

## ECONOMIC EVALUATION OF SOME AGRICULTURAL INITIATIVE PROJECTS IN IRAQ

D. S. Barbaz

Lecturer

Dept. of Agric. Economics /Coll. of Agric. /University of Baghdad

[dhurghambarbaz@gmail.com](mailto:dhurghambarbaz@gmail.com)

A. D. K. Al-Hiyali

Professor

[adk\\_1966@yahoo.com](mailto:adk_1966@yahoo.com)

### ABSTRACT

This research aims to identify the economic and national feasibility of some agricultural activities benefiting from the agricultural initiative's lending funds, as well as to show the impact of the agricultural initiative on these projects in terms of raising social profitability, in the light of the results of the national evaluation criteria addressed in the research. All the studied projects have achieved a net added value at the level of the national economy. The dairy cattle breeding project recorded the lowest net added value of about 914 million dinars (about 745 thousand dollars), and poultry projects achieved the highest added value of about 5 billion ID for the projects of table eggs production 4.9 billion ID for broiler projects, while the relative change in the standard showed that and the broiler production project is one of the most benefited from loan subsidies as the rate of change reached about 25%, while the project of broiler production and poultry hatchery and the project of raising milk cow have negative social return. The initiative's subsidies have increased the social rate of return for these projects to around 24%, 20.5%, and 20%. Agricultural loans from the agricultural initiative raise the national profitability of agricultural projects, which would contribute to the process of agricultural development in Iraq.

Key words: social return, value added, relative efficiency, social feasibility.

\*Part of Ph.D. dissertation of the 1<sup>st</sup> author.

برباز وكسار

مجلة العلوم الزراعية العراقية - 2020: 51(3): 797-804

التقييم الاقتصادي لبعض مشروعات المبادرة الزراعية في العراق

علي درب كسار

ضرغام سلمان برباز

استاذ

مدرس

قسم الاقتصاد الزراعي / كلية علوم الهندسة الزراعية / جامعة بغداد

المستخلص

يهدف البحث الى التعرف على الجدوى الاقتصادية والقومية لبعض الانشطة الزراعية المستفيدة من صناديق الاقراض للمبادرة ، فضلا عن بيان اثر المبادرة الزراعية على تلك المشاريع من حيث رفع الربحية الاجتماعية ، في ضوء نتائج معايير التقييم القومية التي تناولها البحث . ان جميع المشروعات المدروسة قد حققت صافي قيمة مضافة على مستوى الاقتصاد القومي هذا وقد سجل مشروع تربية ابقار الحليب ادنى قيمة صافية مضافة بلغت نحو 914 مليون دينار اي نحو 745 الف دولار ، وحققت مشاريع الدواجن اعلى قيمة مضافة بلغت نحو 5 مليار دينار عراقي لمشاريع انتاج بيض المائدة ونحو 4.9 مليار دينار لمشاريع فروج اللحم ، هذا فيما اظهر التغير النسبي في المعيار ان مشروع انتاج فروج اللحم هو من اكثر المشروعات التي استفادة من اعانات القروض الممنوحة اذ بلغ معدل التغير نحو 25%، فيما حقق مشروع انتاج فروج اللحم ومشروع مفقس الدواجن ومشروع تربية ابقار الحليب معدل عائد اجتماعي سالب بلغ على الترتيب 9%-، 7%-، 15%-، واستطاعت اعانات المبادرة الزراعية رفع معدل العائد الاجتماعي لتلك المشروعات الى نحو 4%، 20.5%، 20%، وبناء على ذلك اوصى البحث بضرورة استمرار دعم المشروعات الزراعية من الصناديق الاقراضية للمبادرة الزراعية لرفع الربحية القومية المشروعات الزراعية والتي من شأنها ان تسهم في عملية التنمية الزراعية في العراق.

الكلمات المفتاحية: العائد الاجتماعي، القيمة المضافة، الكفاءة النسبية، الجدوى الاجتماعية.

\*البحث مستل من اطروحة دكتوراه للباحث الاول.

