BioTechnology

An Indian Journal

FULL PAPER

Relations and effect analysis on the development of agricultural policy-oriented finance and rural economic growth

Liqing Zhang
Xi'an International University, Shanxi Xi'an 710077, (CHINA)

ABSTRACT

The development of agricultural policy-oriented finance is closely and concretely related to the economic growth in rural area. Research in this field should start with the general development situation of agricultural policy-oriented finance, proceed specific research on the building of China's agricultural policy-oriented institution and relevant business scope of finance, so as to make internal relation between rural economy and policy-oriented finance clear. Then further study the status quo of supporting agriculture of agricultural policy-oriented finance in order to show the whole development trend of agriculture-supporting loan structure in China's rural financial institution. Afterwards, specifically analyze the development trend of making progress while keeping stable of the entire financing to find the role of independent financing played on the development of agricultural financing. At last, expound the positive effects of agricultural policy-oriented finance on rural economic growth through empirical analysis. During this, several factors are involved, such as stationarity test of data, building of error correction model, Granger causality test and impulse response functions, to fully show the impetus agricultural policy-oriented financing gave to rural economic growth. This is the main thought of the research in this field, and it shows the main goal and research content.

KEYWORDS

Agricultural policy-oriented finance; Rural economic growth; Specific relation; Effect degree.

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INTRODUCTION

As far as the rural economic development is concerned, the development of agricultural policy-oriented finance effectively widens the approach of capital source and has positive influence on the expansion of application area of its agricultural fund. Research in this field involves several sectors, such as general development situation and agriculture-supporting status of agricultural policy-oriented finance, financing business which makes progress while keeping stable, and empirical analysis, showing scientificity and rationality.

GENERAL DEVELOPMENT SITUATION OF AGRICULTURAL POLICY-ORIENTED FINANCE

Establishment of agricultural policy-oriented financial institutions

Technically, China built it agricultural policy-oriented financial system at the end of the last century, later than other countries, upgrading agricultural industry gradually and starting reform in agricultural system. This changed the rural financial system a lot and effectively built modern service-type agricultural financial institution. In 1994, China launched a special file about this program to officially set up Agriculture Development Bank of China after strict approval, making its nature more clear. The bank is set up to provide effective service [1] to financing method and rural economic development according to national laws and regulations and relevant policies based on state credit. Since its establishment, the bank carries out the thought of financial development consistently and persists with the relevant principles unwaveringly, ensuring the implement of macro control of China's economy. This meets the new needs of China's modern agriculture development and plays an important role on serves for agriculture, rural areas and farmers. By the end of April, 2014, there are 31 provincial branches, 303 prefectural branches and 1688 county-level branches in the agricultural policy-oriented financial system, and its business outlets are set up in all cities and counties.

BUSINESS SCOPE OF THE AGRICULTURE DEVELOPMENT BANK OF CHINA

Now, Agriculture Development Bank's business covers 5 respects: credit business, financing business, clearing business, intermediate business and international settlement business. Credit business is the core business of the bank as well as one of the basic businesses. Others are financial service programs upgrading with the rapid development of economic society to promote the reform. All of these businesses, under the state macro-control, take the service for agriculture, rural areas and farmers as basic service, making this bank different from other commercial banks.

Table 1.Aid-agriculture loan structure of rural financial institution (trillion, %)

Year	total agricultural loan	balance of ADBC loan	rate	agricultural loan of agriculture bank	rate	agriculture loan of rural credit union	rate
1994	0.620	0.356	57.47	0.183	29.50	0.081	13.03
1995	0.800	0.469	58.57	0.223	27.82	0.109	13.62
1996	1.026	0.625	60.93	0.252	24.58	0.149	14.49
1997	1.353	0.864	63.86	0.305	22.51	0.184	13.63
1998	1.328	0.709	53.43	0.352	26.54	0.266	20.03
1999	1.395	0.727	52.14	0.364	26.07	0.304	21.79
2000	1.369	0.740	54.06	0.270	19.73	0.359	26.21
2001	1.455	0.743	51.07	0.270	18.58	0.442	30.35
2002	1.736	0.737	42.43	0.442	25.44	0.558	32.13
2003	1.855	0.690	37.21	0.457	24.63	0.708	38.16
2004	2.032	0.719	35.39	0.464	22.82	0.849	41.79
2005	2.369	0.787	33.23	0.575	24.26	1.007	42.52
2006	2.596	0.884	34.07	0.501	19.31	1.211	46.63
2007	2.984	1.022	34.26	0.566	18.96	1.396	46.78
2008	3.403	1.219	35.83	0.602	17.68	1.582	46.49
2009	3.899	1.451	37.22	0.828	21.23	1.620	41.55
2010	4.419	1.671	37.81	1.016	22.99	1.732	39.20
2011	4.900	1.874	38.24	1.182	24.12	1.844	37.64
2012	5.489	2.185	39.81	1.351	24.61	1.953	35.58

