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The Effect of Energy Consumption on the Productivity of the Entire Production Causes in Agricultural Iran

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Abstract: This study has considered the effect of the amount of energy consumption on agricultural part on the operation of entire of the production causes in this part. For this, it was useful to use from self-explaining template with wide pauses and the used during 1978-2011. According to the results of the research, the amount of energy assumption in long-term and short-term periods. has been a positive and meaningful effect on the growth of the operation of the entire of the production causes in Iranian agricultural part. Also among the other considered causes with the exception of the bulk of exotic business of agricultural production that has had a negative effect on the growth of operation, other dig nations including the price of research and development of agricultural part, coefficient of the mechanism of part and meaningful effect. Totally, the results of the research shows the fact that a diverse, causes in agricultural part, therefore it is suggested that by operation the existing politics about the use of the effective causes, the operation of the production causes changes to one of the basic growth sources that it is completely essential with the focus on the serious limitation during the way of consumption of the saved in Iran especially the saved as well as water and floor.

Key words: Energy consumption, agricultural, productivity, Iran.

INTRODUCTION

Today, the operation is the best and the most effective method for the o achievement of growth with the attention on production sources. Usually through the decades, the economical human straggles were because of the fact of gaining the ability to do the best result by means of the least causes and equipment. This need can be named as achievement to the higher operation. On the other hand, by fainting the economical lands, the triumph for the improvement of operation has changed to the basic cause of competition in the world stage. by means of increasing the operation level it can be possible to increase the work ability if the part and to promote the range of production activities the increase of the production of products akbari and ranjkesh (2003). Because of the placement and importance of operation in economical growth ,in outline of economical matters and the band 37 of document about the 20 years outlook of Iranian Islamic jomhori, the product of a suitable techniques for the growth of the operation of production cause (energy, Spenser ship, job forces, water and soil and…..) is emphasizing. also in band 38 of document, providing the country food security with focus on production from internal sources and emphasizes on self-esteem in producing the basic agricultural products shows the special insight of document on production role in national economic that it is completely in it is right way attention to share and the role of agricultural part in internal impure production, occupation of economic totally, providing the food security, providing first grade material for industry. Therefore, attention to operation of productive saved in agricultural part and analyzing the effective causes on it is seems essential. The amount of consuming energy in this part is one of the effective causes on the operation of production causes, whose role in this field has been more colorful after modern the productive farms, furthering from the traditional productive systems. The amount of usage of different shapes of energy is increasing during agricultural production process in different countries that the agricultural part in Iran was not an exception from such process. Especially after the mechanism and the entrance of different machinery in agricultural part, this process has been intensive more.

According to the static of power ministry in annual energy balance-sheet, the amount of energy consumption in Iran agricultural part (equal to pure oil) has increased from 2.8 million barrels in 1967 to 41.9 million barrels in 2008. Analyzing such process shows that during the last 4 decades, the amount of energy consumption in agricultural part has increased 15 time. By attending to the fact that the energy is used in different productive activities in agricultural part. It has caused to form a new productive structure in this part. Every kinds of mechanism agricultural part like moving and static are dependent on energy. so, using of energy causes the different and new mixture of the saved are elected by them. According to this fact, this present study is going to answer to this basic question that what is the effect of the operation of the amount of energy consumption in agricultural part on the operation of the entire production causes in this part? Because of the

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importance of such subject, the studies were done in relation to this project that will be discussed in continue of this part to study some related internal and external.

