

A Study on the Effect of Agribank Credit Facilities on Agricultural Exports of Southern Khorasan Province

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Abstract: Agricultural sector is one of the most important economic sectors and investigating the relationship between effective factors on the exports of this sector is of great importance. This section has a significant role in economic development, employment and non-oil exports country as well as providing food security and has on average 17% percent of GDP and 23.5 % of employment, and also more than 80% of the food community supplied by this section. The present study examines the role of Agribank credit facilities in agricultural exports in Southern Khorasan Province. So, the effect of Agribank credit facilities on investment, the effect of investment on the stock of capital, the effect of the stock of capital on GDP of agricultural sector, and the effect of agricultural sector GDP on agricultural exports were studied using seasonal time series data of Southern Khorasan Province for the period 2006-2015 and seemingly unrelated equations system. It was found that one unit increase in Agribank credit facilities enhances investment in agricultural sector by 0.36 units, GDP of agricultural sector by 0.26 units, and agricultural exports by 0.53 units. Therefore, in the studied time series, Agribank credit facilities and agricultural exports of Southern Khorasan Province had a positive and growing trend.

Key words: Agribank credit facilities, agricultural exports, Southern Khorasan

Introduction

The development of non-oil exportation has always been an essential principle and economic priority emphasized by planners and policy-makers in economic development programs of Iran in an attempt to emancipate from single-product economy. Accordingly, articles 37, 33 and 41 of Fourth Development Plan affirm it so as to pave the way for renewing the trade, increasing Iran's share in international trade, and strengthening competitiveness of exported products in international markets.

To move from oil-dependent economics toward non-oil economics needs considering non-oil economic sectors and their development. One of these sectors is agricultural sector that is of a considerable importance in Iran's economics due to its eminent role in food supply, income generation, raw materials supply to other economic sectors, occupation generation, balance between labor market and capital, natural relative advantages of Iran in producing some crops, lack of need for sophisticated technologies and expertise, need for small foreign investment, shorter return time, and many others (Akbari & Sharif, 2008). One obstacle to development of Iranian agricultural sector is the financial support that has been always named as a limiting factor of growth of these sector and numerous approaches have been proposed in development program to overcome it. Since the Islamic Revolution of 1979, it has been tried to financially support

agricultural sector by integrating development budget resources and the loans given by banks and credit institutes with the resources of those active in this sector (Aghanisiri, 2012).

In recent years, specialist banks have started to give granted facilities to economic sectors to aid their growth and development (Ahmadzadeh Mashinchi, 2008). As the only specialist bank in agricultural sector of Iran, Agribank plays an essential role in meeting credit requirements of the producers in agricultural sector, agriculture-related food and processing industries, and agriculture-related business and service sector. The bank credits are distributed in the form of Islamic contracts (interest-free loans, civil partnership, installment loan for machinery and raw material procurement, hire-purchase, forward purchase, and liability purchase) (Azizi & Mehrabi Basharabadi, 2014).

Due to Iran's heavy dependence on oil exportation for foreign currency income, we have no clear vision about the consequences of national development programs and even, the impact of these unstable foreign currency incomes on them. So, the single-product economics can be overcome by diversifying foreign currency incomes through non-oil exportation and less dependence on oil incomes. Today, agribusiness sector that is characterized with its seasonality, intense competition and high finance requirements in early-season is of such an importance among developing countries

that enjoys the highest level of governmental support in capital supply. In Iran given the diminished contribution of government to developmental investments in agricultural sector and the role of commercial banks like Agribank in meeting the credit requirements of this sector, it is clear that banks can help quantitative and qualitative boost of production oriented towards the development of agricultural sector exportation by adopting purposeful credit-providing policies. Inadequacy of financial and capital resources is one of the most serious challenges of agricultural sector. Nonetheless, weak infrastructure rooted in lack of finance is another factor hindering the capabilities of agricultural sector. So, these credits for further investment would enhance the agricultural sector products in the province and would improve the exportation of agricultural products to other countries (Khalilian & Farhadi, 2002).

