



Munich Personal RePEc Archive

The concept of economic efficiency in agriculture

Chetroiu, Rodica and Călin, Ion

University of Agronomic Sciences and Veterinary Medicine
Bucharest, University of Agronomic Sciences and Veterinary
Medicine Bucharest

21 October 2013

Online at <https://mpra.ub.uni-muenchen.de/55007/>
MPRA Paper No. 55007, posted 03 Apr 2014 04:11 UTC

THE CONCEPT OF ECONOMIC EFFICIENCY IN AGRICULTURE

CHETROIU RODICA¹, CĂLIN ION²

Abstract: *The economic efficiency is a concept with a complex content, which expresses the useful effect achieved in an economic activity, in relation to the requested expenditures, or the effort for its realization. Through its applicative side, the efficiency (e) can be defined as a quantitative ratio between the effects (E) and the resources or efforts (R) made to obtain them, or, in other words, achieving maximum effect with a specified level of consumptions, or reaching the determined effect with minimum consumption: $e = E / R$ max (maximizing the effects obtained per unit of allocated, consumed resources); $e = R / E$ min (minimizing the resource consumption per unit of effect achieved). This concept is the most important qualitative indicator of the economic development, a key factor in accelerating economic growth. Applied in agriculture, it represents the obtaining the maximum amount of production per hectare or per animal, with minimal expenditure of manpower and materials. Determination of economic efficiency must be based on knowledge of the elements that characterize the production effort and having three main sources: the optimal use of resources, rational use of labour and production management.*

Keywords: *economic efficiency, effects, resources, agriculture, concept*

INTRODUCTION

The economic efficiency is a concept with a complex content, which expresses the effectiveness achieved in an economic activity, in relation to expenses claimed, or the effort to achieve it. So, the effect achieved on a value unit spent is higher, the economic efficiency will be higher [3].

The term "efficiency" is used since antiquity and comes from the Latin language: *efficiens*, which in turn derives from the verb *ex facio*, which means "to obtain something from", idea found in both the pre-Roman civilization and in ancient Greece, where, in fact, the term economy (*oikonomia*) appears for the first time, meaning efficient management of family households [5]. The concept of economic efficiency should not be confused with the notion of economic effect, because it expresses only the results obtained and the concept of economic efficiency shows the effect in relation to expenditures incurred for its realization [7].

MATERIAL AND METHODS

In the light of its applicative side, the efficiency (e) can be defined as a quantitative ratio between the effects (E) and resources or efforts (R) made to obtain them, or, in other words, reaching maximum effect, with a determined level of consumptions, or reaching determined effect with minimum consumptions:

$$e = E/R \text{ max;}$$

(maximizing the effects obtained per unit of resources allocated, consumed);

$$e = R/E \text{ min;}$$

(minimizing resource consumption per unit of effect achieved).

The higher consumption of resources, there is increasing economic effects, but it is accelerated to a level of efficiency, and after a certain threshold of resource consumption, there is a degree of saturation and the effects achieved slowly grow, stagnate or fall [15].

