Funding gender and the relative economic efficiency of calves fattening projects in Baghdad governorate: Anormalized profit function Approach

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Abstract

The research aimed to estimate the Anormalized profit function and derive the production function from it using the developed duality method, as well as measuring the relative economic efficiency and calculating the return to scale. The study reached to derive the duality production function from the Anormalized profit function for the calves fattening projects in the Baghdad governorate, and it was found that they have achieved diminishing capacity returns of the amount of (0.975), less than the correct one, and this means that it is in the stage of rational production, Also the study concluded by measuring the relative economic efficiency through the Anormalized profit function, that there are no differences in economic efficiency between self-financed calves fattening projects and co-financed calves fattening projects, The results of the research also showed that there is a need to increase the use of some resources and reduce Others and in certain proportions in order to achieve the optimum level of use of those resources, so it is necessary to work to direct the breeders to the optimal use of the resources involved in the production process to benefit from them to the maximum extent possible to achieve profitable profits from that process, and the study concluded that calves fattening projects are economically profitable projects, Therefore, it recommends the owners of capital to invest in these projects as they bring profitable profits for them.

Keywords: fattening calves, Anormalized profit function, duality production function, relative economic efficiency, Gender of funding, returns to scale.

Introduction

Livestock is a national wealth that contributes greatly to enhancing the food security capabilities of the country. The development of livestock represented in increasing and improving production contributes to the possibility of responding to the local demand of each country of the world for these products and providing them self, and thus not resorting to importing from abroad or reducing Including at least, which provides a large amount of hard currency so that it can be used in other areas. The country is in dire need of it in providing the requirements for achieving economic development, and in general, Iraq, which has most of the ingredients for the success of animal production projects, suffers from a clear shortage of Production of the various items of this vital sector, most animal products, especially red meat, which is considered one of the most important commodities that enter the Iraqi consumer basket, it is provided by importing from outside the country to fill the deficit in its production. The importance of the research lies in the economic importance of the red meat production

sector in general and beef in particular, as the red meat production sector is one of the most important agricultural sectors responsible for providing animal protein to humans, and Iraq is one of the countries that suffer from a low average per capita share of animal protein, Where the average per capita share is about (13.35) kg / year, which is lower than the average recommended by the World Health Organization and the World Food and Agriculture Organization, which is estimated at about (16) kg / year, with a decrease of (2.65) kg / year during 2019 (FAO, 2020).

As for the research problem, it is summarized in the inability of red meat production in Iraq to meet the increasing needs, in addition to the continuous rise in its prices and the prices of alternative products to it, which led to resorting to foreign markets, whether in the form of processed meat or live animals to bridge the growing gap between local production. On the one hand, and its consumption on the other hand, which requires studying the causes and factors that led to the increase in the size of the gap between them instead of reducing it.

The research aims to estimate the Anormalized profit function, measure the relative economic efficiency and derive the function of producing calves fattening projects in Baghdad Governorate for the year 2021 using the developed duality theory. One of the studies that dealt with this topic is a study (Kalangia & et al, 2016) aimed at analyzing the factors affecting the profitability Beef farms in East Java in Indonesia), the study aimed to determine the factors affecting the profits of beef farms in East Java, as well as to determine the profits earned by farmers in the high areas and low areas in East Java, which is one of the areas where the most cattle are raised. From the Boropolenko region (25-50 m above sea level), which represents the lowlands, and from the Malang region, which represents the high areas 500 m above sea level during a period of one month in 2013, the data were analyzed using the Anormalized profit function (UOP), and the Cobb-Douglas production function (UOP-CDPF) was estimated using the least squares (OLS) method.