\*Received:11/8/2019, Accepted:10/11/2019

## INTRODUCTION

Investment projects play an important role in achieving better and more comprehensive development, as the best way to exploit the human, natural and financial capabilities, and is the ideal solution for many economic problems and crises directed by individuals and institutions, investment provides production and achieve self-sufficiency, and create new jobs and lead to raise the standard of living It also creates political stability (13), Any investment decision must be subject to scrutiny under which the limits of the balance between its costs and burdens should be clarified on the one hand against the benefits it can achieve on the other, in order to be economically sound. It is easy to measure the criteria for assessing the commercial profitability of projects in Iraq, while the calculation of national profitability criteria is difficult in developing countries, because of the difficulty of obtaining accurate and stable evidence of social prices of inputs and outputs, external transfer rates, and discount rates (14). The agricultural system is an integrated set of activities performed by farmers in the field under cultivation conditions to maximize production and net income on a sustainable basis though types of agricultural systems and evaluate these possibilities to increase farm income through resource allocation (6)(7). Therefore, the importance of this research comes from the importance of highlighting the national profitability of agricultural projects of the agricultural initiative in Iraq to show the importance of social evaluation of agricultural projects, and therefore the aim of the research is to show the impact of loans funds of the agricultural initiative on the ability of agricultural projects in achieving national or social profitability by calculating some criteria national assessment, to detect the social or national impact of these agricultural projects at the national level (8). This study aims to make an economic evaluation of some investment projects financed by lending funds, and to show the role of the agricultural initiative in achieving national profitability of agricultural projects, using some social evaluation criteria.

## MATERIALS AND METHODS

The research requirements were met from the data needed based on a sample questionnaire,

which included a feed lab projects, meat broiler projects, table egg production projects, poultry hatchery projects, protected agricultural projects, fish ponds projects and milk cows projects. The data of the studied projects were covered from 2009 to 2018, in order to obtain cash inflows and outflows of the studied projects. The projects borrowed from the agricultural investment fund were targeted for the agricultural initiative.

## Theoretical framework

The study of social or national feasibility of the project is intended to determine the importance of the project to both the society and the national economy(3). Economically investment projects benefit not only the individual investor, but also find a reflection on the level of society as a whole(5). Therefore, governments strive to secure the appropriate investment conditions to attract Investments and providing all possible facilities to that end (10).The level of the performance appraisal system reflects the maturity of society and its rationality in facilitating its affairs and represents the tool by which we recognize the current reality in preparation for its development (12). Assessing projects is increasingly important as the state tends to reduce the role of the public sector and the role of the private sector and to optimize the use of available resources by channeling these resources to the best available uses or so-called rational use (4). Therefore, determining the appropriate criteria is one of the most important bases in the social assessment process in these projects (1). The evaluation process takes place in all economic activities, whether agricultural, industrial or service activities. There is no fundamental difference in the evaluation of these activities, but the difference in how to choose the appropriate criteria for each activity(15) .The research adopted a set of national standards. The national or social feasibility study of the project is of great importance because it represents the study of the project from the point of view of society or the national economy as a whole (9). Net added value is used to determine the impact of projects on GDP or national income. Net added value can be measured using the following formula (11):

$$NNAV_n = NAV_n - D_n$$

where:

NNAV<sub>n</sub>: net national added value n.

NAV<sub>n</sub>: national added value for n.

D<sub>n</sub>: extinction

It is preferable to calculate the net national added value for each year of the project life according to the previous relationship, in order to easily calculate the present value of the net national added value. The present value of the net national added value is obtained by multiplying the annual net added value by the social discount rate. The current value of PNNAV is calculated by the following equation (16):

$$PNNAV = \sum_{t=1}^n \frac{NNAV}{(1 + R_s)^t} - K$$

where:

PNNAV: present value of the national net added value.

NNAV: net national added value.

R<sub>s</sub>: Social discount rate.

N: Age of economic project.

K: present value of the investment costs of the project.

