

THE EFFECTS OF SUBSIDIES ALLOCATION ON COMPETITIVENESS OF THE AGRICULTURAL ENTERPRISES FROM THE HORTICULTURAL SECTOR OF THE REPUBLIC OF MOLDOVA

Artur GOLBAN, Alexandru GORGOS

The State Agrarian University of Moldova, 42 Mircești Street, Chișinău, Republic of Moldova,
Emails: golban.artur@yahoo.com, alexandru.gorgos@gmail.com

Corresponding author: golban.artur@yahoo.com

Abstract

Subsidies allocation represents an important source of financing the agricultural enterprises, being analyzed by the scientists from all over the World. The subsidy policy of the Republic of Moldova is different from the subsidy policy of the European Union, being determined by the following factors: the lack of the consistency of the subsidies policies from the Republic of Moldova and the insufficiency of the necessary financial resources in order to apply the policies like in the European Union. Strategically, at the state level, it doesn't exist a clear subsidy policy for a longer period of time, namely the subsidies measures are not very clear defined and are changing from year to year, which creates difficulties for agricultural producers to access subsidies. In this context this scientific research has the objective to analyze the subsidies effects on competitiveness of the agricultural enterprises, to analyze the subsidies allocated in Moldova compared to neighbor countries, to reveal the measures of subsidizing the agricultural enterprises and to find out if the enterprises can achieve higher competitiveness by subsidies allocation.

Key words: agricultural enterprises, competitiveness, Total Factor Productivity, subsidies

INTRODUCTION

Subsidies represent an important source of financing the agricultural producers. According to the scientific researches made by FAO [11], exists 3 types of economical justifications of subsidies allocation in agriculture:

(a)The case of the „infantile agriculture” – when the branch is dominated by the foreign production and the state would like to develop this branch. The government could allocate subsidies to the agricultural sector through grants, credits, reducing the taxes. When the branch will achieve the desired point of development, the subsidies will be eliminated [9].

(b)The case when a big agricultural enterprise of strategical importance, faces temporary difficulties and can be in danger of termination its activity. Thus, the government in this case has at least three options: no to take any attitude, feeling all the negative effects of the market; or can directly allocate subsidies to the company with difficulties, participating with capital inflows, credits, guarantees; or can let the company to go

down and to intervene through the monetary system at the company's bankruptcy; which will affect the activity of other „healthy companies” from the branch.

(c)The current interests in the field of protection the environment can determine the policy of the state to encourage, through subsidies, the enterprises and the branches to act in an ecological way.

Studying the scientific literature regarding the importance of subsidies for agriculture, also there are many opinions among specialists which affirm that subsidies also have negative effects.

Thus, after the WTO Doha Round from 2001, many countries, like Brazil, China, India expressed their opposite opinion regarding the application of subsidies in the USA and Europe agriculture. They argued that a high volume of subsidy allocation determine artificially the decrease of the prices of the agricultural cultures, which negatively influence the development of the small farmers and contribute at poverty maintenance in many developing countries.

Subsidies should be used to solve some specific problems, not to stop some processes

a long time of period, because exists the risk that the producers not to be competitive and to depend by the government. The efficiency theory affirms that it is very important to produce more products with fewer investments. According to some scientific researches, the subsidies have the tendency to reduce the stimulus of the agricultural producers, which will concentrate not to increase the agricultural production volume, but how to obtain a higher volume of subsidies [6].

Analysing the situation of the Republic of Moldova in the field of subsidies allocation, we can affirm that subsidies are indispensable for the development of a competitive agricultural sector [5]. The subsidy policy from the Republic of Moldova is different from the subsidy policy of the European Union, being determined by the following factors: the lack of the consistency of the subsidies policies from the Republic of Moldova and the insufficiency of the necessary financial resources in order to apply the policies like in the European Union [10]. Also, if we will analyze strategically, we can affirm that doesn't exist a clear subsidy policy for a longer period of time, namely the subsidies measure are not very clear defined and are changing from year to year, which creates difficulties for agricultural producers to access subsidies. Those agricultural producers which access subsidies have more chances to be competitive on the market, compared to those who register lack of subsidies allocation.