An overview of the credits granted by Agribank of Southern Khorasan Province in the period 2006-2015 shows that the mean share of agricultural sector has been 13.5% of all granted credits whereas agricultural sector has, on average, accounted for 3.69% of total gross domestic product (GDP) in the same period. The share of agricultural produce exportation was, on average, 66.1% in the same period. Therefore, given the considerable share of this sector in credits granted by Agribank and the exportation of agricultural produce, it is necessary to precisely assess the effectiveness of Agribank credits on agricultural sector exportation in Southern Khorasan Province.

Considering the rank of Southern Khorasan Province in granting credit facilities in Iran which is 28, it is necessary to find managerial approaches to facilitate the process of credit facility granting in this province and to recognize and tackle the obstacles. So, the present paper aims at recognizing the factors and obstacles for granting credit facilities by Agribank in order to help developing the production and exportation of agricultural produce in Southern Khorasan Province. The objective of the present study is to find out if there is a significant relationship between credits granted by Agribank and agricultural produce exportation.

On the other hand, as most well-known theories of economics emphasize, investment is one of the most important and decisive factors of economic growth. However, financing has become the necessary condition for investment in manufacture and development or even the necessary condition for the survival of some projects. The present study aims at examining the role of credit facilities provided by Agribank as a factor affecting the exportation of agricultural produce from Southern Khorasan Province. Given the role and importance of investment and facilities in growth and development of agricultural sector, the effectiveness of Agribank credit facilities on agricultural sector investment, production and exportation is expressed by simultaneous equations system.

Research Objectives

The main objective of the study is to examine the influence of Agribank credit facilities on the exportation of agricultural produce in Southern Khorasan Province. Also, we aim to quantify the impact of credit facilities granted by Agribank on the exportation of agricultural produce by simultaneous equations system. The methodology of the study is based on a process in that credit facilities as a capital-intensive input would influence investment, production, and finally, exportation of agricultural produce.

Research Hypotheses

Accordingly, it is hypothesized that

- i. there is a significant relationship between Agribank credit facilities and investment in agricultural sector,
- ii. there is a significant relationship between Agribank credit facilities and GDP of agricultural sector, and
- iii. there is a significant relationship between Agribank credit facilities and exportation of agricultural produce.

Review of Literature

Among studies on models of agricultural production and exportation with a focus on credit facilities, some have worked on microeconomic impacts of these facilities on agricultural sector productivity and have proposed econometric models. For example, Heidari Sangolchi (1996) studied the effect of credits on value addition by agricultural sector in the period 1961-1993, for which a simultaneous equations system was developed and the coefficients were estimated by three-stage least squares method. Results showed that the credits had positive impact on capital accumulation and value addition, so that 1% increase in credits resulted in 0.038% more production. Also, he used common least squares method to examine the effect of long-term and short-term facilities on the value added by agricultural sector. It showed that 1,000,000,000 IRR increase in long-term credits resulted in 0.001% more production and that the coefficient was not significant for short-term credits.

Rajabi Jahroudi (2006) looked at the role of credit facilities granted by banks in capital provision and investment in agricultural sector. Since factors underpinning investment may act on its two main components – i.e. investment in machinery and investment in building – differently, he studied these two variables separately. Also, since long-term (repayment period of longer than two years) and short-term (repayment period of shorter than two years) bank facilities influence investment differently, he considered bank credits distinctly in terms of repayment period. The model asserted for investment in machinery and building was estimated in logarithm form using autoregressive distributed lag (ARDL) method for the period 1972-2000.

Zeinali Qasemi and Najafi (2011) worked on the effect of real effective exchange rate on GDP and exportation of

agricultural produce. They reported that real effective exchange rate, stock of money, government expenditures, and agricultural exportation influenced GDP positively. Furthermore, the estimated model of the factors influencing agricultural exportation showed that higher GDP of agricultural sector, real effective exchange rate, stock of money, and government expenditures would boost agricultural exportation.