Karkacier *et al*, (2006) had studied the effect of energy consumption on the operation process in Turkish agriculture, according to which results, it was reported a strong relationship between energy consumption and the operation. Felloni *et al*, (1999) analyzed the effects of the basis for transporting and energy on the production of entire agriculture and the operation of ground and occupation power in elina and used from the surface data of thirty cities. hatirly *et al*, (2005) analyzed the effect of energy and its diverse kinds on the surface of agricultural production in china during 1975-2000. kelolend (1995) declared the amount of surface under the cultivation and climate, the effective causes on the operation of the consumed energy according to a model of economic measurement. mehrara and ahmadzade (2009) concluded that during 3 programs of the country economic, social and cultural expansion, the share of the operation of entire production causes of servicing part in the increase of productions of other than oil economic is more than the other parts and the share of the operation of entire causes of the production of agricultural part is less than the rest parts. Declared that the annual average of the rate of increasing the operation of the entire production causes in agricultural part is 3/08 percent during 1963-2003 years tahamipur and shamoradi (2007). Also, during such period, the share of increasing the operation of entire production causes was negative from the increase of the added value of the part. This happened while gholizade and saleh (2004) showed that in spite of no changes in acting of technology and scale, the changes in the operation of production causes were positive because of the increase in the management efficiency. also had resulted that the increase in the operation of the entire production causes in agricultural part had have a lot of vacillations and its average had been equal to 2/5 percents amirteimori and khalilian (2003). represented that although the freedom polities increased the surface of operation in Iran to 9/3 percents after 1988, they did not have any effects on the rate of increase of the operation mehrara and mohseni (2003). The repletion of research investment and internal and external improvement, human investment, investment intensity, opening index, international resources, the real Currency rate, inflation rate and unrealistic indignations of imposed war and Islamic revolution effect on the operation of entire Iranian economic causes and the effect of the research repletion and internal, external improvement, opening index and the unrealistic indignations has more powerful effect rather than the other indignations shahabadi (2007).

Methodology:

In this part of paper, first the method for calculating of operation of the entire production causes in Iran agricultural part will be presented, and then in detail the model of economical measurement for analyzing the effect of the amount of energy consumption will be discussed.

In the paper, the Kendrick model is used for calculating the operation of the entire production causes in Iran agricultural part. This method is one of the most important direct methods for calculating the operation of entire production causes. Kendrick model is included of the average weight of work and investment. Kendrick used an implicit production function for estimating the changes in operation. His index of the operation of the entire production causes is defined as bellow structure:

$$TFP = \frac{V_t}{ak_t + \beta t_t}$$

In which TFP is the operation of entire production causes, V_t is the real added value(to the fixed price) , k_t is the value of available investment to the fixed price, is the share of the investment agent in added value and β is the share of work agent in the added value (Tahamipour and shahmoradi 2007).

In the literature of the subject about studying the effective causes on the operation of entire production causes, different indignations had been studied that in this paper with attention to achieved studies, the indignations entered the model and their effect had been analyzed. The final estimated model is summarized as the following from:

$$ITFP = E + IE + IRD + LT + LY + LM$$

In this equation:

ITFP = the operation of entire production causes

E = the used energy in agricultural part equal to net oil (Karkacier *et al*,, 2006)

IRD = the research prices and improvement in agricultural part (Haigon, 2007)

LT = the bulk of external business of agricultural production equal to the entire export and import (Mehrara & Mohseni, 2004)

LY = the production of impure national to the fixed price 1997 (Asnaashari *et al*,(2010)

L M = is the mechanization coefficient of agricultural part (Asnaashari *et al*,, 2010) that all of them are used for estimating the model in the shape of logarithm.

RESULT AND DISCUSSION

In the studies that benefit from dates in time series according to the nature of dates. The first essential step is identifying the position of the used indignation. This step causes the prevention of estimating false regressions and presenting misleading result. For this purpose the generalized Dickey-Fuller (Augmented Dickey-Fuller) exam had been used. Zero hypothesis of this test was included: the existence of a unique base and non-stationary of indignation that in the case of bigger absolute value of the observed statistic than critical statistic or (if the observed statistic will be more than critical statistic) the zero hypothesis would be failed and stationary of indignation (hypothesis one) would be accepted. The result of this test are reported in table (1). If the result of augmented Dickey-Fuller test show that all the indignation entered in the model except in the model except the logarithm of the amount of energy consumption, have a unique and non-stationary base in surface that were being stationary by differentiating the first rank. The logarithm of amount of energy consumption is stationary in surface.