In this context this scientific research has the objective to analyze how subsidies influence the competitiveness of agricultural enterprises and if the enterprises will achieve higher competitiveness by subsidies allocation.

MATERIALS AND METHODS

The research was elaborated on the basis of the official data collected from the National Bureau of Statistics, the National Bank of Moldova, the Minister of Agriculture and the Food Industry of Moldova, the Agency of Interventions and Payments for Agriculture (AIPA) and other economic sources.

As research methods there were used: analysis and synthesis, comparative method, logical analysis, graphical method.

Also, as a global indicator of competitiveness it was used Total Factor Productivity (TFP), being calculated on the basis of the Malmquist productivity index, which consists of two components: the index of technological change and the index of technical efficiency change [4,7,8]

$$M_0(x^{t+1}, y^{t+1}, x^t, y^t) = \frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t)} \left[\frac{D_0^t(x^{t+1}, y^{t+1})}{D_0^{t+1}(x^{t+1}, y^{t+1})} \left(\frac{D_0^t(x^t, y^t)}{D_0^{t+1}(x^t, y^t)} \right) \right]^{\frac{1}{2}} \quad (1)$$

where,

Technical efficiency change:

$$\frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t)} \quad (2)$$

Technological change:

$$\left(\frac{D_0^t(x^{t+1}, y^{t+1})}{D_0^{t+1}(x^{t+1}, y^{t+1})} \right) \left(\frac{D_0^t(x^t, y^t)}{D_0^{t+1}(x^t, y^t)} \right)^{\frac{1}{2}} \quad (3)$$

TFP may take the following values:

- (i) TFP>1, then in the period t (between the moment t and t+1) was registered an increase of productivity;
- (ii) TFP=1, in this case wasn't registered changes at the productivity level;
- (iii) TFP<1, then was registered a decrease of productivity.

The data processing was performed using the program DEAP version 2.1., which was elaborated by Tim Coelli, at Centre for Efficiency and Productivity Analysis, Department of Econometrics, University of New England (Australia), in order to construct DEA frontiers for the calculation of technical and cost efficiencies and also for the calculation of Malmquist TFP Indices.

RESULTS AND DISCUSSIONS

The horticultural sector of the Republic of Moldova has a high importance in the economic growth of the country. The majority of the population is engaged in the horticultural sector, which represents quarter from the total agricultural production (Fig. 1). Horticultural production is represented by fruits and vegetables, which play an essential role for the human health. Thus, according to the investigations performed by some scientists, was stated that a person should

consume annually about 563 kg of various vegetables, particularly tomatoes - 416 kg, cabbage- 30 kg, onion - 20 kg, peppers - 15 kg, eggplants - 5 kg; roots of different vegetables - 15 kg, peas and beans - 5 kg; herbs - 5 kg, other vegetables - 15 kg; potatoes - 50 kg.

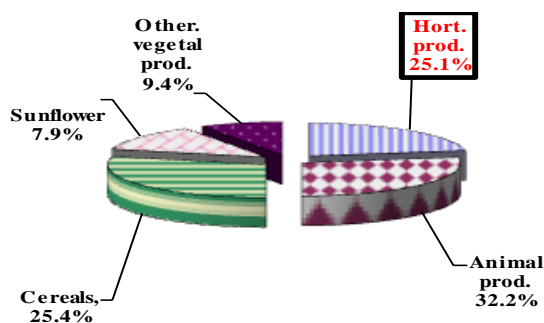


Fig. 1. The structure of agricultural production (2014)
Source: elaborated by the author based on the data from [2]

Taking into consideration, the information mentioned above, there was stated that for a family composed of 4 persons it will be necessary 2,144 kg of vegetables and 200 kg of potatoes. But, this statistics is estimative, because the consumption of fruits and vegetables must be correlated with the level of the physical activity, age, gender, food habits, daily energy consumption etc., so as not to offer the body more food than it needs to operate normally.

