Economic Analysis of Rice Crop Supply Function in Iraq for the Duration (1995-2015)

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Abstract: Whenanalyzing the relationship between rice production and instrumental variables it turns out that the double logarithmic formula best formulas that give results consistent with the operative economic standard tests and statistical function results showed lack of standard problems, the local production of Ricecrop is not enough to meet growing demand and to Iraq depends greatly on governmental and private import imports to bridge the shortfall in availability of consumption, these imports cost the State budget big sums, and rice price parameter amounted to previous year (0.54) that refer to this The variable has a positive impact on supply, but this effect was not enough because there are limitations may prevent producers from increasing their production isThe prices of these other determinants are the quantities of irrigation water and fertilizer prices and economic use of all these resources have an impact on supply.

Keyword: Rice Crop, Supply Function, the Local Production.

I.   Introduction

Rice great importance among food crops in the world and is one of the main crops to feed half the world's population, particularly in Asia, rice is the best cereal for human health for its lack of cholesterol and fat and low sodium salt and the absence, in Iraq takes an economic niche rice crop Mission in Iraq as well as the importance of agriculture and food of the Iraqi capita consumption has important nutritional value for the calories they contain (40%) of calories of grain yield your body needs, and that the seeds of rice contains 9 – 12% protein and 65-70% starch and 4-6% oil. And that Iraq is one of the countries which has all conditions for cultivation of most varieties of rice. This crop was chosen for food and economic importance to be in question, as well as rice is of importance for international trade because it is an important commodity whether exporting or importing commodity. As well as cultivating important items constitutes income for farmers and an important part of the State budget. And increase local production to meet the growing demand for this crop and reduce the quantities imported with the displayed sizelocal. To Iraq from countries where weak domestic production of crops it is not enough to support the consumption of this crop. And if you didn't want to turn agricultural policies allow farmers to increase production through crop price support or support resource prices or the amount of water available to increase production to cover growing demand. Research aims to estimate the supply function to crop rice in Iraq for the duration (1995-2015) Using time-series data and examine the volume of production in Iraq and diagnose the most important factors affecting the width of this crop for the duration (1995-2015). The search is based on the supply of rice depends on several factors affect their production prices as well as the available spaces and cultivated and the quantities of irrigation water and technical factors and experienced farmers in the cultivation of this crop. Data were obtained from official authorities, research and communications and some references and books. Search adopted two methods of analysis: first descriptive analysis of the study presentation on rice crop as well as factors affecting the supply of duration (1995-2015) and see the growth rates of the various economic variables relating to cropRice. The second is the use of quantitative analysis method to estimate the relationship between the quantity of the crop and the factors affecting them.

II.   The Materials and methods

Defines the width of commodity quantities presented by producers and sellers and sell it at a certain time when different levels of prices. Or is the amount of product produced and presented on the consumer Exchange, there is a direct correlation between price and quantity before assuming other factors remain unchanged. (1)

Elasticity of supply

Is a measure of the degree of response of producers to view a commodity as a result of the change in price, and know the elasticity of supply as the relative change in the quantity divided by the relative price change and can be expressed mathematically as follows:(2)
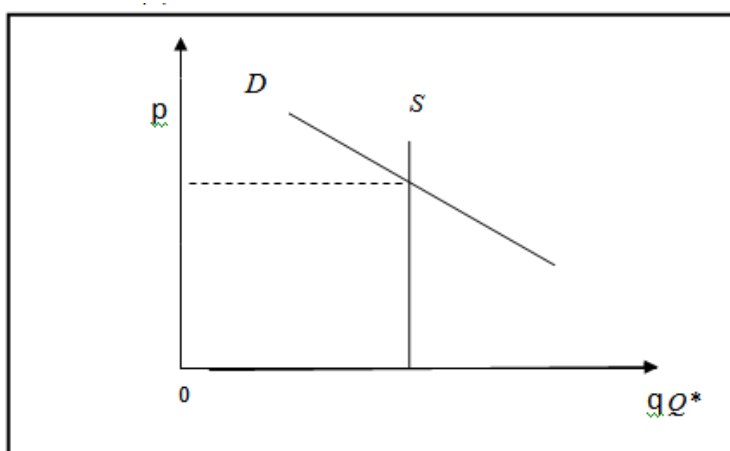
$$E_S = \frac{\Delta Q_S / Q_S}{\Delta p / p}$$