The results of the analysis showed that the average profit achieved by farmers in high areas is higher than the profit achieved by farmers in low areas, and in order to improve the profits of cow breeding, the study recommends increasing the number of livestock ownership and improving animal selling prices, as well as in another study carried out (Hariyati, Y, 2017), entitled Profit and Relative Efficiency Function of Small Farmers of Cocoa in Jemberana, Bali Governorate, the data were collected by a stratified random sample proportional to the sizes of small farms. The study aimed at determining the level of profit achieved by cocoa farms in the research area, as well as identifying the factors that affect the profit of cocoa farms, as well as discovering the difference between economic efficiency and price efficiency. The first hypothesis was tested about the factors that affect the owners of small cocoa farms using a function Anormalized Profit Function (A Normalized Profit Function) based on Cobb Douglas production function, while (Achmad F. & et al, 2019) a study entitled (Factors Affecting Analysis of Profit of Small Holdings of Cattle Breeders in Yogyakarta Special Region), the study aimed to analyze Factors that affected the profits of small farmers from cattle breeders with private ownership (self-owned) and those who depend on them on the partnership system, smallholder farmers in Indonesia mostly keep small farms for fattening cows. The study was carried out in four districts of Yogyakarta district, and a sample of 240

breeders (120 self- and 120 partnership breeders) was taken.

The data was analyzed using the Anormalized profit function (A Normalized Profit Function), and the results of the study showed that the profit of small farmers with private ownership is higher than the profit of the partnership breeders. The results of the analysis also showed that the factors that influenced Negatively in the profits of smallholder cow breeders are the depreciation cost of barns and equipment, the price of fattening calves, the price of fodder, the price of concentrated fodder and rented labor, and the added value of the above five variables tends to decrease in the profits obtained by farmers, while the factors that positively affected are Number of cows, production system, gender of cows and cow ownership system.

Materials and methods

To achieve the objectives of the research, two methods of data collection were adopted, the first of which is the primary (sectional) data using a questionnaire form prepared for this purpose for a sample of (100) breeders distributed over the study area, and the second is secondary (library) data, which was obtained from official sources in the two ministries Planning and Development Cooperation, the Ministry of Agriculture and their official directorate, as well as statistics issued by the Arab Organization for Agricultural Development and the Food and Agriculture Organization of the United Nations, in addition to textbooks, theses, letters, journals, and relevant scientific and research websites.

As for the analysis, the tools of descriptive and quantitative statistical analysis were used to achieve the objectives of the study, such as averages and ratios Percentage, annual growth, simple and multiple linear regression, using different mathematical formulas to extract the most important Statistical and Econometrics indicators using (Excel), (Eviews) programs to reach logical and moral results that meet the economic, statistical and econometrics criteria.

In order to obtain the Anormalized profit function for calves fattening projects using on the basis of the production function, the general formula used in the Cobb-Douglas production function as a profit function is as follows (Hariyati, Y, 2017):

$$\ln\pi^{*} = \ln A^{*} + \sum_{j=1}^{m} B_j \ln c_j^{*} + \sum_{j=1}^{n} a_j \ln Z_j$$

Based on the above general formula, we can write the formula of the function that we will use in analyzing the Anormalized profit function for calves fattening projects using the following double logarithmic formula [(Yotopoulos & Lawrence, 1973), (Gujarati. D, 2004) as follows:

$$\ln\boldsymbol{\pi}^{*} = \ln A + b_1 \ln r_1 + b_2 \ln r_2 + b_3 \ln r_3 + b_4 \ln r_4 + \beta_1 \ln z_1 + \beta_2 \ln z_2 + ui$$

Since:

$\boldsymbol{\pi}^{*}$ = Anormalized profit for the production of calves fattening projects.

A* = constant term of the function.

bi = variable input parameters, i = 1,2,3,4.... etc.

βj = parameters of the constant factors, j = 1,2, ... etc.

r_1 = the Anormalized price of calves (fattening calves) in dinars.

r_2= the Anormalized price of feed consumed in dinars.

r_3 = Anormalized price of labor (for wages of labor) (man/hour).

r_4 = the Anormalized price of drugs and vaccines.

Z_1 = number of calves.

Z_2 = fixed factor costs (interest rate on capital, land rent, depreciation of buildings and equipment).

Ui = random variable. It represents the effect of variables that are not included in the model and are difficult to measure and quantify.