If the output of the equation is positive, then the investment project adds to the national income. The decision is to reject the project. Social return standard: This standard relates the present value of the national net value added (PNNAV), the current division of wages (WPV) and the present value of the investment costs of the project and is calculated by equation (16):

$$SR = \frac{PNNAV - WPV}{K}$$

where:

SR: Social rate of return

PNNAV: present value of the national net added value

WPV: present value of wages

K: Investment costs

**Relative efficiency of capital scarcity:** This criterion is used to differentiate between projects whose aim is to save the capital element. Capital in the project through the ratio of the present value of the net national value added to the present value the total investments in the project (17):

$$REc = \frac{PNNAV}{K}$$

where:

REc: standard of relative efficiency of capital.

PNNAV: present value of the national net added value.

K: The present value of the investment costs of the project. The higher this ratio, the higher the priority given to the project considered in the scale of projects according to the relative efficiency of the scarcity of capital.

**The relative efficiency criterion of labor scarcity** is also called the criterion of efficiency of labor productivity. The relative efficiency of labor or labor scarcity is tested by the ratio of the added value of the net value added to the present value of labor wages paid by the project (2):

$$LE = \frac{PNNAV}{WPV}$$

where:

LE: relative efficiency standard of employment

PNNAV: present value of the national net added value.

WPV: present value of wages. The higher this ratio, the higher the relative efficiency of the cost of the unit of labor, and thus add value to the national economy and the project becomes better, and we note here that the monetary cost of the labor component was adopted instead of the number of employment and the reason for this is that there is a variation in the experiences and skills of workers.

## RESULTS AND DISCUSSION

National profitability criteria are concerned with knowing the profitability of the project from the point of view of the national economy, as each national economy in any region of the world has economic objectives that seek to achieve with the difference in the prioritization of those goals, so the economic thought at the level of macroeconomic analysis and economic policies set several goals such as increased national income and economic growth, full employment, balance of payments balancing, economic stability, price stability and currency maintenance, exchange rate stability as well as equity in income distribution, and other goals. The countries seek to achieve continuous development through them, and in this sense the need for the existence of criteria aimed at achieving more than one goal at the level of the national economy, and then measure the extent of the project's social profitability. Through the

above we note the differences encountered in the study of the analysis of cost items and income items in the economic assessment starting from taxes and subsidies, and that all agricultural projects and under the tax exemption for such projects did not face the problem of relying on local prices as alternative accounting prices for shadow prices as it represents border prices add to the costs of internal transport, as it is difficult to obtain shadow prices as it requires the existence of a target function of the national economy as a whole with all the constraints of this economy to be derived using linear programming models of the economic system. Some economists see it is the only way to get so-called shadow prices by definition, but most of the criticism of shadow prices has focused on the inapplicability of developing countries because of price distortions in their economies, and parallel exchange rates have been adopted. For the Iraqi dinar against the dollar being more accurate than the official exchange rate, as well as the calculation of some items that are not cost from the point of view of the private investor, but are also from the point of view of society in general, so taken into account when using economic valuation, the most important example of this case interest rate while the latter are cost elements from the community point of view, the zero interest rate makes the loans income and repayment payments canceling each other without changing the economic value of the project, the cost of loans has been calculated on the basis of interest rates on loans long-term loan

years are based on interest rates at the central bank and banks operating in Iraq. In addition, the financial criteria may differ due the economic criteria in the evaluation process. Assuming that other factors are constant, the internal rate of return is a financial criterion that determines the profitability of the project from a private point of view. The present value is an economic criterion, since it determines the profitability of the project from the point of view of the economy.

#### National Net Value Added

The basic objectives of development policy in any country is to increase the growth rates of national income in order to achieve a better standard of living for its members. National income is a basic quantitative measure that reflects the amount of increase in national prosperity. Therefore, the ultimate goal of any investment project from the point of view of the community in which this project is held is to contribute as much as possible to achieve the increase of national income, and the practical translation of this increase at the level of the investment project is the net added value achieved by using the real social prices of the project inputs and outputs with a note the material inputs to the project include current resources and services such as raw materials, energy, fuel, transportation, maintenance, etc. and procurement from outside the project. The value added criterion is one of the most important criteria of social profitability, which measures the impact of the project on national income or GDP (9).