$$E_S = \frac{\Delta Q_S}{\Delta p} \cdot \frac{p}{Q_S}$$

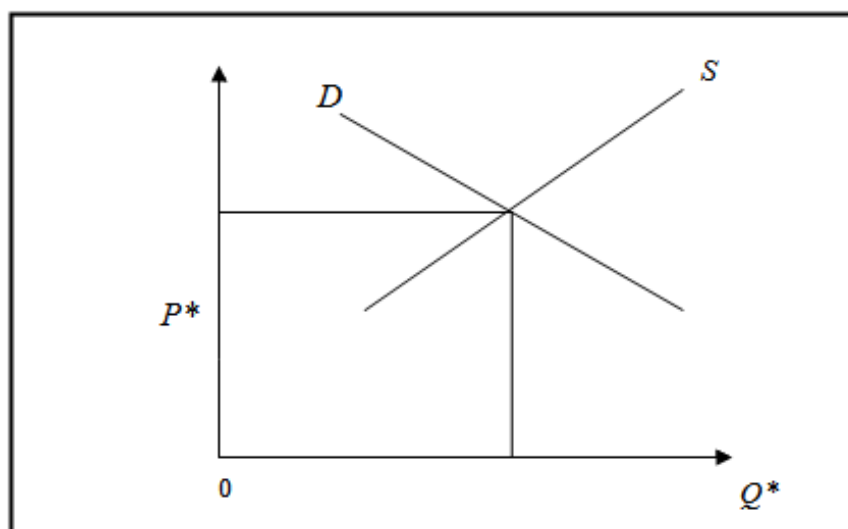The elasticity of supply in the short and long periods

First: very short period.

The product during this period varies in size, this duration is not flexible or inflexible, because the product can't respond to change in price, but the price will be determined what it will demand time and such perishable goods such as tomato and fish. (3).

Form (1) illustrates the elasticity of supply is very short
Source (4).

II: long term and during this period the product can change all production tools so that it can respond to the change in price elasticity of supply is thus great. That there is a possibility to increase the number of projects working in the same field and allow the new producers to enter the modern techniques of agricultural production of this commodity to increase production (3).

Form (2) illustrates the elasticity of supply in the long term

Display parameters (6)

1-The prices of factors of production.

2-number of producers

3-the technique used

4-taxes and Government subsidies for rice crop supply function description in Iraq for the duration (1995-2015).

Select variables that were included in the function display based on several factors including section as determined by economic theory and the other section by filling us in on previous studies and research and how important these variables and data availability are considered an important requirement in order to complete the search display function has been chosen Rice crop on the rice crop to be displayed is the dependent variable, independent variables are the price of rice and wheat price previous year area cultivated and the quantities of water and urea price and production risk. Turns out that the double logarithmic function which gives the best results and conformity of economic theory and statistical display function were estimated as follows.

$$Ln\,Ys = Ln\widehat{b_o} + \widehat{b_1}\,Ln\,x1_{t-1} + \widehat{b_2}\,Ln\,x2_{t-1} + \widehat{b_3}\,Ln\,E + \widehat{b_4}\,Ln\,U + \widehat{b_5}\,Ln\,O + \widehat{b_6}\,Ln\,N$$

$Ln\,Ys$:The natural logarithm of a quantity of rice crop

$Ln\,x1_{t-1}$: Natural logarithm of previous year rice crop price

$Ln\,x2_{t-1}$:The natural logarithm of the wheat crop earlier year price

$Ln\,E$: The natural logarithm of the area cultivated for rice crop

$Ln\,U$: Natural logarithm of price of urea

$Ln\,O$: The natural logarithm of water levels (Tigris-Euphrates).

$Ln\,N$: Natural logarithm of productivity

Time-series data were used for rice harvest in Iraq for the duration (1995-2015), and use the data in the form of indices and to eliminate the impact of inflation in accordance with the following formula: (10).

index number=100 * (comparison in variable value)/(Foundation year in variable value).