Hypothesis Testing and Decision-Making Criteria for Measurement of Relative Economic Efficiency:

To measure the relative economic efficiency of calves fattening projects, the dummy variable must be entered into the Anormalized profit function, with the explanatory factors remaining the same. In our study the dummy variable is represented by the gender of funding, so we give the self-founding projects number (1), and we give the participation projects number (0), and testing the relative economic efficiency of calves fattening projects will be based on the null hypothesis and the alternative hypothesis, so the formula for the Anormalized profit function with the presence of the dummy factor is as follows:

In exponential form:

$$\pi^* = A\, r_1^{b1}\, r_2^{b2}\, r_3^{b3}\, z_1^{B1}\, z_2^{B2}\, e\delta d$$

As well as in the double logarithmic form after entering the dummy variable as follows:

$$= \ln A + b_1 \ln r_1 + b_2 \ln r_2 + b_3 \ln r_3 + B_1 \ln Z_1 + B_2 \ln Z_2 + \delta d \pi^* \quad \ln$$

First - The Null Hypothesis H_0, which states that there are no significant differences between self-financed projects and co-financed projects, equal efficiency between projects in terms of relative economic efficiency.

H_0: D = 0

Second - The Alternative Hypothesis H_1, which states that there are significant differences between projects in terms of relative economic efficiency, and this mean, unequal efficiency between projects.

H_1: $D \neq 0$

As for the decision-making criteria, it depends on the (t) test to determine the efficiency difference between projects (Hariyati, 2017), as follows:

1- If the calculated (t) is less than or equal to the tabular (t), then the null hypothesis is accepted and this means that there are no economic differences between the self-financed projects and the partnership projects.

2- If the calculated (t) is greater than the tabular (t), then the null hypothesis is rejected and the alternative hypothesis is accepted, which states that there is a difference in economic efficiency between self-founding projects and partnership projects.

The data were analyzed using the least squares method (OLS) and through the (Eviews 12) program, to estimate the Anormalized profit function according to the double logarithmic formula in the presence of the dummy variable (gender of founding), and it is subject to economic, statistical and econometric theory tests, as shown in the following table (1):

Table (1) Outputs of the results of the Anormalized profit function analysis with the presence of the dummy factor for calves fattening projects in Baghdad governorate.

Independent variables	Estimated	coefficient	t value
fixed limit	A	18.92	3.492
Relative calves' price	r_1	-2.685	-3.638
Relative feed price	r_2	-1.772	-3.144
Relative labor price	r_3	-0.455	-2.685
medicines and vaccines	r_4	0.126	1.050
number of calves	Z_1	0.542	4.929
Fixed factor costs	Z_2	0.320	3.125
dummy variable	D	0.005	0.207
F - Test		255.18	
R Square (R^2)		0.944	
D – W Test		1.988	
No. Obs		100	

The following estimated equation, based on the data in Table (1), represents the Anormalized profit function for the production of calves fattening projects in the governorate of Baghdad with the presence of the dummy variable, and it is compatible with the economic, statistical and econometrics logic as follows:

$\ln \boldsymbol{\pi}^* = 18.921 - 2.685 \ln r_1 - 1.772 \ln r_2 - 0.455 \ln r_3 + 0.126 \ln r_4 + 0.542 \ln z_1 + 0.320 \ln z_2 + 0.0058D$.

Statistical tests

The t-test resulting from the statistical analysis of the estimated function data proved the significance of the estimated parameters at the level (1%) with the exception of the drugs and

vaccines variable, where the coefficients of the estimated function variables were the relative price of calves (r_1), the relative feed price (r_2) and the relative labor price (r_3).) and the number of calves as well as the costs of fixed factors are all significant at the level (1%), except for the price of The relative drugs and vaccines (r_4), which was not significant, as we found from the F-test, whose value (255.18) was significant for the function as a whole at a statistical level (1%), while the value of the coefficient of determination R^2 (0.94) explained that it explains to us that More than (94%) of the changes in the Anormalized profit are caused by changes in the independent (illustrative) variables included in the model, although less than (6%) of those changes are attributed to other factors that were not included in the model, and from the results of the statistical analysis we found that there is no The significance of the dummy variable (gender of founding) because the calculated t value is less than the tabular value (t), and this confirms that there are no significant differences between self-financed projects and co-financed projects, and therefore we accept the null hypothesis of the relative economic efficiency between projects, which states that there are no significant differences between both genders of projects (the efficiency is equal between projects) and we reject the alternative hypothesis.