**Table 1. Results of the National Net Added Value criterion (NNAV)**

Projects	NNAV without loan cost (\$)	NNAV with loan cost (\$)	NNAV without loan cost (IQD)	NNAV with loan cost (IQD)	Relative change
Feed Factory	2,504,137	2,110,909	3,090,794,914	2,600,981,580	19%
Poultry hatchery	3,075,465	2,559,058	3,819,859,800	3,179,132,300	20%
Production of broiler chickens	3,939,143	3,142,717	4,901,040,400	3,912,325,400	25%
Production of chicken eggs	4,179,930	3,555,136	5,198,215,060	4,423,315,060	18%
Farm greenhouses	2,113,568	1,970,988	2,599,037,500	2,425,608,400	7%
Fish ponds	839,341	738,154	1,041,373,250	916,323,250	14%
Breeding of milk cows	745,402	625,375	914,620,000	770,013,400	19%

Source: Prepared by the researchers based on the questionnaire data.

Results of table 1 showed that all the studied projects have achieved a net added value at the level of the national economy has been

recorded milk breeding project the lowest net added value, although the project has achieved losses according to the criteria of commercial

profitability, but was able to achieve a positive added value amounted to about 914 million dinars, or about \$ 745 thousand, this has maintained the poultry projects have achieved the highest added value of about 5 billion for the production of table eggs and about 4.9 billion dinars for projects broiler meat, this showed the relative change in the standard that the project of broiler production is one of the most beneficial projects from the loan subsidy rate was about 25%, while the poultry hatchery project came second in terms of benefiting from loan subsidies in the form of zero interest rates, while the greenhouses project was one of the least beneficiaries of the loan subsidies. The effect of the exchange rates of the dinar against the dollar on the value of the criterion if the order of the projects did not differ. Perhaps the most important reason is the relative stability of the exchange rates in light of the financial policies of the Central Bank in Iraqis, especially in the recent period. We conclude from the foregoing that the agricultural initiative has an active and

prominent role in raising the economic profitability of agricultural projects on the various productive activities.

#### **Present value of national net added value**

The interest rate used by countries when borrowing long-term from world markets is adopted as a basis for estimating the social discount rate while maintaining a slight increase or decrease margin to face the changes and fluctuations that occur (16). This specific discount rate is called the social deduction rate, which reflects the real social cost of project financing or the time value of a single monetary unit of project flows from a community point of view. The commercial discount rate as an expression of the social discount rate (2). The net present value of net revenue will now be extracted at the discount rate of 8.7%, which is the interest rate for 2018 on borrowing according to the interest rates at the Central Bank in Iraq. This is lower than the discount rate we used in the financial analysis, which represents the opportunity cost.

**Table 2. Results of the Present value of national net added value criterion**

Projects	PNNAV without loan cost (\$)	PNNAV with loan cost (\$)	PNNAV without loan cost (IQD)	PNNAV with loan cost (IQD)	Relative change
Feed Factory	1,304,359	1,000,871	1,612,042,572	1,234,463,272	31%
Poultry hatchery	683,167	284,685	910,852,829	417,019,289	118%
Production of broiler chickens	900,338	296,453	1,203,933,208	455,103,485	165%
Production of chicken eggs	254,181	(234,707)	428,467,280	(177,183,590)	-342%
Farm greenhouses	948,927	837,217	1,184,068,584	1,048,518,855	13%
Fish ponds	411,815	335,465	517,772,682	423,608,127	22%
Breeding of milk cows	221,837	127,930	275,117,727	162,260,259	70%

