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Lotfi, Habib and Ahmadzadeh Mashinchi, Sina

Chabahar Maritime University

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Investigating the Effect of Granted Facilities by Specialist Banks to Agriculture Part on Value Added Agriculture Part of Iran

[1]*H. Lotfi and* [2]*S. Ahmadzadeh-Mashinchi*

[1]Department of Agricultural Economics, Islamic Azad University, Ilkhchi branch, Ilkhchi 5173734991, Iran
[2]Department of Agricultural Economics, Chabahar Maritime University, Chabahar, Iran

Abstract: Iran's agriculture part is one of the areas that can have an important effect on the growth of country's economy. Concerning this, variables that can increase value added agriculture have been concentrated on and the government is supporting them. One of these policies is granting loanable facilities from specialist banks to agriculture part, which was in the specialist banks agendum during last years. In this study, the relation between granted facilities to agriculture part and value added investigated. According to results, the correlation between these two variables verified during the research period (1991-2003).

Key words: Loanable facilities %Agriculture part %Value added %Economic growth

INTRODUCTION

One of the fields of moving from an oil-based economy to an independent one is paying attention to non-oil based economical parts and developing them. To achieve this, during recent years, in order to support agriculture parts, granting loanable facilities to economical parts as a tool for their growth and development is on the agenda of the specialist banks. On the other hand, considering climatic conditions available human sources, developing agriculture parts seems to be able to play an important role in the economical growth of the country [1].

To gain the growth of the agriculture part in this situation, the factors affecting the efficiency of this part studied to find ways to improve the efficiency of the agriculture part [1]. Present article tries to study the effect of loanable facilities given to agriculture part on the value added in this part between years 1991 to 2003.

Considering the limitation economical resources and conditions, allocation of the resources in the best way and spending them in the most efficient way seems to be necessary to pay back the maximum profit to the country. To reach economical independence through the 5-year economical development programs, one of the parts that supported by the government is the agriculture part. The government supports agriculture part by using different policies such as paying loanable facilities, guaranteed buying of the agricultural products [2-4].

Doubtless the main goal of these policies and supports is to increase the value added in this part. It is clear that if these actions cannot at last increase the vale added, the resources will be useless. In such an occasion, comes out a question that how far paying these facilities have been useful and been able to raise the value added. The first question is as "Is there a meaningful relation between granting loanable facilities to agriculture part by the specialist banks and the value added in this part?" Further more, if there is a relation, how the amount and the direction (direct or reverse) are. This article tries to find an answer from a scientific aspect [3-5].

To discover the necessity of doing research in this field, a few points suggested finding out the effect of granted facilities to the agriculture part helps economical programmers find a suitable program for supporting policies and used in programming the global economical policies[6-9].

The main target of this research is to study the effect of granted facilities on the value added in the agriculture part. The secondary target is to establish the relation between the granted facilities to the agriculture part and the economical growth of the country, minding that the rise of the value added in the agriculture part leads to the economical growth of the whole country.

Corresponding Author: Mr. Habib Lotfi, Department of Agricultural Economics, Islamic Azad University, Ilkhchi branch, Ilkhchi 5173734991, Iran

MATERIALS AND METHODS

Gathering Information and Analysis Method: Required information for the research gathered with the "documentary analysis" method using the Central Bank reports the national statistics yearbooks and statistics released by ministry of Jahad-E-Keshavarzi.

Research Method: In the present survey in order to avoid incorrect regressions, firstly all the variables used in the research examined for being stable. Then using multimode linear model and OLS method and Eviews software, we start the regression.

Introducing Variables:

- Value added- Value added in the agriculture part is the Dependent variable of the model
- Granted facilities to the agriculture part by specialist banks- Based on the government's policies, specialist banks must give special loans and facilities to economical parts every year. In this research, the amount of granted facilities to the agriculture part considered as one of the independent variables of the model.
- The amount of the export of the agricultural products- noticing the relation between export and the growth of each part, the amount of the export of the agricultural products considered one of the other independent variables.

Paying attention to country's economical situation, foreign exchange too, is one of the variables that con affect other economical variables. Having a short glimpse on the vacillation of the rate of foreign exchange during research era and in order to gain real and scientific results, this variable considered one of the independent ones.

Theoretical Basis and the Research Backgrounds: In connection with the factors affecting the variables of the agriculture part and the variables of its subdivisions, these five common models used:

- B.A. Johnson and H.E. Striner model
- G.D. Szakasit model
- Gobb Douglas model
- Transcendental model
- Simple Linear model

It is necessary to note that in Johnson and Szakasit models the available investing in the agricultural researches used as the only production factor. but in Gobb Douglas, Transcendental and Simple Linear models this variable is considered one of the production factors along with the other factors(work and capital) and in fact this is the main reason of the separation of the Johnson and Szakasit models from the other three.