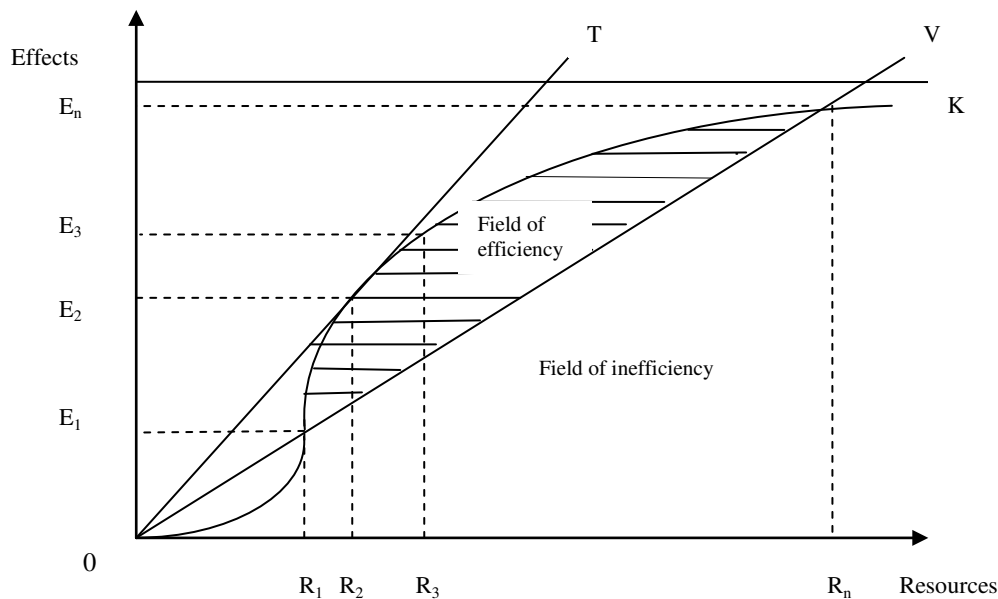
¹PhD Candidate - University of Agronomic Sciences and Veterinary Medicine Bucharest, 59 Mărăști Bvd, sector 1, e-mail: rodigeo7@yahoo.com

²Prof. PhD. - Universitatea University of Agronomic Sciences and Veterinary Medicine Bucharest, 59 Mărăști Bvd, sector 1, e-mail: icalin63@yahoo.com

RESULTS AND DISCUSSIONS

The dependence of effects of increasing the allocation of resources analyzing, it is found that this is a linear function of the type $E = f(R)$ and in a coordinate system, it is as follows (see Figure 1):

Figure 1: Dependence of effects on efforts



in which:

- $R_1...R_n$ – levels of resource allocation
- $E_1...E_n$ – effects corresponding to resources
- V – minimum limit of efficiency
- C – curve of maximum efficiency
- K – limit of effects

Source: adapting from Băjan G., 2009

If the ratio effect / effort is above the straight line V, the activity is efficient, under it becomes ineffective. On the range 0 - R_1 , the activity is inefficient due to insufficient allocation of resources, efficiency curve being convex. The effect increases with increasing resource allocation, the curve becoming concave, but over time the blocking effect occurs, even the effects are significant and will enter in the field of inefficiency [2].

By their nature, resources may be material, energy, human, financial and others, and based on the criterion of regeneration, can be renewable (human, vegetal material, specific energy) or nonrenewable (materials). The economic effects can be direct or indirect and depending on the activity purpose may be basic or complementary [13].

The theoretical approaches of the concept of economic efficiency appeared in capitalism, with different currents and economic doctrines:

- mercantilism – the first doctrine that affirms the importance of economic activity for the welfare of the nation;
- physiocrats (or power of nature) - is mentored by François Quesnay and as a doctrine is opposed of mercantilism, through a humanistic and liberal philosophy, arguing that freedom of change can be achieved with profit sharing all;

- classics, whose representatives were Adam Smith, W. Petty, David Ricardo, J.P. Boisguilbert; Sismardi states that "the engine of economic development is freedom, not regulation";
- malthusianism said that economic efficiency is dependent on population growth ("Essay on the Principle of Population");
- marginalism considers that land, labor and capital contribute equally to the creation of value (represented by C. Menger, E. von Wieser, L. Walrus, Ph. Wicksteed, etc.);
- Keynesianism, mainly through its representative, Keynes aimed, first, the study of the factors of production and the use of labor and shows that the only way of economic development is state intervention, placing the increasing of economic efficiency in the center of dirigisme doctrine;
- Socialism – that expresses the economic efficiency as a ratio between labor and its outcome, in terms of the degree of satisfaction of the needs of society.