Table 1: The results of augmented Dickey-fuller test

Reliability Status	Subtracting the first order statistic	Statistics	Variable
$I_{(1)}$	-6.7^{***}	-1.84	LTFP
$I_{(0)}$	_	-3.08^{**}	LE
$I_{(1)}$	-9.05^{***}	-0.82	LRD
$I_{(1)}$	-10.52^{***}	-0.60	LT
$I_{(1)}$	-5.87^{***}	0.02	LY
$I_{(1)}$	-9.42^{***}	-1.98	LM

* Denotes statistical significance of variables
Source: research finding

The information about the stationary position of indignations not only prevent the estimation of false regressions, but also presents the essential information for the selection of the method of model estimation.

By attending to the collective degree of indignations, the auto-regressive distributed lag model was used. This model with estimating a fixed equation makes it possible for a test and estimating a long-term relationship. The results of the estimating a fixed model is reported in table 2.

By using the presented model, Banerjee, Dolado and Mester test is used for the collective test of ARDL model. if the total of efficiencies of lag model indignations related to dependent indignation would be less than one, the fixed model would have a tendency toward the long-term balanced model. Zero hypotheses is according to luck of collocation and the following hypothesis is according collocation among the model indignations. The essential statistic quantity for performing above test is calculated as follow

$$t = \frac{\sum_{i=1}^{m} \beta_i - 1}{\sum_{i=1}^{m} s\beta_i}$$

By comparing the statistic of observed with the critical quantity presented from Banerjee, Dolado and Mester in the observed trust surface, presence or absence of a long-term balanced relationship among the model indignations would be understood. In this study, the statistic is calculated equal to -5/1 . by comparing the observed statistics with the critical statistics in a five percent meaningful surface (-4/43),the long-term balanced existence and collocating of indignations would be consented.

Table 2: Estimating the fixed model ARDL (1,1,0,0,0,0).

Significant	Statistics	Coefficient	Explanatory variables
0.07	1.89	0.27	LTFP(-1)
0.01	2.8	0.003	LRD
0.02	2.34	0.002	LRD(-1)
0.00	4.21	0.03	LE
0.07	-1.89	-0.006	LT
0.00	3.73	0.013	LY
0.11	1.62	0.003	LM
0.00	-5.00	-2.00	C
DW = 2.6		$R^2 = 0.99$	

Source: research findings

After consenting the existence of long-term relationship among indignations, the mentioned relationship would be estimated, whose results will be given in table 3.according to long-term relationship, those indignations related to the prices of research and improvement, the amount of energy consumption and the national impure production have got a positive and completely meaningful effect on the increase of the operation of entire production causes. the indignation related to the bulk of external business of agricultural production has got a negative and meaningful effect ,while the indignation related to mechanism coefficient, although has got less meaningful. Identity than the other indignation, it has a positive effect. the positive effect of the amount of energy consumption on the operation of entire production causes is because of the fact that the increase of energy consumption during the studied period has caused the usage of the novice technology in the production process that it can be clearly pointed to the increase of the fixed and moving mechanism surface in the farm surface. The increase in energy consumption makes an essential condition for using the machines during different steps of production in agricultural part and by this, it increase the saved that are going to be used. The positive effects of mechanism coefficient agree with such a fact.

Table 3: Estimating long-term model

Significant	Statistics	Coefficient	Explanatory variables
0.00	6.39	0.008	LRD
0.00	6.92	0.04	LF
0.09	-1.74	-0.008	LT
0.00	3.67	0.01	LY
0.11	1.64	0.004	LM
0.00	-36.96	-2.75	C