Johnson and Striner Model: In 1961, Johnson and Striner, using their model, showed that there is not only a correlation, but also a cause and effect relation between per capita production and GNP percentage allocated to research. The model is like this:

$$Pc = a\ R\ b$$

Where, Pc: Per capita national gross production and R is the Ratio of research costs to national gross production.

Szakasit Model: Szakasit's study was comparing per capita research costs with per capita GNP IN 1962. His model is:

$$Pc = a\ (Rp)\ b$$

Rp: per capita Research costs

Gobb Douglas Model: Agricultural economists estimate Gobb Douglas's production function for each of the potential production processes that contain transferring factors to agricultural production. This model described like this:

$$y = a\ x1a1\ x2a2\ x3a3$$

Where, y: amount of production and x1, x2 and x3 are factors used in production.

Transcendental Model: In 1950th Hocking, Carter and Halter, three economists introduced a production function called "Transcendental model" which shows each factor's production traction as its function. Doing this we can find out that in each period with certain amount of production, which stage the consumption of each factor is in. The model is:

$$y = a\, x_1^{a_1}\, x_2^{a_2}\, e^{y|x|} + y^{2_{x2}}$$

Where, y: amount of production and x1, x2 are factors used in the production

It is essential noted that multivariable Simple Linear model used when the data is statistically valid enough. Steps of estimating the effect of agricultural research costs on the value added in this part, farming subdivision and some of the farming products:

Step 1: Using the 5 mathematical models(Johnson and Striner, Szakasit, Gobb Douglas, Transcendental and Simple Linear models) the effect of agricultural and natural resources research costs on the value added in this part during 1966 to 1998 was studied. In these models, the Dependent variable is the value added in this part and the independent ones are: workers in the agriculture part, physical capital inventory and agricultural and natural resources research budgets. From the five mentioned models, Simple Linear model does not qualify because it is not statistically valid enough, while the other four do. The results are stored in table 5. It reminded that Johnson and Striner, Szakasit and Gobb Douglas models estimated with two time pauses and the transcendental model without any pauses. Noticing the fact that, it seems impossible for the research costs to impress the agriculture part with no pauses, transcendental model (which estimated without any pauses) cannot be the fittest one despite its high F, R2 statistics. In addition to this, the coefficient of LNLK variable has 85% statistic validity whereas all coefficients in the other models have more than 99% statistic validity. Consequently, among the three remaining models (Johnson and Striner, Szakasit and Gobb Douglas) all of which are statistically valid, the Gobb Douglas model chosen as the fittest because of its high F, R2 statistics compared to the other two.

In Gobb Douglas model for 1% increase of the agricultural and natural resources research costs, there will be 18% increase of per capita value added after 2 years and this shows the positive effect agricultural research costs on the per capita value added in this part. Besides, in this model there will be approximately 19% rise in the per capita value added for 1% rise of the physical capitals, after 2 tears, so we can draw the conclusion that the effect of physical capitals on the per capita value added in the agriculture part is more than per capita research costs. Further, noting that per capita value added shows the mean productivity of the work force, we can say that the effect of per capita agricultural and natural resources research costs is positive. On the other hand, the preference of the Gobb Douglas model to Johnson and Striner and Szakasit models indicates that, using research capitals along with the other production factors (work force and physical capitals) is better than using them as the only production factor.

Also in this step, each of the models that did not qualify estimated with 1 to 5 year pauses. the result shows that, with expansion of the pauses (in long term), the effect of research costs on the value added is enlarged, but because the F,R2 have the maximum value in 2-year pause, it is accepted as the most appropriate one.

Step 2: Using the mentioned models, the effect of farming subdivision research costs on the amount of production in this subdivision during 1971 to 1999 has studied. Dependent variable is the amount of agricultural products and the independent ones are the area being cultivated, agricultural research budget and the amount of fertilizer and pesticide used. Transcendental and the Simple Linear models do not qualify for estimation because are not statistically valid, but the others do and all of them estimated with 1-year pauses. The Gobb Douglas model was decided to be the best one because of its F,R2 values. The results showed in table 6.

In Gobb Douglas model each 1% rise in the agricultural research costs leads to 5% rise of production, which shows the positive effect of agricultural research costs on the production. Further more, each 1% rise in the area being cultivated leads to 54% and each 1% rise in the amount of fertilizer and pesticide used leads to 35% rise of production, so area, fertilizer and pesticide are more effective than research costs.