În România, o contribuție importantă la dezvoltarea conceptului de eficiență economică au adus-o Virgil Madgearu și M. Manoilescu. Virgil Madgearu, punând accentul pe importanța gospodăriei țărănești, arată că „acolo unde economia capitalistă încheie socotelile ei cu pierderi, economia țărănească să socotească profituri”. M. Manoilescu a avut un aport științific deosebit prin „constanta Manoilescu”, care arată discrepanța dintre productivitatea muncii din industrie și agricultură, prima fiind superioară celei de-a doua [2].

The principle of efficiency, in its general form, involves three levels of analysis:

- Defining the set of solutions of technical and economic point of view;
- Choose effective solutions with the principle of saving resources, which means minimizing their consumption and maximize results;
- On the basis of the option, the choice within the effective solutions, to those considered optimal [4].

The economic activity from a unit is conditioned by regular flows exchanges with other economic agents, which are determined on the one hand, by the system inside (development of production), as well as the system outside (the market for products, inputs of force labor, materials, technology). Outside this continuous cycle, the energy of activities can be enhanced by stimulation and motivation of the workforce. Occurs thereby accelerate business cycles, materialized in products and then in money, targeting maximum effect.

The linguistic sense of the notion of efficiency shows that it is the attribute of all human action to produce the desired effectiveness. Protecting reserves and best use of resources require increasing role of efficiency criteria for decision-making within the activities. The necessity of economicity of material and labor use is generated by their limited level [13].

The analysis of economic efficiency is the main method of analysis of economic systems. Its application is based on the economic principle according to which decisions involve the allocation of rare resources (which takes maximum utility expression), distributed according to the requirements of competition [1]. The author mentioned here shows that the study of economic efficiency involves the analysis of relationships between resource costs for each variable, yields and risks of alternatives. The universal principle of Maupertius, that of the minimum action ("*desired goal with minimal effort*") suggests a fundamental question in defining efficiency ie what level of concordance between results and purpose the efficiency begins?

Referring to efficiency, Kotarbinski T. (1976) suggests that it is effective the action that ensures achievement of the aim in terms of minimal cost and S.G. Strumlin (1972) defines economic efficiency "maximum effect with minimum cost and shortest time."

The economic efficiency is a complex economic category, in which operation of economic laws is reflected and the most important part of economic activity is manifested: economic result (effect) [12]. The nature of effect has various forms of efficiency: production – productivity, savings - economy, profit - profitability. In the complexity of the hypostases and relations within an economic activity, there may be totally or partially effective activities, with different efficiency levels, between 0 (indifference) to 1 (total efficiency). Similarly, there are different degrees of inefficiency, compact interval being located between minus 1 and 1 [1].

Muresan V. (1986) defines efficiency with the relation "efficiency = effectiveness x economy", attracting attention to the fact that expenditures should be reported to the costs strictly necessary, at an optimal level determined scientifically minimal. The author mentioned above also shows that the quantitative aspect of the economic effect must be accompanied by its qualitative aspect.

The economic efficiency refers to the value of all inputs used to obtain a product. Its production is economically efficient where there is no other way of production in that it uses a less total amount of inputs. Of all the means of production technically efficient, must choose the one that attracts the minimum value of inputs, which involves economic efficiency [9].

This concept is the most important qualitative indicator of economic development, a key factor in accelerating economic growth. Applied in agriculture, it represents getting the maximum amount of production per hectare or per animal, with minimal expenditure of manpower and materials [12]. Often, economic efficiency in agriculture is associated with social efficiency of agricultural production, due to food security strategy.

Efficiency is one of the criteria for scientific substantiation of the decision. In animal husbandry, economic efficiency can refer to the entire branch, the species or categories of animals, or the animal products [3]. Băjan Gheorghe (2009) shows that "the economic efficiency is the activity result expression of any forms of existing farming systems in agriculture. Cannot be conceived an activity in agriculture without taking into account a positive outcome."

The particularities of economic efficiency in animal production refers to the fact that the results obtained are reported both to reproduction animals and to the costs for yearly average number of animals; also, economic efficiency can be measured throughout the year, as costs and their recovery occur gradually [15].