Source: Prepared by the researchers based on the questionnaire data

Results of table 2 showed that the egg production project has achieved a loss of 177 million dinars, despite the profitability of the project according to commercial profitability criteria, but it is the only project that achieves losses at the national economy level, as the project benefits from subsidies loans granted on prices zero meet achieved the highest benefit from the loans granted and this is evident from the results obtained as the relative change rate reached about 165% which is the highest recorded rate of change in the present value criterion. Value of the standard with take into account the cost of loans granted in the feed plant project if the

value of about 1.2 billion dinars, while the present value of the net value added in the project greenhouses farm about 1 billion dinars, the second highest recorded value despite the relative change in the value of the standard in this project has the project showed that the meat broiler project, fish lakes project and poultry hatchery project achieved similar values if they reached (455, 423, 417) million dinars. National income, despite respectively according to the commercial profitability criteria, the relative change in the value of the standard is about 70%. We can conclude from the above that the profitability of the project according to financial analysis is not enough to

judge its profitability from an economic point of view. Waste of financial or human resources or freezing of these energies without contributing to increase national income, but the main objective is to achieve self-sufficiency at the national level, the policy of the agricultural initiative in lending agricultural projects at zero interest rate would increase the profitability of projects at the national level. It should be noted that the project of feeder plants and farm greenhouses is one of the best projects contributing to the increase of national income in the light of this criterion, but it is one of the least projects to benefit from loan subsidies as they achieved the lowest relative change of the standard in the projects studied, fish ponds and the poultry hatchery project have contributed to increasing national income in equal proportions, but poultry projects are among the most important projects that benefited from the agricultural initiative subsidies, as they achieved the highest relative change in the projects studied, and some non-profitable projects at the level this is evidence of the impact of the agricultural initiative on raising the profitability of projects at the national level.

### Social Return

Poultry projects are making losses at the national level, where the value of the social rate of return has fallen below the social interest rate and even a negative signal. The agricultural initiative has contributed to increasing the profitability of agricultural projects and helped them achieve a positive social rate of return and greater than the social interest rate of 8.7 %. This is show in table 3, where the project of meat broiler production, poultry hatchery project and milk cattle breeding project achieved a negative social rate of return, (9%, 7%, and 15%) respectively,

and agricultural initiative subsidies were able to raise the social rate of return. These projects amounted to about (24%, 20.5%, 20%), where the project of the production of table eggs recorded the lowest social rate of return with a negative value of about 37%. The feed plant project has achieved the highest social rate of return of about 98%, which soon rose to about 165%, after subsidies of the agricultural initiative loans. The social rate of return calculated using the parallel exchange rates of dinar against the dollar has not changed significantly. The greenhouses project has achieved a social rate of return that exceeds the discount rate even when the cost of the loan is calculated at 53%, which is higher than the social discount rate. We conclude from the above in the light of the social rate of return that the feed plant project and the fish ponds project and the project of greenhouses have achieved a positive social rate of return and greater than the rate of social discount in both cases with subsidies or without subsidies agricultural initiative, which is evidence of the profitability of projects at the national level even with the absence of subsidies for the agricultural initiative, it is necessary to take this into consideration when drawing the lending policy for the agricultural initiative. The volume of large investments in poultry sector projects requires the intervention of the state in maintaining the national profitability of these projects, by increasing subsidies and taking this into account when drawing lending policies for the agricultural initiative in line with the objectives of the agricultural initiative, especially the main objective of the initiative, which is To achieve self-sufficiency in the production of crops and agricultural products.

**Table 3. Results of the Social Return criterion**

Projects	SR without loan cost (IQD)	SR with loan cost (IQD)	Relative change
Feed Factory	165%	98%	69%
Poultry hatchery	20%	-7%	-381%
Production of broiler chickens	24%	-9%	-361%
Production of chicken eggs	-18%	-37%	-53%
Farm greenhouses	53%	31%	72%
Fish ponds	109%	55%	99%
Breeding of milk cows	20%	-15%	-229%