Economic analysis and display function index of rice harvest in Iraq for the duration (1995_2015)

The purpose of the economic analysis and record huh mathematical and statistical methods for the functions described, one of the objectives of the standard analysis form and form test assessment gap in terms of moral and explanatory power of micro and macro-economic model using the necessary tests and interpretation Analysis of the results extracted from them. (7). The dual logarithmic formula is the best formulas and results that are consistent with economic logic in terms of morale and size parameters and signals and display function was estimated by the following formula:

$$Ln\,Ys = -1.666 + 0.540\,Ln\,x1_{t-1} - 0.352\,Ln\,x2_{t-1} + 0.477\,Ln\,E - 0.311\,Ln\,U + 0.410\,Ln\,O + 0.610\,Ln\,N$$

Table 1 shows the value and volume of supply function parameters

Variables	B	T	Sig.
Stationary intersection.	-0.1666	-2.234	0.042
Previous year rice price	0.540	2.925	0.011
Previous year wheat price	- 0.352	-2.063	0.058
Cultivated area	0.477	4.037	0.001
Urea price	-0.311	-2.033	0.061
The amount of water	0.410	2.802	0.014
Risk productivity	0.610	3.777	0.002

Source: prepared by the researcher using a program (spss)

Table (1) that the reference to previous year rice parameter rate below the level of morale (1%), increase the price of rice by 1% will lead to increased production by 0.54% of any increase in production is less than the percentage increase in price, but the price was wheat crop parameter is negative amounting (. 0.352) and below the level of morale (5%) The increase in the price of wheat (10%) The quantity of rice harvest will drop by 3.52% and that makes sense economically either for acreage parameter, which came by (0.477) and below the level of morale (1%) So to increase the cultivated area by 10%, production will increase by 4.7% and that makes sense because the increase in cultivated area alone is not sufficient to increase output either signal parameter urea price was worth negative (-0.311) and below the level of morale (5%) Increased urea prices by 10% which leads to reduced production by 3.11 percent. Either for water quantity parameter which came with water quantity parameter (0.410) where increased water levels and quantity available for growing rice by 10% which leadsTo increase production about 4.1%, with the rest of the production requirements and this underlines the importance of water and its contribution to increase production, and indicates that increased productivity (increase risk) to 10% lead to increased production by 6.1%.

The value of the coefficient of determination (R^2) debugger (0.870) indicate that about 87% of the changes in the dependent variable that represents the quantity of rice crop of explanatory variables responsible within the display function of rice crop and the remaining 13% of other changes not contained in A template

which sucked the impact of these variables, random variable, and through the test (t) indicate results obtained for variables in double logarithmic display moral function of each of these variables are statistically significant at different levels either moral regression testing. College test (f) denote a function when moral value (23.291) and moral level (1%) This illustrates the importance of explanatory variables independent of the function display on the quantity of rice crop.

Standard display function problems and disclosure standards

1. The link problem (Autocorrelation):

The Durban value indicates Watson (D.W) display function (2.568) where this value is compared with the tabular values when the sample size (n = 21), and (k = 6) and at the level of 5% morale and found the following. (8)

$$dL = 0.731$$
$$du = 2.124$$
$$4\text{-}du = 4 - 2.124 = 1.876$$
$$dL = 4 - 0.731 = 3.269 \ 4\text{-}$$
$$D.W > \quad du$$
$$2.568 > 2.124$$

Seen through the value of the indexed values that Watson Durban template no economic link problem (Autocorrelation) between the estimated variables for random error display function and lack of seriousness of this problem. (8)

2. The problem of heterogeneity of variance (Hetroscedasticity):

To detect this problem was using test Park by making the dependent variable huh residuum values box (〖〗 〖ei ^ 2) to independent variables in a function of supply and have been using each independent variable separately with residuals values box and using the program (SPSS) program (Microsoft Excel) which indicates that the Template without a problem the heterogeneity of variance and the results obtained for economic variables in rice crop supply function as in table (2). (9)

Table 2 shows the value of the variable wemanoitha as test Park display function

Variables	T	Sig.	F	R2
Previous year rice price	0.603	0.554	0.363	0.019
Previous year wheat price	0.258	0.799	0.067	0.003
Cultivated area	0.869	0.396	0.755	0.038
Urea price	0.781	0.444	0.610	0.031
The amount of water	0.208	0.838	0.043	0.002
Risk productivity	0.846	0.408	0.716	0.036

Source: prepared by the researcher using a program (spss).