The horticultural sector of the Republic of Moldova is divided in two subsectors:

(a) **The sector of fresh horticultural products** – characterized by the lack of financial resources, investments in high-tech, innovative production technique, developing irrigation infrastructure and the marketing strategy (lack of post-harvest infrastructure – refrigerated rooms, packing houses, etc.)

(b) **The sector of processing horticultural products** – characterized by continuous process of developing, which can be ensured by 3 basic pillars - the raw material, the labor force and the development of new high requested products.

The analyze of the horticultural sector using five forces competition model of Michael

Porter, reveals that the competition on the local market is moderate without big inclination towards the consumer or the producer.

Risk of new entrants on the market is not very high because initiation of a fruit production business requires long term investments in multiannual plantations which is a little different from vegetables production in cold period of the year, but which also need investments for greenhouses. New entrants on the market also must ensure high quality, well packed products to be competitive towards the existing firms from the market.

Buyers are the final point of all the producers preoccupation, because the acquisition of the horticultural products by the consumers represent the acceptance of the producers supply by which is realized the change commodity – money. Regretfully, in RM doesn't exist a brand strategy for agricultural products which will differentiate the products, thus influencing the prices. Also it is very important to remark that in RM, the majority of the horticultural products are bought by consumers from the open markets because of the price which lower than in supermarkets.

Threat of substitute products. Fruits and vegetables have no substitute products. Even more that once the income of the population are decreasing, the consumers will change their preferences to lower prices products, from exotic products to local products.

Suppliers. In Republic of Moldova the number of suppliers of horticultural products is very high. Those who have a well organized distribution network of horticultural products from the producer to the consumer (it is a rather small number) are more advantaged towards those who have no a well organized distribution network. Local suppliers of horticultural products have no strong brands which would determine the consumers to give up to some of their preferences in favor of local horticultural products. A very serious problem is the lack of cold storage rooms, which determines the agricultural producers to realize directly from the field the horticultural production during the harvest season at low prices, compared to the period out of the season, when they could obtain incomes two

times higher, if they had cold storage rooms for keeping horticultural production in the cold period of the year.

Rivalry between players. Examining the existing rivalry from the market of horticultural enterprises, it is revealed that exist situations when local market faces overproduction because of the lack of foreign markets. Republic of Moldova faces with many export barriers. As a result of the embargo imposed by Russian Federation, in 2014 the fruits and vegetables producers from Republic of Moldova, according to the Minister of Agriculture and Food Industry registered losses over 20 Million USD, connected to the export of apples, but regarding the total exports of food products, RM registered losses over 200 Million USD. In this context high level of competitiveness can be achieved by increasing the productivity, according to the M. Porter theory of competitiveness, which can be realized by the allocation of the financial resources in the modernization of the horticultural production process.

Thus, according to the Government Decision nr. 352 of 10.06.2015, regarding the way of repartition the subsidy fund to agricultural producers for 2015, the amount of the subsidy fund constituted 610 Million MDL, which is more than in 2014 by 110 Million MDL, and then in 2013, by 210 Million MDL.

Analyzing the sum of subsidies fund of some EU member states and the subsidies fund from the Republic of Moldova we can state that agricultural producers receive the least subsidies in the region. For example, in 2013, in Hungary, there were allocated 1,904 Million EUR (approximately 450 EUR/ha), in Romania, there were allocated 2,620 Million EUR (approximately 191 EUR/ha), which is considerably much more than in Republic of Moldova, where the subsidizing fund was 454.03 Million MDL (approximately 24.67 Million Euro or 20 EUR per ha). Under these conditions, the agricultural producers are not competitive on the region's markets. Production costs are too high and the lack of financial resources creates difficulties at increasing the competitiveness [3].