Status quo of agriculture supporting of agricultural policy-oriented finance

China's rural financial system is an agricultural policy-oriented institution with Agriculture Development Bank of China as its main part, rural commercial finance and credit union as branches, showing the features of rural finance. ADBC and rural credit union contribute a lot in loan transaction, but with different proportions. Table 1 shows, the proportion of

ADBC in policy-oriented finance keeps large since 1994, as well as its rate in credit allocation. This rate peaked in 1997 with a total credit of 863.7 billion yuan, accounting 63.86%. However, as the grain reform accelerating, the grain market started marketization, reducing the loan ratio of ADBC. Until 2006, this ratio began to increase. ADBC came out at the top again because of its highest loan ratio in 2011. At the same time, the rate of support for agriculture of agricultural policy-oriented finance keeps above 35% of the economy, sometimes more than 60%. While the loan of ADBC keeps around 20% without big fluctuate, but it decreases a little due to the commercialization of agricultural bank[2]. The aid-agriculture credit rate of rural credit union shows upward tendency in recent years mainly because the widespread service outlets increase its deposit. The aid-agriculture rates from 2003 to 2010 are the highest, showing that rural credit union and ADBC can benefit the rural economy jointly.

Figure 1 shows the relation between aid-agriculture loan of rural financial institution and the gross output value of agriculture. Before 2004, agricultural policy-oriented finance increased by keeping pace with gross output value on both the size of loan and fitting chart, showing agricultural policy-oriented finance can drive the development of commercial finance and has positive effects on cooperation [3]. But after 2004, some policy-oriented financial industries like rural credit union exceeded cooperative finance and fit gross output value better due to changes in grain market. In conclusion, agricultural policy-oriented finance is more important for agriculture supporting. Policy-oriented financial corporation played a positive role which cannot be replaced by any other financial system on China's rural economic growth since its establishment, showing increasingly importance rather than peripherization.
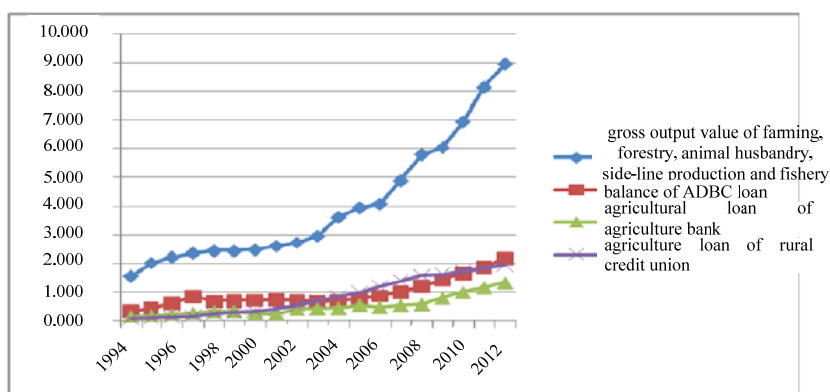

Figure 1.Trend of aid-agriculture loan balance of rural financial institution and gross output value of agriculture (trillion yuan)