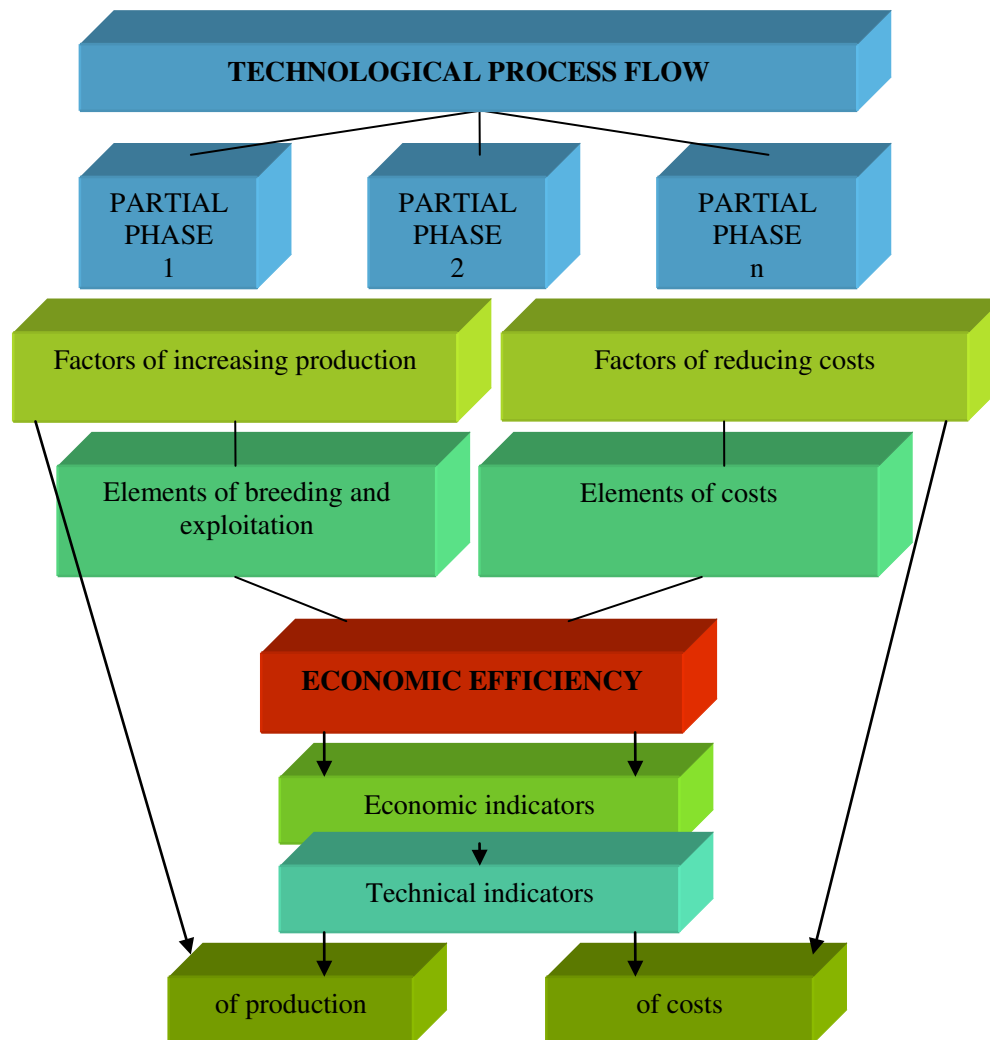
Livestock production is the result of convergent factors of production action. These are the resources that participate in the development of production processes and that the results obtained depend on. Optimizations of production processes require knowledge of the factors of production and their role for their efficient use in breeding activity and exploitation of animals. Inputs can be classified in:

- Natural factors (temperature, precipitations, light, wind, soil, etc.);
- Economic factors (labor, livestock buildings, machinery and equipment, medicines, energy, etc.);
- Organizational and management factors, which provides a combination of other categories of factors [6].