Mohammadi and Ahmadi (2011) studied the impact of bank credit facilities granted to agricultural sector and real exchange rate on agricultural export using appropriate production and exportation models, Johansen's cointegration technique, and data of time series for the period 1984- 2006. They found that credits, stock of capital, and labor had positive, significant influence on value added by agricultural sector and that value added, real exchange rate, and relative export price had positive, significant influence on agricultural exportation.

Ehsani and Khatibi (2012) focused on the effect of interest rate ceiling on private investment in Iran's economics by simultaneous equations system. They estimated a systemic model using three- stage least squares method. The Mckinnon-Shaw Hypothesis was confirmed for Iran in simultaneous equations system of estimated investment and saving functions. In other words, interest rate was found to positively affect private investment in Iran.

Taji and Omidikia (2013) investigated the effect of bank credit facilities on investment, occupation and value addition in agricultural sector for the period 1973-2010 using three-stage least squares method for the estimation of the equations. They reported that floating credit and investment credit were positively and significantly associated with value addition, investment, and occupation in agricultural sector.

Barani et al. (2014) investigated the variables affecting the use of Agribank facilities by farmers in Hirmand. The studied variables included educational level, land size, and number of loans. They administered a questionnaire to 117 loanee famers during 2006-2011 for data collection. It was found that educational level, land size, and number of loans were positively and significantly related to the use of Agribank facilities for agricultural production.

In a study on the impact of exchange rate, inflation, and GDP on non-oil exportation, Mohammadian (2015) concluded that agricultural exports of Iran have a major role in its non-oil exports and that agricultural exports are more stable than other sectors. Among the produce, pistachio, date and raisin were found to be of high importance. After a theoretical analysis of the importance of these products in exportation, they analyzed the impact of macroeconomic variables on the exportation rate of pistachio, date, and raisin using panel data approach for the period 1981-2013. The estimated model showed that the exportation of these products was directly and significantly related to the exchange rate, GDP, and inflation rate in the studied period.

Factors underpinning the exportation have been extensively studied using different variables and approaches to determine them.

According to Stolper (1947), “The relation between export growth and economic growth has long been an area in international and development economics receiving a great deal of research attention. Relying on basic economic theory, one can suggest that exports growth contribute to economic growth first through what is known as the foreign trade multiplier effect.”

Jungand Marshall (1985) states “the causality relation between exports and economic growth can work in both directions; a reverse causality direction, from economic growth to export growth might well exist. This idea is often referred as the “growth-led export” hypothesis and is based on the view that domestic economic growth dynamics is more relevant for explaining export growth.”

Islam and Subramanian (1989)¹ mentioned that agricultural exports were mainly a function of relative price, long-term pressure of domestic demand, and sharp fluctuations of inland production. They observed that price had smaller role than non-price factors in explaining exportation so that the reduction of the prices of exported goods could not boost the agricultural exportation adequately.

Lukonga (1994)² studied the trend of agricultural exports in Nigeria in 1970-1990 and estimated exports supply model by including the impacts of domestic demand, the prices of the exported goods, consumer price index, and industrial production index on the export supply of agricultural goods. The results of model estimation indicated that the sign of coefficients were expectedly positive for the variables.

Mohan (2006)³ examined the overall growth of agriculture and the role of institutional credit. Agreeing that the overall supply of credit to agriculture as a percentage of total disbursement of credit is going down, he argued that this should not be a cause for worry as the share of formal credit as a part of the agricultural GDP is growing. This establishes that while credit is increasing, it has not really made an impact on value of output figures which points out the limitations of credit

Sreeram (2007)⁴ concluded that increased supply and administered pricing of credit help in the increase in agricultural productivity and the well being of agriculturists as credit is a sub- component of the total investments made in agriculture.