Econometrics tests

1-The autocorrelation problem

The model showed that there is no autocorrelation problem between random variables after conducting the Durbin-Watson test, because the calculated Durbin-Watson (DW) test value is equal to (1.988) for a significance level of (5%) and lies between (du < D.w < 4-du), its value is confined between (1.55 < 1.988 < 2.197), where the computed D.w is greater than du and less than 4-du, meaning that it is located in the acceptance region, and from it we conclude that there is no autocorrelation between the random variables.

2- The heteroscedasticity problem

To detect the problem of inconsistency of variance inconsistency, the Park test was used, which includes estimating the square error regression equation as a dependent variable for the explanatory (independent) variables in the model, which are (r_1, r_2, r3, r_4, z_1, z_2), and the function estimated by the formula The double logarithm is as follows:

A- The error bounds square test for the Anormalized profit function with relative price variables: $\ln ei^2 = a + b \ln r_i$

B- The error bounds square test for the Anormalized profit function with constant factor variables: $\ln ei^2 = a + b \ln z_j$

Table (2) Park's test results for the limits of square error for the independent variables and the t-statistic, F-statistic.

Independent variable	Error bound square test	F statistic
r_1	$\ln ei^2 = 9.38 + 9.77 \ln r_1$ t (0.228) (0.212)	0.045

r_2	$\ln ei^2 = -187.49 + 23.45 \ln r_2$ t (-0.542) (0.553)	0.353
r_3	$\ln ei^2 = 19.877 - 5.87 \ln r_3$ t (6.17) (-0.566)	0.320
r_4	$\ln ei^2 = 17.536 + 0.675 \ln r_4$ t (3.755) (0.124)	0.0155
z_1	$\ln ei^2 = 28.355 – 3.727 \ln z_1$ t (5.20) (-1.90)	3.61
z_2	$\ln ei^2 = 50.259 - 2.39 \ln z_2$ t (2.229) (-1.427)	2.036

And since the estimated functions are not significant under the level of (5%) according to the (F) statistic, and as it appears from the results of the analysis in Table (2), because the calculated (F) value is less than the tabular (F) for all the estimated equations, so we conclude that no The existence of the problem of inconsistency of homogeneity of variance, and also that the calculated t value of the slope of the error regression equations is less than the tabular t value with a significant level (1%), and from it we conclude that there is no problem of inconsistency of homogeneity of variance.

3- The multicollinearity problem

To detect the existence of the multiple linear correlation problem between the independent variables, we do this by using the simple correlation matrix through the Klein Test (Maddala, 1988: 271-295).

It was found from the simple correlation matrix below in Table (3) that there is no problem of multiple linear correlation between the independent variables, because the simple correlation coefficient between the independent variables was smaller than the total correlation coefficient of the estimated model, which is (0.969), as well as by comparing the coefficient of determination (R^2) with the square of the correlation coefficient between the independent variables. If the coefficient of determination (R^2) is greater than the square of the correlation coefficient between the independent variables, this means that there is no problem of multiple linear correlation.

That is: $R^2 > r^2 x_i xj$

Table (3) matrix of simple correlations between independent variables (Illustrative) of the Anormalized profit function for calves fattening projects in Baghdad governorate.

	Lnr_1	Lnr_2	Lnr_3	Lnr_4	Lnz_1	Lnz_2	D
Lnr1	1	-0.3343	0.5520	-0.1367	-0.0284	-0.040	-0.184
Lnr2		1	-0.1076	-0.0782	-0.2644	-0.307	-0.315
Lnr3			1	-0.395	0.1167	-0.0047	-0.258
Lnr4				1	0.0542	0.350	0.434

Lnz1					1	0.930	0.516
Lnz2						1	0.637
D							1

Economic analysis of the relative economic efficiency in calves fattening projects.