Between the concepts of optimally and efficiency there is an interdependence, the optimum reflecting the steady state of economic activity, resulted from a certain way of allocating resources and economic efficiency expresses the capacity of factors of production to determine obtaining of useful economic results, with labor-saving. Optimization of production activities allows concrete level foundation of economic efficiency, aiming at achieving maximum effect with existing means, or minimum total cost for the proposed production. The field of efficient solutions include a wider sphere, but the best solution is determined either by the amount of resources allocated either desired effect size [13].

The content of the concept of economic efficiency in animal production refers to two basic elements, namely: achieving increased production of animal products and the allocation of production factors leading to reduced production costs [7] (Figure 2):

Figure 2: Organisation chart of the concept of economic efficiency content in animal husbandry



Source: adapting from P.S. ADER 211/2011

CONCLUSIONS

Determining the economic efficiency must be based on knowledge of the elements which characterize the production effort and has three main sources:

- Optimal use of resources;
- Rational use of labor;
- Production management.

In animal husbandry, optimal use of resources includes:

- full use of accommodation capacity, machinery, facilities and land for forage base;
- optimizing the unit size;
- optimizing the herds structure and reproduction indices;
- optimizing the structure of fodder;
- optimizing the feed rations etc.

The main directions of actions on rational use of labor are:

- Sizing staffing;
- Substantiation of labor norms;
- Determining the best forms of work organization;

- Training and qualification;
- Correlation of staff incomes with work results;
- Motivating and promoting staff. [16]

Production management includes the following activities:

- Design and economic substantiation of production systems;
- Design and technology foundation for growing and exploitation of animals;
- Organization of production processes [11].

In achieving the desired effect, particular importance is the quality of the results obtained; therefore, the whole concept of efficiency is a qualitative concept.

BIBLIOGRAPHY

1. Andronic B.-C., 2000 – *The performance of company - cross-disciplinary approach in microeconomic analysis*, Polirom Publishing, Iași
2. Băjan G., 2009 – *Economic efficiency of agricultural exploitations* – PhD thesis, Bucharest
3. Chiran A., Gîndu Elena, Banu A., 2002 – *Livestock economy - theory and practice*, Bucharest
4. Cuțuhan M., Săbădeanu P., 1980 – *Economic efficiency of animal husbandry*, Ceres Publishing, Bucharest
5. De Soto J.H., 2011 – *The theory of dynamic efficiency*, University “Alexandru Ioan Cuza” Publishing, Iași
6. Drăghici M., Oancea Margareta, Pleșoiianu G., Zăhău Letiția, Scrieci F., 2004 – *Farm management handbook*, Atlas Press SRL Publishing, Bucharest
7. I.C.E.A.D.R., 2012 – P.S. ADER 211- *Determining the economic indicators of production technologies for vegetal and animal products in order to increase the environmental performance (costs, productivity, profitability, gross margin)*
8. Kotarbinski T., 1976 – *Treatise on the job well done*, Political Publishing, Bucharest
9. Marinescu Daniela, 2006 – *Measuring efficiency. The link between productivity and efficiency* – – PhD thesis, Bucharest
10. Mureșan V., 1986 – *Values and criteria of the efficiency*, Political Publishing, Bucharest
11. Oancea Margareta, 2003 – *Modern management in agricultural units*, Ceres Publishing, Bucharest
12. Parmacli D., Stratan A., 2010 – *The economic efficiency of agricultural production*, Publishing Complex of IEFS, Chișinău
13. Stăicu F., Pârnu D., Dimitriu Maria, Stoian M., Vasilescu I., 1995- *Economic efficiency of investments*, Didactic and Pedagogic Publishing, Bucharest
14. Strumlin S.G., 1972- *Outstanding economic writings*, Scientific Publishing, Bucharest
15. Tăpăloagă P.-R., 2000 – *Comparative studies on the economic efficiency of breeding pigs by mating and artificial insemination* – PhD thesis, USAMV Bucharest
16. Zăhău Letiția, 1999 – *Agricultural management*, Economic Publishing, Bucharest