Tekin (2012)⁵ examined the relationship between economic growth, exports and foreign direct investment in least developed countries by a panel Granger causality analysis. He studied the potential Granger causality among real GDP, exports and foreign direct investment in least developed

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⁵Tekin, ⁶Hasanov and Huseynov, ⁷Farmaryari

countries in 1970-2009 using panel data and economic modeling approach on SUR systems. Results showed a direct casualty from exports to GDP in Haiti, Rwanda, and Sierra Leone and from GDP to exports in Angola, Chad, and Zambia. Also, a direction relationship was found between foreign direct investment and economic growth.

Hasanov and Huseynov (2013)⁶ examined bank credits and non-oil export economic growth in Azerbaijan. Data were analyzed by ARDL approach, Engle-Granger methodology, and Johansen's approach, and error correction test was used for cointegration. Results of all three tests showed that bank credits would affect non-oil exports favorably in long- and short-run and that deviation from short-run to long-run equilibrium was estimated to be about one quarter.

Farmarzyari et al. (2014)⁷ analyzed factors affecting the use of Agribank facilities in Khoy, Iran. The sample (120 participants) was taken by proportionate stratified method from the statistical population (4,592 people) composed of all farmers in Khoy who had received loan at least once in the period 2002-2007. They reported that only 37.8% of the studied farmers had used the loan merely in farming, 18.4% had completely biased, and the rest had partially biased.

Methodology

The present study uses a modified version of Tekin (2012)'s model for the analysis of simultaneous equations system. Since in single equation methods, the estimation may not be precise enough due to the interactive effect of economical variables on each other. So, the relationships were studied in a single system simultaneously. The method uses data for investment, GDP, agricultural exports and Agribank credit facilities with some modifications for Southern Khorasan Province in the period 2006-2015 on a seasonal basis using econometric models. We, first, introduce the functional form of the model and then, we assert it with a review of the relevant econometrics to examine the relationship between Agribank credit facilities, investment, agricultural sector produce, etc.

In econometrics, the seemingly unrelated regressions (SUR) or seemingly unrelated regression equations (SURE) model, proposed by Arnold Zellner in (1962), is a generalization of a linear regression model that consists of several regression equations, each having its own dependent variable and potentially different sets of exogenous explanatory variables. Each equation is a valid linear regression on its own and can be estimated separately, which is why the system is called *seemingly unrelated*, although some authors suggest that the term *seemingly related* would be more appropriate, since the error terms are assumed to be correlated across the equations.

The model can be estimated equation-by-equation using standard ordinary least squares (OLS). Such estimates are

consistent, however generally not as efficient as the SUR method, which amounts to feasible generalized least squares with a specific form of the variance-covariance matrix. Two important cases when SUR is in fact equivalent to OLS are when the error terms are in fact uncorrelated between the equations (so that they are truly unrelated) and when each equation contains exactly the same set of regressors on the right-hand-side.

The SUR model can be viewed as either the simplification of the general linear model where certain coefficients in matrix B $\{\displaystyle \mathrm{B}\}$ are restricted to be equal to zero, or as the generalization of the general linear model where the regressors on the right-hand-side are allowed to be different in each equation. The SUR model can be further generalized into the simultaneous equations model, where the right-hand side regressors are allowed to be the endogenous variables as well. (Souri, 1394).

The present paper investigates the impacts of Agribank credit facilities on agricultural exports. So, given the fact that factors affecting agricultural exports have been identified in previous studies, we will focus on the influence of Agribank credit facilities on agricultural exports using simultaneous equations system. This model will simultaneously scrutinize the effect of credit facilities on investment, the effect of investment on the stock of capital, the effect of the stock of capital on GDP of agricultural sector, and finally the effect of agricultural sector GDP on agricultural exports. The model is studied in form of the following equations system composed of three equations and one factorization that are explained below:

$$I_{ag} = C_1 + C_2GDP_{ag} + C_3F_{ag} + C_4K_{ag}(t-1) + u_3 \quad (1)$$

$$K_{ag} = I_{ag} + (1 - \sigma)K_{ag}(t-1) \quad (2)$$

$$GDP_{ag} = b_1 + b_2L_{ag} + b_3K_{ag} + U_2 \quad (3)$$

$$X_{ag} = a_1 + a_2GDP_{ag} + a_3F + U_1 \quad (4)$$

Equation for investment in agricultural sector

In this equation, investment in agricultural sector (I_{ag}) is considered as a function of GDP of agricultural sector (GDP_{ag}), Agribank credit facilities in Southern Khorasan Province (F_{ag}) and stock of capital in the previous period ($K_{ag}(t-1)$) because by definition, the moment of change in investment is induced by the change in total demand or domestic income. On the other hand, as it was said, credit facilities granted by banks form a source of investment in agricultural sector. Also, investment in agricultural sector in each period is affected by the stock of capital at the beginning of the period.

$$I_{ag} = C_1 + C_2GDP_{ag} + C_3F_{ag} + C_4K_{ag}(t-1) + u_3 \quad (5)$$

Equation for stock of capital in agricultural sector

The stock of capital in Southern Khorasan Province was estimated by Cobb Douglas production function and Kiani model. Production function characterized with constant return to scale is considered in the following form:

$$Y_t = c + dD_{1t} + \alpha L_t + (1 - \alpha)K_t + u_t \quad (6)$$

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where, $Y_t = \ln(GDP)$, C is constant term, L_t is the logarithm of occupation, k_t is the logarithm of the stock of capital, U_t is the error term, and $D1_t$ is a dummy variable equal to 0. In this study, two states are considered for the calculation of variable depreciation rate. In the first state, depreciation rate is considered as a function of GDP variations and in the second state, it was considered as a function of a dummy variable. The formulations of these two states are shown below:

$$K_t = I_t + (1 - \delta)K_{t-1} \quad (7)$$

$$\delta_t = d_0 + d_1 Z_t \quad (8)$$

$Z_t = \Delta Y_t$ for the first state and $Z_t = D2_t$ for the second state, and $D2_t = 0$, then $t < 1385$, if $t > 1385$ $D2_t = 1$. So, the stock of capital in Southern Khorasan Province is calculated by this equation derived from Kiani et al. assuming 8.5% depreciation rate.

Equation for GDP of agricultural sector

There are two factors – labor and capital – in this study that is about GDP of agricultural sector (GDP_{ag}). Labor (Lag) is the labor active in agricultural sector and capital is the stock of capital in agricultural sector (K_{ag}) obtained from modified formula for stock of capital.

$$GDP_{ag} = b_1 + b_2 Lag + b_3 K_{ag} + U_2 \quad (9)$$

Equation for Agricultural Exports

In our assessment of the factors affecting the dependent variable in exports equation, general factors and standards like GDP of agricultural sector and real exchange rate were considered. Other effective factors were included in the equations. In this equation, the agricultural exports (X_{ag}) and the exchange rate in free market ($Fern$) were considered in terms of US\$.

$$X_{ag} = a_1 + a_2 GDP_{ag} + a_3 F + U_1 \quad (10)$$

Data

Data were collected by library method. Then, they were

categorized and analyzed using econometric models and statistical procedures. Since Southern Khorasan Province is a newly founded province with a history of just 13 years, the time series for the period 2006-2015 is short and data are unavailable for the period when it was not a province, then all time series data were converted into seasonal by Eviews 9 software package in order to make the results of model estimation closer to the real. The data of investment, occupation, GDP, and Agribank credit facilities were inferred from economical reports of Governor's Office, Economical Planning Office of Planning Deputy, and Agribank of Southern Khorasan. Also, data of agricultural exports were collected from Industry, Mining and Trade Office and Customs Office. Due to the lack of data about the stock of capital in the agricultural sector of the province, it was estimated for the period 2006-2015 by production function of agricultural sector assuming constant return to scale. Also, we assumed in the estimation of the stock of capital that the depreciation rate of agricultural sector was 5.8% as did Kiani et al. The models were estimated and the tests were carried out by Eviews 9 Econometric Software Package.