Through the economic analysis of the Anormalized profit function for the production of calves fattening projects with the presence of the dummy variable, it was found that the signals and values of the studied independent variables that conform to the economic logic are the relative price of calves, relative fodder and relative work. The relative price of calves, relative fodder and relative work, while the relationship of the Anormalized profit with the relative price of medicines and vaccines was contrary to the economic logic. It was also shown from the results of the economic analysis that the Anormalized profit function is increasing in relation to the fixed costs factor and the number of calves being Their sign is positive, and this is contrary to economic logic as in Table (33), which is the same as the results of estimating the Anormalized profit function without using the dummy factor with small changes in the amounts of the estimated coefficients due to the introduction of the dummy variable in the estimated function, and given the results of the analysis in relation to the dummy variable (D), it has a positive sign and the value of the regression coefficient was estimated at (0.0058) and the calculated t value was (0.207), which is not significant because the calculated t is less than the tabular t. On the profits of farmers in the study area, this means that there are no relative differences in economic efficiency between self-financed projects and partnership projects, and we accept the null hypothesis and reject the alternative hypothesis.

Derivation of the production function for calves fattening projects from the profit function Anormalized by the presence of the dummy factor:

The neoclassical production function in the (Cobb - Douglas) formula, which is called (the indirect production function) can be derived from the Anormalized profit function based on the approach of the developed duality theory that embodies the relationship that exists between them, the production function relates to the inputs to the outputs, while the Anormalized profit function is related to prices The relative proportions of the fixed inputs and production factors to the Anormalized profit, as well as the fact that the parameters of the two functions are interrelated with each other, as the production function is only an inverse image of the profit function and vice versa (Olusola & Others, 2014: 46).

The normal production function is written according to the following formula: $Q_i = f(x_1, x_2, x_3, z_1, z_2, a, \theta)$

Whereas the Cobb-Douglas production function has a formula as follows:

$$Q_i = K X_1^{a1} X_2^{a2} X_3^{a3} Z_1^{\theta 1} Z_2^{\theta 2}$$

When converting the function from the exponential form to the logarithmic form, we get the production function in the double logarithmic form, as follows:

$\ln Q = \ln K + a_1 \ln X_1 + a_2 \ln X_2 + a_3 \ln X_3 + \theta_1 \ln Z_1 + \theta_2 \ln Z_2$

Since:

Q = output.

K = constant limit.

Xi= variable input, i = ...,1,2,3.

Z_1 = fixed factor costs (land rent and capital interest.)

Z_2 = production capacity.

a_1, a_2 ,a_3 ,θ_1,θ_2 represent the parameters of the duality production function.

In order to find the parameters of the production function from the parameters of the estimated Anormalized profit function, we must first extract the sum of the parameters of the relative prices of the variable resources from the estimated profit function, which is expressed by the symbol (U_N) as in the following formula:

$U_N = \Sigma_i \, b_i$

The parameters of the production function can be found depending on the parameters of the relative prices of the inputs in the Anormalized profit function and on the U_N formula), as in the following mathematical relations:

$a_1 = - b_1 (1 - U_N)^{-1}$

$a_2 = - b_2 (1 - U_N)^{-1}$

$a_3 = - b_3 (1 - U_N)^{-1}$

$a_4 = - b_4 (1 - U_N)^{-1}$

$\theta_1 = B_1 (1 - U_N)^{-1}$

$\theta_2 = B_2 (1 - U_N)^{-1}$

Since:

a_1, a_2, a_3, a_4, θ_1, θ_2 represent the parameters of the duality production function.

Also, the constant term (A) for the output function from the constant term (K) For the Anormalized profit function:

$K = (1 - U_N) \, A \, (1 - U_N)^{-1}$

This means that it is possible to obtain the unknown constant segment and the parameters of the production function through the Anormalized profit function [(Olusola & Others, 2014: 43-50), (Rahji & Others, 2015)].