Step 3: The effect of research costs on some of agricultural products such as wheat and barley, rice and oleaginous grains in 1978 to 1998 on the each one's production that surveyed in this step. The dependent variable is amount of the products and the independent ones are the area being cultivated and research budget for each of the products. Here too, Transcendental and Simple Linear modes do not qualify for estimating because of not being statically valid, on the contrary with the others and the Gobb Douglas model was deduced to be the fittest one for its F,R2 values. The results shown in tables 7-9.

Each 1% rise in the cereals (wheat and barely), after 3 years, the production meets a rise of 26% and each 1% rise in the area leads to 9% rise of production. Likewise, each 1% rise in the research costs of rice, after 4 years leads to 12% rise of its production, whereas each 1% rise in the area of this product leads to nearly 88% rise of production.

Finally, each 2% rise in the research costs of oleaginous grains, after a year, leads to nearly 39% rise of

production, whereas each 1% rise in the cultivated area of these products leads to nearly 63% rise of production. Therefore, it suggested that the effete of each product's research costs on its amount of production is positive and the cultivated area is more effective on production than research costs. In a survey [9], these matters brought up:

In this research, done in three steps, the effect of research costs on the amount of production studied. In the first step, the effect of agriculture part and natural resources research costs on the vale added in this part was studied using the 5 mathematical models during years 1966 to 1998. The results describe the Gobb Douglas as the best model.

According to this model, each 1% rise in the per capita research costs, after 2 years, leads to 12% rise of per capita value added in this part, which indicates that, the effect, is positive. In addition, because doing research in the agriculture part shows its results in a several years time, the Gobb Douglas model estimated with different pauses. The results showed that with the rise of the number of pauses, the effect of investments on the value added rises too, but noticing the R2 statistics, the model was found to perform in the best way with 2 pauses. In another step, the effect of these costs on one of the most important agricultural subdivisions, farming, examined using now familiar models in years 1972 to 1998. Investigations proved that Gobb Douglas model is the best one to use. Moreover, the traction of the research costs is around 5%. It shows that each 1% rise in the research costs, after 1 year, leads to 5% rise of the production in this subdivision and the effect of cultivated area and using fertilizer and pesticides on increasing the farming production is more than research costs.

Finally, in the last step of the examining the effect of research costs on the amount of production, the effect of these costs on some of agricultural products such as cereals, rice and oleaginous grains was studied using the 5 models. According to the results of Gobb Douglas model (which, is proven the best), the cultivated area is more effective on increasing the production than their research costs. In all three steps, the minor tractions of production factors (per capita physical and research capital and cultivated area) is less than 1, which indicates that their final production will be less than the mean production. In other words, the actual products of the mentioned factors are less than their potential products. The reason is that, in the agriculture part, not much use of the per capita physical and research capitals and the area being cultivated made.

RESULTS AND DISCUSSION

After collecting information and required data, regarding the theoretical bases and the conducted study, the main model introduced this way:

$$VAG = B1\ GF + B2\ EX + B3\ XA + U$$

Where,
VAG: Value added in aGriculture part
GF: the amount of Granted Facilities
XA: eXport Amount of agricultural products
EX: foreign EXchages' rate (US dollar)

As it is obvious in the table, granted facilities to agriculture part by the banks, is growing all the time. Therefore, this number has reached 28769.3 million Dollars in 2003, which was 956.9 in 1991.On the other hand, the value added in the agriculture part has increased too and has reached 127578 million Dollars in 2003, from 7472 in 1991 (Table 1 & Figures 1 and 2).

The data estimated with the Eviews program and least squares method. In estimating stable variables, the classic hypotheses and existence of short and long-term relation between the variables examined. Knowing that the research model does not have any problems, we explain the estimated coefficients on the base of the Table 2.

As it is clear, variables' coefficients in reliance level of 5% are meaningful and analyzed. The modified R2 shoes that more than 99% of mutation of the dependent variable, depends on the selected independent variables.