Estimation of Model and Analysis of Results

To estimate the model for the effect of Agribank credit facilities on agricultural exports, seemingly unrelated regression (SUR) equations system was applied. Then, the stationarity and cointegration of the variables were tested by Dickey-Fuller test and Engle and Granger cointegration technique and finally, the results of SUR equations system were examined.

Stationarity and unit root test

All included variables were checked by augmented Dicky Fuller test to make sure if they are stationary or non-stationary. Table 1 presents results of augmented Dicky Fuller test of unit root for the studied variables.

Table 1. Augmented Dicky Fuller test for the studied variables

Variable	Status of stationariness	ADF statistic	Stationariness
GDP agr	I(0)	-2.57	-2.96
k agr	I(0)	-2.03	-2.93
Fern	I(0)	-0.613	-2.93
I ag	I(0)	-1.05	-2.94
Ex	I(0)	-2.02	-2.94
Facilities	I(0)	-1.28	-2.93
Lag	I(0)	-1.05	-2.93

Critical values of Dicky Fuller are at the 5% level. (Source: Research findings)

As is evident, since the absolute value of augmented Dicky Fuller statistic is less than the critical values for all variables, it can be concluded that all studied variables were

non-stationary and the assumption that there is a unit root for the variables is not rejected at a high confidence level. Now, augmented Dicky Fuller test is repeated for the first-

order differential of the variables to recognize their autocorrelation, whose results are shown in Table 2.

Table 2. Augmented Dicky Fuller Test for first-order differential of the studied variables

Variable	Status of stationariness	ADF satistic	Critical level
GDP agr	I(1)	-5.69	-2.94
k agr	I(1)	-6.57	-2.96
Fern	I(1)	-8.93	-2.94
I ag	I(1)	-6.15	-2.94
Ex	I(1)	-6.0	-2.94
Facilities	I(1)	-6.24	-2.94
Lag	I(1)	-6.10	-2.94

Critical values of Dicky Fuller are at the 5% level. (Source: Research findings)

Results of the test reveal that all variables of the model were non-stationary at data level and the absolute value of Dickey Fuller statistic was always less than MacKinnon critical value. The repetition of the test for data differentials shows that all variables became stationary after one-time differentiation and the null hypothesis of non-stationariness is rejected and the opposite hypothesis of stationariness of the variables is accepted at the 95% confidence level. According to this test, all variables that were included in the model are cointegrated of first order I(1).

Since some variables are non-stationary, it is necessary to use

the difference of non-stationary variables to avoid dummy regression. Obviously, the use of the difference of variables will eliminate their long-term effect. Then, the results cannot be generalized and used in predictions. In these cases, the study of models convergence may turn out to be useful. In other words, in case of the convergence of the estimation models, there will be no need to use the difference of non-stationary variables to avoid the dummy regression of the models. The convergence test of the models by cointegrating regression Durbin-Watson (CRDW) test and Engle-Granger test showed that the three equations are cointegrated.

Table 3: Determination of integration models using the Engel-Granger tests and CRDW

Level	Result	Statistics DW	Level	Result	Statistics ADF	models
1%	Converge	2/00	1%	converge	-6/55	I ag
1%	Converge	2/00	1%	converge	-9/80	GDP ag
1%	Converge	2/00	1%	converge	-4/82	EX ag

Critical values of Dicky Fuller are at the 5% level

Source: research results

Cointegration Test

Cointegration² technique was first developed by Engle and Granger in 1987 and then, it was complemented by Johansen in 1990. At this part, we check the cointegration among the variables by two-step Engle-Granger method (Souri, 2015).