In the same context, analyzing the structure of

subsidies allocation in 2013 (Fig. 2), we can mention that for stimulating crediting for agricultural producers and by banks non-financial institutions were allocated only 8.66% of financial resources. The investments subsidies for the establishment of multiannual plantations constituted 19.51%. Also for the development of the horticultural sector very important are technologies used in the process of production, thus 31.26% of subsidies were allocated as investments for purchasing agricultural machinery and equipment including irrigation equipment; 15.38% of subsidies were investments in the development of the processing and post harvesting infrastructure [1].

A specific measure of subsidizing agricultural producers which contribute to the increasing of competitiveness of the agricultural enterprises is „Stimulation of investments in the post harvest infrastructure”, for which in 2013 were allocated 69,817 Million lei. From this sum of subsidies allocated to the agricultural enterprises, for the development of the post harvest and processing infrastructure of the horticultural products were authorized subsidies equal to 8,901 Million lei only to 20 enterprises from 18 rayons, which represents 12.75% from the total sum of the allocated subsidies for the development of the post harvest and processing infrastructure, which represent a very low value for increasing the competitiveness of the local horticultural production, which represents a third from the total agricultural production. The majority of the allocated subsidies were for: purchase of equipment for primary processing of fruits and vegetables, the largest subsidy being allocated to Comrat Rayon amounting to 1.5 million lei; procurement of equipment for drying fruits, the largest subsidy being allocated to Criuleni Rayon in the amount of 1,240 Million lei.

Thus in order to increase the competitiveness of the horticultural production it is necessary to increase the allocated subsidies for the development of the post harvest and processing infrastructure.

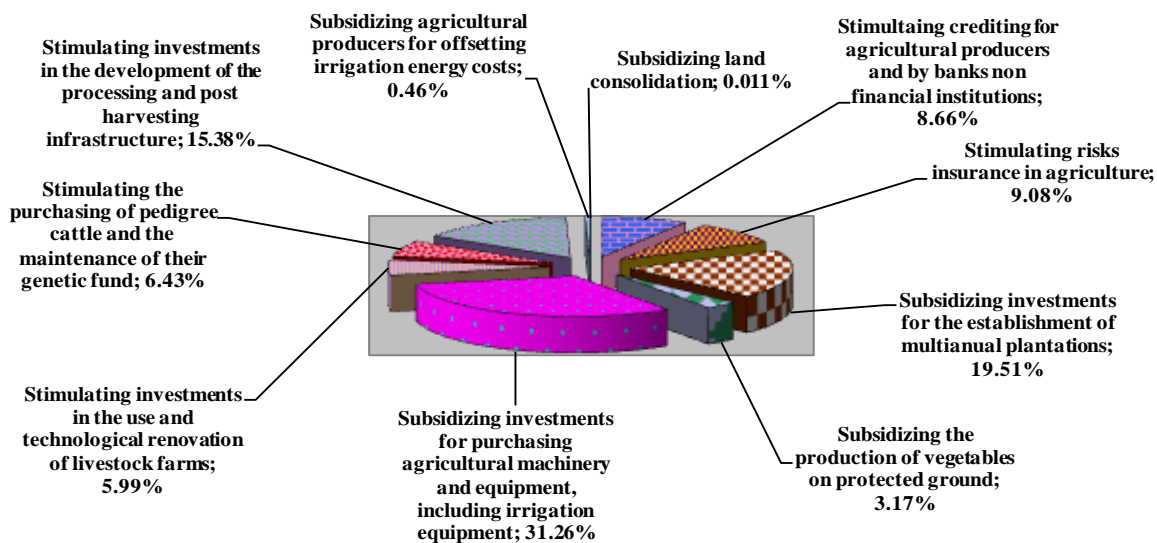


Fig. 2. The structure of subsidies allocation in 2013, %

Source: Elaborated by the author based on data from the Agency of Interventions and Payments in Agriculture