In order to calculate the parameters of the production function of calves fattening projects in

the presence of the dummy factor in Baghdad, we must first obtain the sum of the relative price parameters (U_N) from the estimated profit function, as in the following formula:

$U_N = \Sigma_i b_i$

$U_N = \Sigma_i (b_1 + b_2 + b_3 + b_4)$

$U_N = (-2.685 - 1.772 - 0.455 + 0.126)$

$U_N = -4.786$

The production function coefficients for calves fattening projects can be derived depending on the value of (U_N) and the parameters of the Anormalized profit function according to the following relationships as follows:

$\ln\boldsymbol{\pi}^* = 18.921 - 2.685 \ln r_1 - 1.772 \ln r_2 - 0.455 \ln r_3 + 0.126 \ln r_4 + 0.542 \ln z_1 + 0.320 \ln z_2 + 0.0058D.$

$a_1 = -(-2.685)\,[1-(-4.786)]^{-1}$

$a_1 = 2.685(1+4.786)^{-1} = 2.685 * 0.1728$

$a_1 = 0.4639$

$a_2 = 1.772 * 0.1728$

$a_2 = 0.306$

$a_3 = 0.455 * 0.1728$

$a_3 = 0.0786$

$a_4 = -0.126 * 0.1728$

$a_4 = -0.02177$

$\theta_1 = 0.542 * 0.1728$

$\theta_1 = 0.0936$

$\theta_2 = 0.320 * 0.1728$

$\theta_2 = 0.05529$

Also, the constant term (k) of the production function can be derived from the constant term (A) of the Anormalized profit function according to the following formula:

$K = (1 - U_N)\, A\, (1 - U_N)^{-1}$

$K = (5.786)\,(164924771.9)\,(0.1728)$

$K = 164895217.4$

$\ln K = 18.921$

After the parameters of the production function and the fixed limit were obtained from the above equations, the double logarithmic production function can be written for calves fattening projects in Baghdad Governorate, which is called (indirect production function) as follows:

$$\mathbf{lnQ = 18.921 + 0.4639lnx_1 + 0.306lnx_2 + 0.0786lnx_3 - 0.0217lnx_4 + 0.0936lnz_1 + 0.05529lnz_2}$$

Table (4) The results of the production function derived from the Anormalized profit function with the presence of the dummy factor.

Explanatory variables	Parameters	Estimated parameter value
Constant	K	18.911
Calves' weight	a_1	0.4639
Amount of feed consumed	a_2	0.306
Human labor	a_3	0.0786
medicines and vaccines	a_4	- 0.0217
Number of calves	θ_1	0.0936
Fixed factor costs	θ_2	0.05529

Economic interpretation of the factors affecting the dual logarithmic production function of calves fattening projects.

It was found from the estimated function for the production of calves fattening projects that the coefficients' sign agrees with the economic logic, except for the indication of the drug and vaccine costs parameter. Table No. (4) above shows the partial elasticity, which is the regression coefficient for each variable in the estimated function, and from it we note that the coefficient of the fattening calves variable reached about (0.4639) which is a relatively high value compared to the rest of the other variables, and this means that the increase in spending on buying fattening calves by (1%) leads to an increase in meat production by (0.4639) while other factors remain constant, and for this reason the breeder spends large sums when buying Fattening calves. As for the elasticity of the consumed feed costs, it was also high, similar to the elasticity of fattening calves, which amounted to (0.306), and this explains to us the realism of the relative importance of these two suppliers being the main determinants of the produced quantities of meat. Therefore, the increase in spending on feed by (1%) leads to an increase Meat production increased by (0.306) with other factors remaining constant, while the partial elasticity of human work was at (0.0786), and this means that an increase in the number of human work hours by (1%) leads to an increase in meat production by (0.0786) while other factors remain constant. , As for medicines and vaccines, their partial elasticity was about (-0.0217), which has a negative sign, which indicates the inverse relationship between the costs of medicines and vaccines and the total production of Meat, and this means that there was no real or statistically significant relationship between the variable of medicines and vaccines and the increase in production, because no serious and fatal diseases affecting

the production of calves fattening projects were found during the study period, so that the costs of medicines and vaccines were relatively small, and this came In line with the research studies conducted by [(Rahayu, 2013), (Happy & D., 2017), (Achmad & Others, 2019)] while another study by (Ginting, 2012) reported different results which argued that the drug variable vaccines will affect the overall production of meat.