Assume that we have the following model:

$$y_t = B_1 + B_2 X_{2t} + B_3 X_{3t} + \dots + B_k X_{kt} + u_t \quad (11)$$

$$\{\Delta^d X_{1t} \sim I(0) \rightarrow \Delta^d Z_t \sim I(\max(0, d_2 - d_1)) = I(d_2 - d_1)$$

If the variables Y_t and X_{it} are I(1), then u_t is I(1), too. But, it is not necessarily the case and u_t may be stationary. As mentioned, the stationarity of u_t implies that the above equation describes an equilibrium (cointegration) relationship between Y_t and X_{it} . So, for cointegration test, we first estimate

$$\{\Delta^d X_{2t} \sim I(d_2 - d_1) \quad (12)$$

and, then, we compute e_t . Having e_t , the unit root test can be done for e_t :

$$\Delta e_t = 8e_{t-1} + r_t \quad (13)$$

Although e_t has no unit root, it shows that it is stationary implying the presence of an equilibrium (cointegration) relationship between Y_t and X_t . Here, the hypothesis test is for residuals (e_t), then, the critical values are different from Dickey-Fuller and augmented Dickey-Fuller tests. Accordingly, Engle-Granger calculates other critical values for e_t stationarity test, came to be known as Engle-Granger test and augmented Engle-Granger test.

Since some variables are non-stationary, it is necessary to use the difference of non-stationary variables to avoid dummy regression. Obviously, the use of the difference of variables will eliminate their long-term effect. Then, the results cannot

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be generalized and used in predictions. In these cases, the study of models convergence may turn out to be useful. In other words, in case of the convergence of the estimation models, there will be no need to use the difference of non-stationary variables to avoid the dummy regression of the

models. The convergence test of the models by cointegrating regression Durbin-Watson (CRDW) test and Engle-Granger test showed that the three equations are cointegrated (Souri, 2015).

Table 4: Determination of integration tests

Result	The significance level			StatistiADF	Residua ls
Accumulated	-2/60	-2/94	-3/61	-6/15	U1
Accumulated	-2/61	-2/94	-3/63	-9/80	U2
Accumulated	-2/61	-2/96	-3/66	-4/82	U3

significant at the 10%, 5%,1% level.

Source: research results

As is evident, the value of ADF is lower than the critical value. So, the presence of unit root in residuals or the non-stationarity of residuals is rejected. Thus, the variables of the model including investment, GDP and agricultural exports are cointegrated, and there is a long-term equilibrium relationship between dependent variables and descriptive variables. In other words, it can be said that as Agribank credit facilities to investment and production sector increases, more exports can be expected. Also, CRDW was used for cointegration test. If Durbin-Watson stat obtained from cointegrated

regression was lower than the critical values, then the residuals would not be stationary. Since the statistic obtained from all three questions (DW = 2) is greater than the critical values, then H0 hypothesis about the presence of unit root in residuals is rejected and the variables of the regression are cointegrated.

Model Estimation by Simultaneous Equations System

Model equations were estimated by seasonal time series data for the period 2006-2015. The results of the seemingly unrelated equations regression are presented in Table 5.

Table 5: results of studies

R2	Statisticst	Factor	independent variable	The dependent variable
0.73	3.69	0.22	GDP ag	I ag
	2.64	0.36	F ag	
	3.42	0.20	K ag	
0.65	1.08	0.58	L ag	GDP ag
	0.85	0.26	K ag	
0.85	1.09	0.53	GDP ag	EX ag
	-0.78	-1.12	Fern	

Source: research results

According to the estimation of the model, one unit increase in credit facility provided by Agribank results in 0.36 unit increase in investment and 0.20% increase in the stock of capital for investment. Also, one unit increase in credit facilities would increase the agricultural production by 0.22%, Finally, one unit increase in credit facilities would result in 0.53 unit higher agricultural exports, So, it is observed that the credits granted by Agribank and agriculture produce export of Southern Khorasan Province were positive in the last decade, exhibiting an ascending trend