Fig. 3 . Intensive growing of tomatoes and strawberries in greenhouses, tunnels and greenhouses

Source: <http://pepinierelchida.ro/php/cultura-protectata-a-capsunului/>

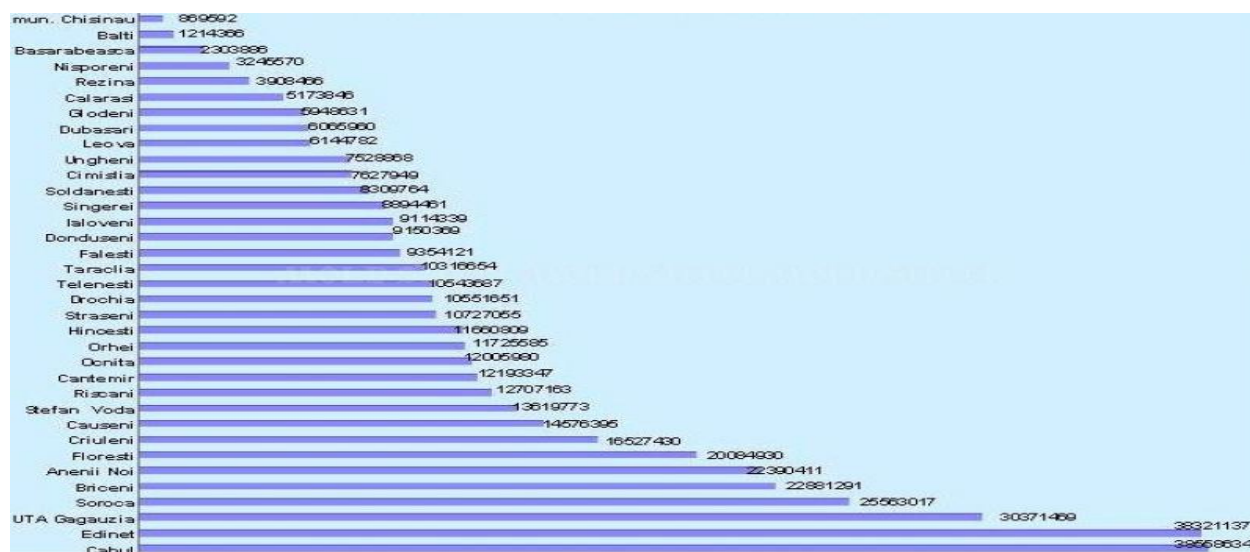


Fig. 4. The repartition of the subsidy fund by rayon (2013)

Source: [1]

According to the Fig. 4, it is revealed that the subsidy fund is not uniform. The leader Rayons in receiving subsidies are: Cahul – 38.56 Million MDL, Edineț – 38.3 Million MDL, UTAG – 30.4 Million MDL, Soroca – 25.6 Million MDL, Briceni – 22.9 Million MDL.

The territorial repartition of subsidies reveal that the discrepancy between the received subsidies by rayons is very high. This will not be a problem if there will be defined the disadvantaged rayons and the financial resources will be allocated to them.

The competitiveness analysis of the agricultural enterprises from the horticultural sector was performed using the Malmquist productivity index. Thus, using the linear programming duality there was determined the equivalent envelope of competitiveness of the agricultural enterprises, namely:

$$\begin{cases} \min_{\theta, \lambda} \theta \\ -y_i + Y\lambda \geq 0 \\ \theta x_i - X\lambda \geq 0 \\ N1 \cdot \lambda \leq 1 \\ \lambda \geq 0, \end{cases}$$

where:

θ - efficiency parameter;

n – number of farmers

Y – output vector, represented by the income from selling the agricultural products