ADVANCE FINANCING WITH STABILITY

With the stable increase in financing, financing capability is also improved in three respects. Firstly, proportion of self-financing keeps rising. It reached 90% in the last quarter of 2012, 2.1% higher than previous years. Secondly, financial bonds are issued successfully. In 2012, China's rural bank issued 19th policy-oriented bonds, and raised 465 billion yuan, 177.3 yuan more than previous years. At the same time, Hong Kong raised 6 billion yuan for agricultural policy-oriented fund. At last, average daily balance of low-cost deposit increases rapidly and deposit rises greatly (see Figure 3). At the end of 2012, total balance of RMB business reached 419.62 billion yuan, and average daily deposit reached 430.3 billion yuan, increasing by 1.1%, up by 4.8 billion yuan. In this, the deposit from enterprises and institutions is 303.36 billion yuan, increased by 5.7%, up by 4.8 billion yuan. Financial deposit is 80.25 billion yuan, up by 70 million yuan. Deposit of the same industries is 3.609 million yuan, increased by 79.5%, up by 1.598 million yuan.
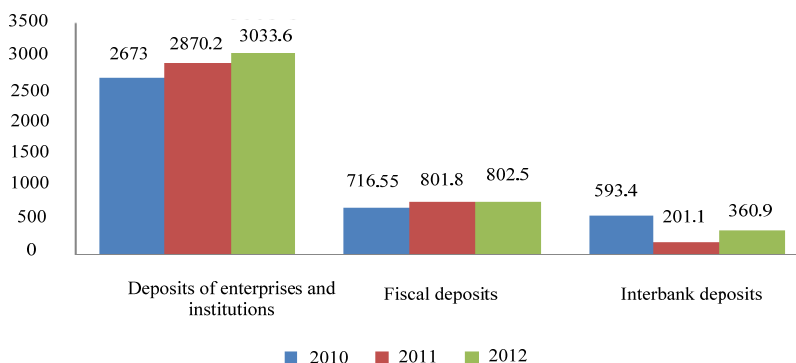

Figure 2.Year-end deposit structure of recent three years(100 million yuan)

EMPIRICAL ANALYSIS

Stationarity test of data

During sample selection, choose natural logarithm to avoid fluctuations in sequence and eliminate heteroscedasticity so as to ensure linear data while not influence co-integration relationship [4]. Therefore, process relevant factors like per capita gross output value in rural areas and represent them with LnRY=log(RY), LnNDY=log(NDY), LnNCD= log(NCD). Process ADF test by data process and analyze software, the result is as shown in Table 2.

Table 2.Result of ADF test

variable	test pattern	statistics	P value	1%	5%	10%
LnRY	(C,0,1)	1.002159	0.9945	-3.857386	-3.040391	-2.660551
LnRY	(C,0,1)	-3.22019	0.0365	-3.886751	-3.052169	-2.666593
LnNDY	(C,0,1)	-1.594391	0.4649	-3.857386	-3.040391	-2.660551
LnNDY	(C,0,1)	-3.587339	0.018	-3.886751	-3.052169	-2.666593
LnNCD	(C,0,1)	-0.765826	0.8046	-3.857386	-3.040391	-2.660551
LnNCD	(C,0,1)	-3.555914	0.0201	-3.92035	-3.065585	-2.673459

Note: C in test pattern (C.T.K) means there are constant terms, T=0 means there are not trend terms, K represents lag phase, ΔLnRY is the first difference of LnRY.

Building of error correction model

The selection of lag is key to the building of VEC model. This research selects the best lag of 1 through LR、LogL、FPE、AIC、SC and HQ statistics, test result is as shown in Table 3.

Table 3.Selection of lag

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2.006693	NA	0.000362	0.589023	0.73606	0.603638
1	45.68637	72.94233*	3.92e-06*	-3.963103*	-3.374952*	-3.904639*
2	52.0354	7.469449	6.09E-06	-3.651224	-2.62196	-3.548913

Jorgenson co-integration test on variables cannot show the real-time dynamics of variables in a short time, so an appropriate error correction model [5] is required. Only building specific error correction model of relevant financial variables like rural economic growth on the basis of the establishment of co-integration relationship can fully show the fluctuant relationship in a short time.

Granger causality test

Co-integration test shows a co-integration vector at the 5% significance level about rural economic growth (LnRY), scope of agricultural policy-oriented finance (LnNDY) and efficiency of agricultural policy-oriented finance (LnNCD). So test causal relationship between variables with Granger causality test, the test result is as shown in Table 4.