Source: research findings

The increase of mechanism co efficiency shows the fact that the amount of machines including the fixed and moving machines in art, followed a growing process. Also process has contained the increase of energy consumption. The increase of mechanism surface and energy consumption causes the increase of operation of the saved as well as water, ground and human power that totally caused the total production causes in this part to be improved. The long-term stretch of energy consumption shows that in a long period of time, one percent increase in the amount of energy consumption. has followed the 0.04 percent increase in the operation of entire production causes. A compare among the tensions of the effective causes on the operation of entire production causes represented that in a long period of time the amount of energy consumption has got the most effect on the increase of the operation of entire production causes in agricultural part. Because of this the impure national production had got the second placement. The positive effect of impure national production is because of the fact that by increase of national impure production, the possibility of investment in agricultural part will be increased that such fact follows with improvement of operation as well. Another important indignation that had a positive and meaningful effect on the growth of operation of entire production causes in agricultural part is prices related to research and improvement. In Iran, the research and improvement activities in agricultural part turned to the definition of new productive numbers which have resistance to the vermin's, diseases and environmental problems, and by this has helped the increase of production in this part. Totally, investment in research and improvement by means of the basic and technical new, causes the improvement of the operation of entire production causes and the more increase in this part. Another analyzed indignation is the bulk of exotic business of agricultural products that has negative effect is because of the fact that the Iranian agricultural part has not changed to a business part in country economic yet and because of the high price of production of agricultural productions in Iran in compare to the world, it provides improvement of the relationship with out of field world for the entrance of exotic agricultural product and causes the weakness of production and in decrease of internal producers motivation that has got a negative effect on the operation of production causes. In continue with error correction model, for the purpose of analyzing the short-time relationship among indignations and also the way of intention of changes in indignations toward a long-term balance, had been estimated. The results related to estimating of such model that is reported in table 4 showed that all indignations except of the bulk of the exotic business of agricultural products have a positive effect on the growth of operation of entire productions causes. According to this, all of indignations have harmonious and same effects on the operation of entire productions causes during the long and short periods of times. The indignation related to the amount of energy consumption with 0.03 percent coefficient in short period of time has also the most powerful effect and the internal impure production like the long-term period is situated in the next class

The positive effect of energy consumption in short period of time also shows that energy consumption in different period's acts as a basic stimulant for the growth of operation of production causes in agricultural part. Another benefit of estimation of error correction model is that the way of decreasing the existed shocks in short time period toward the long-term balanced quantities can be analyzed. According to this, the correction co efficiency that is estimated equal to -0.72 represents that according to the sign and amount of this co efficiency,

the existed shocks during short period of time are decreasing toward the long-term balanced quantities. The amount of the estimated co efficiency represents the high speed (rate) of decreasing toward the balanced quantities.

Table 4: Estimation of error correction model

Significant	Statistics	Coefficient	Explanatory variables
0.00	2.80	0.003	dLRD
0.00	4.21	0.03	dLE
0.06	-1.89	-0.005	dLT
0.00	3.73	0.01	dLY
0.11	1.62	0.003	dLM
0.00	-5.00	-2.00	dC
0.00	-5.10	-0.72	ECm(-1)

Source: research findings

Results:

In present study, the effective causes in Iran agricultural part were analyzed with focus on the amount of modeling energy consumption. According to the results get by this research, the amount of energy consumption, research and prices, development in agricultural part, the national impure production and mechanism co efficiency in part during short and long period of time, have a positive and meaningful effect on the operation of entire production causes, just that indignation related to the bulk of external business of agricultural part has got negative effect, that such negative effect is because of the fact that Iran agricultural part cannot complete with the worldly production yet as a business part and the basic cause in this field can be the high price of production. Among the causes whose positive effect was estimated during both short and long period of time, is the amount of energy consumption that has the most effect on the operation of entire production causes. Totally, the result from the research represent the fact that different causes can improve the operation of production causes, in agricultural part, therefore, it is suggested that by operating the appropriate politics for using the effective causes, the operation of production causes changes to one of the basic growth sources in this part, that it is completely essential by attending to the serious limitations in the way of consuming the saved as well as water and ground in Iran, besides, by attending to the operation of the law of aiming Subsidies that can have an effect on the amount of energy consumption, it is necessary in this case that the operation of consuming energy in this part would be attended, and by increasing operating such important saved, it can have an increasing positive effect on the operation of other production causes, that in this case, equipping and innovation the used machines in agricultural part can be a suitable solution that for such purpose the support of nation from the agricultural part producers is necessary.

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