As for the parameter of the number of calves, its partial elasticity is about 0.0936, which has a positive sign and its value is relatively low, The positive sign is the direct relationship between the increase in the number of bound calves and the total production of meat, and this means that an increase in the number of calves by (1%) leads to an increase in production by (0.0936), while other factors remain constant, while the elasticity of costs of fixed factors (interest on capital, the deductions and land rent) were about (0.0552), which has a positive sign that reflects the direct relationship between the costs of the fixed factors and the quantities of meat produced, and this means that an increase in fixed costs by 1% leads to an increase in production by (0.0552), as the establishment of barns and fodder stores and the rest The requirements of fattening projects in scientific and studied ways, and the proximity of the land on which the project is located to transportation routes and water sources, all of which will lead to an increase in spending and thus contribute to production.

Measuring return to scale for calves fattening projects in Baghdad governorate with the use of the dummy variable.

It is evident from the amount of capacity returns in the function estimated for the production of calves fattening projects in the governorate of Baghdad shown in Table No. (5), which amounted to about (0.9757), and less than the correct one. Subject to diminishing returns based on economic theory, which means that an increase in the use of resources by a certain percentage will lead to an increase in production by a percentage less than the rate of increase in the use of resources, meaning that:

$$\sum E_P < 1 \ (0.9757)$$

Table (5) Productivity elasticities and capacity return for producing calves fattening projects in Baghdad governorate without using the dummy variable.

Explanatory Variables	Productivity Elasticity
Purchase of fattening calves	0.4639
Feed costs used	0.306
Human labor	0.0786
Costs of medicines and vaccines	- 0.0217
number of calves tied	0.0939
fixed factor costs	0.05529
Capacity Returns (Total Productivity Elasticities)	0.9757

Conclusions

1- The results of the research, by measuring the relative economic efficiency through the Anormalized profit function, showed that there are no differences or differences in economic efficiency between self-founding calves fattening projects and co-financed calves fattening projects, because the calculated value (t) is smaller than the value of (t) tabular.

2- The results of the study of the duality production function (the indirect production function) derived from the Anormalized profit function showed that the calves fattening projects have achieved diminishing returns to scale of (0.975), which less than the correct one, that is, they are in the stage of rational production, which is very close to the right one, which means that there is a need to increase the use of some resources and reduce others in certain proportions.

The study concluded that calves fattening projects are economically profitable projects, and that there are serious opportunities to invest in this gender of project in light of a large deficit in the quantities produced of red meat locally, which is in great demand despite its high prices compared to the prices of imported meat that Our local markets are flooded, knowing that the prices of locally produced meat have been almost conservative in the last ten years.

Recommendations

1- Our study recommends that the state represented by the Ministry of Agriculture should seek to activate the private sector in establishing large and distinguished projects in each of the governorates of Iraq, because we do not have large productive projects as much as small individual holdings, and this activation is through providing facilities Specific, such as long-term loans or providing facilities in the field of importing good assets from meat-producing breeds and from sober origins known globally in this field and under the supervision of specialized state agencies.

2- The study recommends benefiting from the experiences of the Arab countries neighboring Iraq with a climate similar to that of our country, which has come a long way

It is a great deal in this field, as well as the rest of the fields in the agricultural sector, in terms of plants and animals, and I emphasize the experiences of emerging countries so that we start where they arrived, and do not repeat steps that were bypassed by those countries so that after a carefully planned period, we can catch up with those countries or keep up with them.

3- Working on improving local calves varieties by conducting genetic improvement and cross-breeding experiments with imported varieties with high-quality specifications that are compatible with local environmental conditions and selecting calves with high productive efficiency in muscle formation and speed of growth, and this is done through the establishment of specialized research centers to keep pace with progress In the field of animal breeding and improvement, and allocating the necessary funds for scientific research institutions working in this field to support research and specialized studies And work to find a clear mechanism for linking and cooperation between scientific research institutions on the one hand and workers in the field of animal production on the other hand, in addition to

importing good assets from mothers for the purpose of multiplying them in the country.

4- The necessity of providing feed, especially concentrated feed, in the necessary quantities and qualities required during different seasons by providing hybrid fodder crops such as fodder corn, as well as providing modern mowing and harvesting machines that contribute significantly to shortening the time and effort needed to complete the work.

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