coefficients of tourism income along with the road and bridge input are negative but extremely small in absolute value, indicating that these two indicators have a negative spillover effect on the level of rural revitalization in Yunnan Province, but the inhibitory effect is weak. The reason may be that the increase of tourism income and the improvement of road traffic in Yunnan Province have further broken the barriers between villages and cities, and the rural people, especially the skilled labor force, has experienced labor loss, thus inhibiting the development of rural economy to a certain extent.

Group② and group③ has decomposed the core explanatory variables into two dimensions: input scale and input efficient of agriculture-related loan, denoted as fin-scale and fin-eff respectively. The results show that both scale and efficiency of farm-related loan have positive and significant effects on rural revitalization, and from the quantitative value of the regression coefficients(0.052 and 0.058, respectively), the efficient of agriculture-related loan has greater impact, which indicates that the higher the conversion rate of residents' savings deposits into farm-related loans, the more conducive it is to rural revitalization.

Group④ replaced the explanatory variable with industrial prosperity, denoted as industry, which is the most basic and critical component of rural revitalization strategy. This step can both test the robustness of the regression model by replacing the dependent variable and examine whether the level of agriculture-related loans still positively promotes industrial prosperity or not. The results show that after replacing, the level of agriculture-related loans still positively and significantly affects the development of rural industries in Yunnan Province.

5. Conclusion and Standpoints

At present, a few empirical studies on rural revitalization focus on the national macro level, and draw similar conclusions that there are great differences in the level of rural revitalization in China's eastern, central and western regions. Based on Yunnan Province, this paper studies the relationship between the input level of rural loans and rural revitalization from a micro level. First, starting from the five major contents of rural revitalization, 17 secondary indexes were selected to calculate the annual rural revitalization index from 2006 to 2021 with the entropy method. Secondly, considering the two dimensions of input scale and input efficiency, the comprehensive input level of each year is calculated. Finally, using GMM model to eliminate the possible endogenous effects, and four sets of regression results were obtained. To sum up, this paper draws the following conclusions:

Primarily, the level of rural revitalization in Yunnan Province increased year by year and had an obvious acceleration after 2017. Secondly, the input level, scale and efficiency of agriculture loans all have positive impacts on rural revitalization. Besides, the input

efficiency, that is the conversion rate of household savings deposits into agriculture-related loans, has a bigger impact. Thirdly, the agricultural-related loans can also promote the rural industries in a positive way. Fourthly, the per capita GDP of Yunnan province has a positive effect on rural revitalization, whereas the ratio of elderly population has a negative effect.

Based on the empirical analysis and conclusions, this paper has also drawn the following enlightenment:

Firstly, increase the issuance of agriculture-related loans. With the increase of investment in rural infrastructure, the demand for capital will become more and more urgent. With the reform of corporate system and listing financing, China's agriculture-related commercial banks have shifted their businesses away from agriculture-related fields[13]. At the same time, the financial branches set up in rural areas are not perfect in terms of business scope, capital scale and staffing skills. Therefore, after an assessment of credit risk, commercial banks should take the responsibility to increase funds to support rural construction.

Secondly, continuously improve inclusive finance and build more digital financial infrastructures in rural areas.

Digital inclusive finance combines digital technology with inclusive finance, reduces service and transaction costs, and uses information technology to depict credit characteristics of different users to carry out peer-to-peer credit business. It is helpful for farmers and small enterprises in rural areas, since they are not easy to get approval in traditional credit granting[14]. The Yunnan Provincial government should construct the digital infrastructure in rural areas, and cooperate with financial institutions to educate the farmers of digital financial knowledge, so that farmers can truly benefit.

Thirdly, financial support for the development of rural industries to achieve “self-hematopoietic”. From the perspective of long-term stability, industrial prosperity is the fundamental way to realize endogenous economic growth in poor areas, and it is also critical for the ultimate realization of rural revitalization. The expansion of industry needs capital, and capital allocation should abide by the law of market economy. Therefore, it is crucial for relevant departments to guide social capital and banking credit funds into rural industries properly and efficiently.