3. the problem of multiple linear correlation (Multicollinearity):

A test used to detect link problem Klein paced between the independent variables. This test is can take the square root of the coefficient of determination ($\sqrt{(R \char`\^ 2)}$) and comparing this value with partial links to independent variables with each and must be the square root of the coefficient of determination is greater than or equal to the partial correlations between the independent variables. Since the value of the coefficient of selection (0.909) after taking the square root value became (0.953) when comparing this value with partial correlations obtained using the program (SPSS) find that the r-squared value of the coefficient of determination is greater than the value of partial links so the template without Problem of multiple linear correlation (Multicollinearity) (3)

• Elasticity's derived from the rice harvest display function.

• The price elasticity of supply amounted (0.54) which indicates a 10% price change will lead to a change in the quantity offered less and 5.4% and this shows that the elasticity of supply is flexible for the rice crop and that's what characterizes most agricultural commodities. elasticity of supply has reached crop cross Rice with wheat (-0.352) which show that wheat crop of rice crop competition any crops to increase the price of wheat crop by 10% which leads to a lower quantity of rice crop by 3.52%. While the flexibility of rice crop acreage (0.477) and the quantity of rice affected by vegetation. As increasing the cultivated area by 10% leads to increased production by 4.7% and vice versa. Amount of water which was flexible and (0.410), to increase the amount of water by 10% would increase the supply of rice increased by 4.1%, flexible risk productivity (0.610) increase the risk by 10% will lead to increase the supply of rice by 6.1% and this ratio indicates the importance and significance of rice crop under Ml risk in order to increase production and finally reached the elasticity of composting Urea (0.311) as urea price increase of 10% would lead to a decrease in the quantity of rice (3.1%).

III. Results and discussion

Production growth rate during the period (1995-2015) (3.6%) and that's a good sign and shows the increasing production, either during the period (1995-2003), the growth rate of production (1.8%) during this period decreased production due to low vegetation. During the period (2003-2015), the growth rate of production (-2.1%) This decrease in production in Cannes caused by wars and economic conditions affecting agricultural production and other sectors. The most important factors influencing the quantity displayed is the price of rice crop of precedent as well as cultivated and the quantities of irrigation water from the major factors affecting the supply and price of opposing crop of precedent and urea price also factors that affect the displayed quantity. The local production of rice crop is not enough to meet growing demand and to Iraq depends greatly on governmental and private import imports to bridge the shortfall in availability of consumption, these imports cost the State budget big sums. Rice price parameter value of precedent (0.54) Which indicate that have a positive impact on supply, but this effect was not enough because there are limitations may prevent producers from increasing their production but prices of these determinants are the quantities of irrigation water and fertilizer prices and economic use of all these resources have an impact on the quantities Before it wasn't cultivated influence in Iraq as to increase production in sufficient amounts and parameter acreage amounting (0.48), because the availability of vegetation associated with primarily availability mAh irrigation and other factors. The local production of rice crop is not enough to meet growing demand and to Iraq depends greatly on governmental and private import imports to bridge the shortfall in availability of consumption, these imports cost the State budget big sums.

We recommend that the need to increase domestic production by providing necessities of fertilizers, equipment and electrical energy and encourage farmers to grow rice through awareness and correct guidance through agricultural extension programmers, and the need to increase the amount of water allocated to the agricultural sector and especially the rice harvest And create lambast to dump excess water on the rice crop yields need needs punched big water. It is necessary to develop appropriate price policy to support prices and especially important and strategic crops, the State must raise the price of rice crop to encourage farmers to increase their production to meet growing demand In view of the increase in the annual population size. The State must deal with the neighboring wekhsasa which stems from the Tigris and Euphrates rivers to increase water quotas allocated to the country, and the need to build dams to store water and use them at a certain time in order to cope with the water shortage because it is considered an important factor in g Marveled at rice.

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