Table 4.Test result of Granger causality test

Null Hypothesis	Lags	F-Statistic	Prob.
DLNRY does not Granger Cause DLUNNDY	5	57.4075	0.0172
DLNNDY does not Granger Cause DLNRY	5	1.20204	0.5123
DLNRY does not Granger Cause DLNNCD	5	0.0928	0.9846
DLNNCD does not Granger Cause DLNRY	5	22.598	0.0429

The result of Granger causal relationship in Table 4 shows the fundamental cause of rising agricultural policy-oriented finance is the rapid rural economic development, while the scope of agricultural policy-oriented finance is not the main Granger reason of rapid rural economic development[6]. The main Granger reason of rising agricultural policy-oriented finance efficiency is not rapid rural economic development, but rising agricultural policy-oriented finance efficiency is one of the key reasons. Thus, the speed of rural economic development is determined by increasingly stronger agricultural credit investment which increases the requirement of credit fund to expand the scope of policy-financial loan. But this scope cannot decide the speed of rural economic growth, showing that only large loan cannot push the rural economic development forward comprehensively. Increasing policy-oriented financial deposit and diverse finance source approaches raise the credit

fund and contribute to rural economic development. Therefore, when expanding credit scope, agricultural policy-oriented finance should also raise its correctness to expand the scope of rural funds. In addition, increasing policy-oriented deposit is also needed to meet the needs of rapid rural economic development.

Impulse response functions

Impulse response functions can provide more information of dynamics about one variable act on another. It means to add a standard pulse on random disturbance so as to influence the current value and future value of endogenous variable. Vertical axis represents the influence degree endogenous variable acts on the pulse, while horizontal axis represents lags.
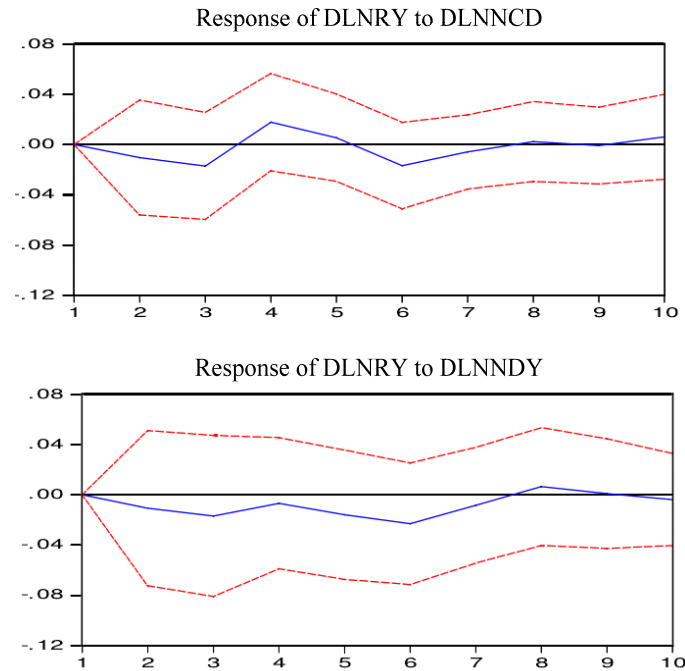
Response of DLNRY to DLNNCD

Response of DLNRY to DLNNDY

Figure 3.Impulse response

The result of impulse response shows that after the agricultural policy-oriented financial efficiency is hit by the external shock of standard deviation, rural economy would decrease in the initial period, showing negative effect. Then it will increase yearly and turn into positive effect at period 3.5, peak within period 4, and show negative effect afterwards. But this reversion appears again at period 8, impulse response gradually turns into positive effect and shows overall upward trend at last. After the agricultural policy-oriented financial scope is hit by the external shock of standard deviation, rural economy would decrease in a long period, showing negative effect too. This will turn into positive effect until period 7.5, and peak within period 8, then turn into negative effect and decrease. The last impulse response turns from positive effect into negative effect and decrease continuously[7]. Figure 3 also shows that both the efficiency and scope of policy-oriented finance will fluctuate influenced by impulse, verifying limit impetus on agricultural economic development after policy-oriented finance is hit by external shock. But specific adjustment can change aid-agriculture effect and support overall rural economic development in a long term. Meanwhile, rising financial efficiency has positive effect on rural economic development which requires further attention on finance source approach. Only expansion of credit scope is not enough to promote rural economic development, rational application of credit scope is the urgent problem for rapid rural policy-oriented financial development. This conclusion agrees with the result of Granger test.

CONCLUSION

The above shows the research and exploration of the relations and effect analysis on the development of agricultural policy-oriented finance and rural economic growth. This paper takes aid-agriculture status quo and empirical analysis as core part. Hope this research can lay a solid theoretical and data foundation of further research.

ACKNOWLEDGEMENT

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