Fourthly, increase the total output and the employment rate of Yunnan province. The empirical results show that both the increase of per capita GDP and the decrease of old-age dependency ratio can promote rural revitalization in Yunnan Province, that is because the increase in GDP may lead to an increase in agriculture-related loans, and the increase in employment rate will bring down the old-age dependency ratio, which could alleviate the burden of old-age care in rural areas.

Lastly, increase the transportation construction investment in rural areas and continue to develop rural tourism. The empirical results show that road and bridge investment as well as tourism income, both have negative but little impacts on rural revitalization. However, in the long run, with the continuous improvement of road transportation, natural and cultural tourism industries in rural areas will be boosted, and also can attract more human capital to flow into and stay in rural areas, contributing to rural revitalization.

Acknowledgments

1. Realization path and risk prevention of "capital sinking" in underdeveloped areas under the Strategy of Rural
Revitalization" (Project No. 2021XZD04);
2. Research on Intelligent Tourism Recommendation Algorithm Based on Yunnan Attractions Data (Project No. 2022XZD03);
3. Curriculum ideological and political construction project: Multivariate statistics. (Project No. 2021XJBM063).

Author information:

Chen Li: FRM certified, Lecturer in Dianchi college of Yunnan university. lilly881225@126.com
Piao Lisa: Associate Professor in Dianchi college of Yunnan university. 22378551@qq.com
Lu Chong: Lecturer in Dianchi college of Yunnan university. 937040498@qq.com

References

1. Sheridan, M. Assets and the poor: A New American Welfare Policy [M]. New York: M.E. Sharpe, Inc, 1991.25-74.
2. Yu, Chunmiao, Ren Changqing. Rural financial support for industrial development: experience in poverty eradication and insights into rural revitalization[J]. The Economist,2021, (02).
3. Wu, Benjian, Ge Yuhang, Ma Jiujie. A comparison of the performance of financial and fiscal poverty alleviation in the period of precise poverty alleviation--based on the perspective of poverty level differences and multidimensional poverty among poverty alleviation targets[J]. China Rural Economy,2019, (7).
4. Cai Xing, Cai Haishan, Zhao Jiazhang. An empirical study on the impact of financial development on rural revitalization development[J]. Contemporary Economic Management, 2019(8):1-9.
5. Zhang Ting, Li Minrong, Xu Yanmei. Construction and empirical study of rural revitalization evaluation index system[J]. Management World, 2018(08):1-9.
6. Liu Jin, Li Zhen, Zhang Zhong, Meng Qingsheng. Construction and empirical analysis of the evaluation index system of rural revitalization in Sichuan Province[J]. Western Economic Management Forum.2021(6):1-13.
7. Wang Feiyi. Research on the innovation of rural financial services in the context of rural revitalization[J]. Journal of Changchun College of Engineering (Social Science Edition), 2020(03).
8. Zhou Shuang, Liu Peng. Research on the innovation of financial precision poverty alleviation in poor areas in China[J]. Shanghai Finance,2017, (01).

9. Tian Lin, Zhang Yuanyuan, Zhang Shijie. Research on the dynamic impact of digital inclusive finance on rural revitalization--a test based on systematic GMM and threshold effect[J]. Journal of Chongqing University,2022(3):25-38.
10. Guo Haojie, Zhang Wei, Zhang Deliang. Determination and analysis of the realization degree of rural revitalization in Yunnan Province[J]. Journal of Yunnan Agricultural University (Social Science Edition).2019(3):5-11.
11. Chen Wei, Xia Jianhua. Optimal weight assignment method by combining subjective and objective weight information[J]. Practice and understanding of mathematics, 2007, 37(001):17-22.
12. Zhao Guangyao. Research on the dynamic impact of rural finance on rural industrial revitalization in Henan Province -- an empirical analysis based on TVP-VAR model[D]. Lanzhou: Lanzhou University, 2022.
13. Wang Yan, Tian Zhihong. How to implement financial services for rural revitalization--an empirical reference based on the evolution of financial support policies for agriculture in Japan[J]. Modern Finance Discussion. 2020(05):124-125.
14. Guo Shengtie, Yao Yucheng. Research on financial support for high-quality agricultural development in the new era[J]. Economic Vertical and Horizontal, 2014(04):95-102.