Conclusion

The preset study tried to examine the effect of Agribank

credit facilities in Southern Khorasan Province on agricultural exports of this province, for which simultaneous equations system was used. So, a model was designed composed of three equations and one factorization to check the effect of Agribank credit facilities on investment in agricultural sector, the effect of investment on GDP of agricultural sector, and the effect of GDP on agricultural exports. So, the lack or low quality of statistical data for the estimation of econometric models or, in some cases, the confidentiality rendered it impossible to study them statistically. Thus, data for the model were collected for the period 2006-2015 based on constant price of 2006 and were converted to seasonal by Eview software package. Before the

model was estimated, the unit root (augmented Dickey-Fuller) test was run to determine the cointegration of residual terms in the model by the Engle-Granger test. Results implied the stationarity and cointegrity of the variables. Then, it was the model's turn to be dealt with. All coefficients of variables were as expected and were statistically significant at 5-10% level. Coefficients show positive relationship of Agribank credit facilities with investment, GDP, and exports of agricultural sector. Given the credits allocated to agricultural sector, there is a direct relationship between production, investment and exports of agricultural sector. Since the effect of bank facilities has been evaluated positive and increasing over the time on the growth of agricultural exports, the value addition and agricultural exports can be boosted through adoption of appropriate monetary and credit policies by government and bank system and their sound management and monitoring mechanisms. Here, the loans and credits granted by Agribank are more in focus, whose failures would damage agricultural production and agricultural sector. The results are summarized below:

1. One unit increase in credit facilities increases investment in agricultural sector by, on average, 0.36 units. Also, one unit increase in the stock of capital for agricultural sector enhances GDP of agricultural sector by 0.26 units and accordingly the first hypothesis, i.e. the positive relationship between Agribank credit facilities and investment in agricultural sector, is confirmed. This is similar to what reported by Hasanov and Huseynov (2013), Tekin (2012), Rajabi Jahroudi (2006), Taji and Omidikia (2013). The most effective policy to realize this objective is to increase bank credits in order to bolster investment and the stock of capital for agricultural sector as a supply side policy. So, it is suitable to allocate the investment and Agribank credit facilities to agricultural infrastructure including roads on the path of exportation aimed at enhancing the return and productivity of production factors and coping with the relevant problems, so that the facilities can be appropriately used in the development of agricultural production and exports.
2. One unit increase in agricultural sector GDP improves agricultural exports by 0.26 units and accordingly, the second hypothesis about the positive relationship between Agribank credit facilities and agricultural sector GDP is confirmed which is in agreement with Islam and Subramanian (1989), Taji and Omidikia (2013), and Ehsani and Khatibi (2012). So, it is recommended to support agricultural sector by price support policies for crops in order to improve agricultural sector GDP and agricultural exports.
3. One unit increase in Agribank credit facilities increased agricultural exports by 0.35 units. Thus, the third hypothesis about the positive relationship between Agribank credit facilities and agricultural

exports is confirmed as the same has been reported in Mohammadian (2015) and Lukonga (1994). Therefore, full financial and credit support of all exporting producers can boost the agricultural produce for exports.

Recommendations

1. Since according to the first and second hypotheses, Agribank credit facility is significantly related to investment and production of agricultural sector and since investment is one of the variables that increase agricultural exports, it is recommended to increase agricultural produce by active participation of bank systems in rural areas to provide efficient services. It will lead to higher value addition of agricultural sector and will, in turn, improve agricultural sector production and investment in Khorasan Province.
2. Higher credit facilities granted by Agribank to agricultural sector can overcome the capital deficiency among farmers, motivating private sector to invest in this sector. Also, policies that target supply, e.g. higher labor efficiency and the application of modern technology in agricultural production, can pave the way for the growth of rural areas.
3. Given the risks that agricultural sector is posed to (e.g. drought, pests, chilling), the development of cooperatives to collect small capitals of farmers for investment in agriculture infrastructure can be a way to prevent the exit of credit facilities from agricultural sector.
4. According to the third hypothesis about the significant relationship between Agribank credit facilities and agricultural exports, full financial and credit support of all exporting producers can bolster agriculture produce for exports.

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