X – input vector, $n \times 5$ dimensional, given by:

a) Surface of the agricultural lands effectively seeded

b) Costs for labour remuneration, thousands lei

c) Costs for seeds and planting material, thousands lei

d) Costs for chemical and natural fertilizers, thousands lei

e) Costs for auxiliary activities and indirect consumptions, thousands lei

$N1$ – is vector n - dimensional with components 1;

λ – variable of linear programming problem which would be solved

The competitiveness analysis of the agricultural enterprises was performed on the

base of 303 agricultural enterprises with horticultural frontier of production, which performed activity during 2008-2012. The statistical data processing was performed using the DEA program version 2.1.

The obtained results (TFP) for the analyzed period (2009-2012) were grouped into two categories:

(i) Average TFP of enterprises which received subsidies;

(ii) Average TFP of enterprises which didn't receive subsidies.

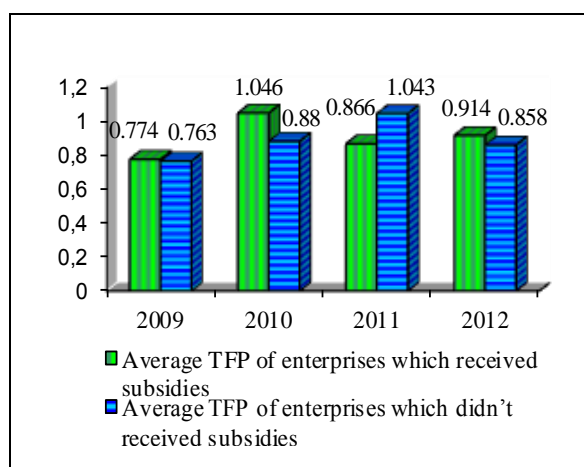


Fig. 5. The competitiveness dynamics of the agricultural enterprises from the horticultural sector depending on subsidies allocation

Source: Elaborated by the author.

Analyzing the competitiveness dynamics of the agricultural enterprises from the horticultural sector of the Republic of Moldova depending on subsidies allocation during 2009-2012, it is revealed that the agricultural enterprises from the horticultural sector which received subsidies are more competitive compared to the enterprises from the horticultural sector which didn't received any subsidies, fact demonstrated by higher values of TFP, namely: in 2012 the average TFP of the agricultural enterprises from the horticultural sector which received subsidies constituted 0.914, which is more by 0.056 compared to the average TFP of the agricultural enterprises from the horticultural sector which didn't received subsidies, where the average TFP constituted 0.858. From the figure 5 we can state that only in 2011 the average TFP of the agricultural enterprises from the horticultural sector which didn't

received subsidies exceeded the average TFP of the agricultural enterprises from the horticultural sector which received subsidies by 0.177. This fact can be explained by the lack of a vigilant control from the state regarding the use by destination of the subsidy fund, which maybe was used in other purposes than those for which they were granted, which influence negatively the competitiveness of the agricultural enterprises from the horticultural sector of the Republic of Moldova.

In the same time, according to Fig. 5, it is revealed that the difference between the average TFP of the enterprises which benefited of subsidies towards the average TFP of the enterprises which didn't received subsidies it is not very big. This fact reflects the inefficiency of the country's subsidy system, where must be performed improvements in terms of the subsidy measures, the selection criteria of the subsidy beneficiaries, as well as the control of the use of subsidies by the destination they were allocated.

CONCLUSIONS

The scientific researches regarding the role and influence of the subsidies on competitiveness of the agricultural enterprises from the horticultural sector of the Republic of Moldova give us the possibility to formulate the following conclusions:

-Despite the fact that subsidies represent an important source of financing the agricultural enterprises from the Republic of Moldova, from the analyze of the allocated subsidies fund in some of the EU countries - Romania, Hungary, compared to the subsidies fund from the Republic of Moldova, there was stated that the agricultural enterprises from the Republic of Moldova benefit approximately of 24.67 Million Euro or 20 EUR per ha, which is considerably less than in Hungary, where the allocated subsidy fund constitutes 1,904 Million EUR (approximately 450 EUR/ha), or in Romania were the allocated subsidy fund constituted 2,620 Million EUR (approximately 191 EUR/ha). Production costs are too high and the lack of financial

resources creates difficulties at increasing the competitiveness of the horticultural products.