Source: Prepared by the researchers based on the questionnaire data

### Relative efficiency of capital

Results of table 4 shows that all the projects studied have achieved relative efficiency of the invested capital except the production of table eggs, the fish ponds project achieved the highest relative efficiency of capital reached about 2.974 dinars at the national level, and despite the calculation of the cost of the loan was able to maintain. The value of the standard reached about 2.433 at the national level and the results of the calculation of the criterion using the exchange rates parallel to the dinar against the dollar were not very different. The feed plant project achieved a relative capital efficiency about 2.887 at the national level and about 2.210 when calculating the cost. While the project of producing table eggs recorded the lowest relative efficiency of capital at the national level amounted to about 0.139, the calculation of lending costs in the project resulted in a negative value about- 0.058. The capital exceeded the value of the poultry hatchery project and the chicken broiler project even with calculating the cost of the loan provided to the project. We conclude from the above that the agricultural initiative has an effective role in raising the relative efficiency of capital in agricultural projects, as we note that poultry projects have the least relative efficiency of capital compared to other projects because of large investment, but the agricultural initiative has a role in raising the relative efficiency the percentage change in the criterion was about 168% in the chicken broiler project, 118% in

the poultry hatchery project and 342% in the table egg production project.

**The relative efficiency of employment at the national level** Table 5 shows that the feed plant project achieved the highest relative efficiency of employment amounting about 2.343 Iraqi dinars at the national level. The results of the calculation of the criterion using the exchange rates parallel to the dinar against the dollar is perhaps the most important reason that wages and salaries are not linked to exchange rates as they are local resources. We conclude from the foregoing that the feed factory project has high efficiency in use of labor and need skilled workers. The project came in second place in the dependence on skilled workers, where the value of the standard in the project of raising broiler meat about 1.818 Iraqi dinars, followed by the poultry hatchery project, where the value of the standard about 1.666 Iraqi dinars at the national level, while the production of table eggs recorded the lowest relative efficiency of work at the national level reached about 0.440 dinars, and the milk cattle breeding project achieve the lowest relative efficiency in the work amounted about 1.301. This proof that these projects do not need skilled workers. We conclude from the above that the feed plant project and the production of meat broiler and poultry hatchery project are characterized by the relative efficiency of work and need skilled workers to carry out production processes within those projects, and the project of raising milk cows do not need skilled workers to carry out agricultural activities.

**Table 4. Results of the Relative efficiency of capital**

Projects	RE without loan cost (\$)	RE with loan cost (\$)	RE without loan cost (IQD)	RE with loan cost (IQD)	Relative change
Feed Factory	2.882	2.212	2.887	2.210	31%
Poultry hatchery	0.461	0.192	0.512	0.234	118%
Production of broiler chickens	0.469	0.154	0.523	0.198	165%
Production of chicken eggs	0.099	-0.091	0.139	-0.058	-342%
Farm greenhouses	1.839	1.623	1.940	1.718	13%
Fish ponds	2.808	2.287	2.974	2.433	22%
Breeding of milk cows	0.838	0.484	0.862	0.509	70%

Source: Prepared by the researchers based on the questionnaire data

**Table 5. Results of The relative efficiency of employment at the national level**

Projects	RE without loan cost (\$)	RE with loan cost (\$)	RE without loan cost (IQD)	RE with loan cost (IQD)	Relative change
Feed Factory	2.359	1.810	2.343	1.795	31%
Poultry hatchery	1.552	0.647	1.666	0.763	118%
Production of broiler chickens	1.688	0.556	1.818	0.687	165%
Production of chicken eggs	0.325	-0.300	0.440	-0.182	-342%
Farm greenhouses	1.354	1.194	1.378	1.220	13%
Fish ponds	1.551	1.264	1.576	1.290	22%
Breeding of milk cows	1.281	0.739	1.301	0.767	70%

Source: Prepared by the researchers based on the questionnaire data.

After reviewing the criteria of economic evaluation, we conclude that the agricultural initiative has an active and prominent role in raising the economic profitability of agricultural projects in different production activities. The research recommended need to use the lending funds of the agricultural initiative as a means to raise the national profitability of various projects, as well as the need to raise awareness of the importance and role of feasibility studies and social assessment in achieving development goals at the national level.

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