Table 1: The process of granting facilities (from a statistical point of view)

year	Granted facilities (million dollar)	Value added in agriculture part (million dollar)
1991	9.56	7472
1992	1300	10719
1993	1752.1	13696
1994	2019	17536
1995	3362	29859
1996	3695.2	38479
1997	5288.2	42327
1998	6791.1	59257
1999	8055.1	64151
2000	10664	75229
2001	16488.1	82885
2002	22607.6	105745
2003	28769.3	127578

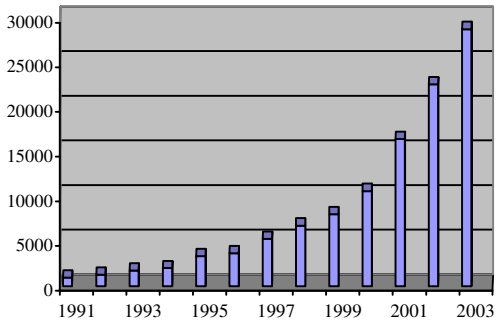

Fig. 1: The process of mutations of variables from 1991 to 2003 (Y column is Granted facilities)

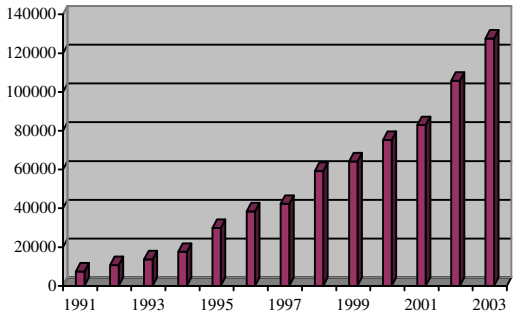

Fig. 2: Value added in agriculture part from 1991 to 2003

In addition, noting the D.W value there is not self-correlation in the model. Moreover, from the variance anisotropy point of view and considering the results of Right test, there is no problem in the estimated model. The research results states that there is correlation between granted facilities to the agriculture part and the value added in this part. therefore the estimating coefficient for this variable is 2.78 and the effect of the related t is 16.69, in other words, estimation coefficients of the variable indicates that with a change of one unit in the amount of the granted facilities, the value added meets an increase of 2.78 in the straight direction. It means that, one unit rise of the amount of granted facilities to the agriculture part by the specialists banks results in 2.78 rises of the value added in this part. Taking the above points into consideration, the main theory of this research confirmed that there is a positive correlation between granted facilities to the agriculture part and the value added in this part.

Results showed that there is a direct relation between the rate of foreign exchanges and the value added in the agriculture part. So that the estimating coefficient for this variable is 5.38 and the effect of the related t is 15.85, so that a change of one unit in the rate of foreign exchanges, the value added in the agriculture part meets an increase of 5.38 in the straight direction. Noting that the estimation coefficient for amount of export of the agricultural products was meaningless, this variable omitted from the main model.

Table 2: Estimated coefficients in this study

Dependent Variable: VAG
Method: Least Squares
Date: 08/19/05 Time: 23:12
Sample: 1991 2003
Included observations: 13

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GF	2.781384	0.166560	16.69904	0.0000
EX	5.385803	0.339724	15.85346	0.0000

R-squared	0.992450	Mean dependent var.	51917.92
Adjusted R-squared	0.991763	S.D. dependent var.	38081.81
S.E. of regression	3456.205	Akaike info criterion	19.27437
Sum squared resid	1.31E+08	Schwarz criterion	19.36128
Log likelihood	-123.2834	F-statistic	1445.859
Durbin-Watson stat	2.299302	Prob(F-statistic)	0.000000

The relation between granted facilities to the agriculture part and the economical growth of country Based on surveys done on the agriculture parts share of the economical growth of country, there is a relation between the growth of agriculture part and the growth of country. Therefore, the variables that cause the rise of the benefit in the agriculture part, indirectly, cause economical growth of country. Granted facilities to the agriculture part, too, is one of the variables that can indirectly and through raising the value added in the agriculture part, help the economy of country grow. So considering the results of this research, supporting agriculture part leads to positive effects on country's economy.

Suggestions for Future Policies: According to results, which indicates the existence of a positive correlation between the granted facilities to agriculture part by specialist banks and the value added in this part? Results also showed considering nonexistence of proportional advantage in industry part (one obvious example is supporting country's automobile industry and the weak quality and the high price of the native cars compared to global ones) the importance and necessity of supporting agriculture part becomes more and more clear.

The suggestions for future programming practical policies are:

- Reducing supports of industries, which lack proportional advantage and leading them especially financial ones to agriculture part.
- Raising the granted facilities to the agriculture part by specialist banks.
- Omitting some of excessive operations in the process of giving loans speeding up this process.
- Making arrangement for the agriculture part to be supported by other relating organizations, so that the products can directly reach the consumers, because the fulfillment of this matter has these two benefits:
  -Omitting intermediaries in dealing agricultural products and the decrease of their price.
  -Benefiting of the producers from the profit of products
- Enough supervision on the process of giving loans and on the way it is spent in order for the loans to be used only in production process, not in other fields.

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