-The territorial repartition of subsidies reveals a high discrepancy between the rayons which received subsidies. In order to solve this problem, there must be defined the disadvantaged rayons and elaborated a legal framework of subsidies allocation to this rayons.

-The analyze of the competitiveness dynamics of the agricultural enterprises from the horticultural sector of the Republic of Moldova depending on subsidies allocation during 2009-2012, revealed that the agricultural enterprises from the horticultural sector which received subsidies are more competitive compared to the enterprises from the horticultural sector which didn't received any subsidies, fact demonstrated by higher values of TFP.

-In 2011 the average TFP of the agricultural enterprises from the horticultural sector which didn't received subsidies exceeded the average TFP of the agricultural enterprises from the horticultural sector which received subsidies by 0.177. This fact can be explained by the lack of a vigilant control from the state regarding the use by destination of the subsidy fund, which maybe was used in other purposes than those for which they were granted, which influence negatively the competitiveness of the agricultural enterprises.

-The difference between the average TFP of the enterprises which benefited of subsidies towards the average TFP of the enterprises which didn't received subsidies it is not very big. This fact reflects the inefficiency of the country's subsidy system, where must be performed improvements in terms of the subsidy measures, the selection criteria of the subsidy beneficiaries, as well as the control of the use of subsidies by the destination they were allocated.

REFERENCES

- [1]AIPA, 2013, The subsidies lists of beneficiaries during 2010-2013. Available online at: <http://aipa.gov.md/ro/lista-benificiarului>.
- [2]BNS, 2013, Biroul National de Statistica din

Republica Moldova. Available online at:
<http://www.statistica.md/pageview.php?l=ro&idc=315&id=2278>

[3]CAP, 2013, Reform the CAP. Key data on the CAP. Subsidies per hectare in 2013, Available online at:
<http://www.reformthecap.eu/key-data-on-the-cap>

[4]Chaudhary, S., 2012, Trends in total factor productivity in Indian agriculture: state-level evidence using non-parametric sequential Malmquist index. Working paper 215, Delhi School of economics, Centre for development economics.

[5]Cimpoieş, L., 2012, Agricultural subsidizing system and its efficiency: evidence from Moldova. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 12 (3): 29-32. Available online at: http://managementjournal.usamv.ro/pdf/vol.XIII_3/Art5.pdf

[6]Clay, J., 2013, Are agricultural subsidies causing more harm than good? The Guardian. Available at: <http://www.theguardian.com/sustainable-business/agricultural-subsidies-reform-government-support>.

[7]Fare, R., Grosskopf, M., Norris, M., Zhang, Z., 1994, Productivity growth, technical progress, and efficiency in industrialized countries. The American Economic Review, Vol. 84, No 1.

[8]Knox Lovel C.A., 2003, The decomposition of Malmquist productivity indexes. Journal of Productivity Analysis 20, Kluwer Academic Publishers, p. 437-458.

[9]Myint, H., 1963, Infant Industry Arguments for Assistance to Industries in the Setting of Dynamic Trade Theory. International Trade Theory in a Developing World. Macmillan & Company, London.

[10]Sargo, A., 2013, Stimulating investment in Moldovan agriculture through subsidies. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 13 (3): 263-266.

Available online at: http://managementjournal.usamv.ro/pdf/vol3_3/Art44.pdf

[10]Schrank, W.E., 2003, Introducing fisheries subsidies. FAO Fisheries Technical Paper, No. 437, FAO, Rome, 52 p.