Assessment of impact of the Common Agricultural Policy on the development of viticulture in Bulgaria via Policy Analysis Matrix (PAM)

Desislava Toteva,
Institute of Agricultural Economics, Sofia, Bulgaria
e-mail: leeva@mail.bg

Abstract.

For the purposes of this paper Policy Analysis Matrix (PAM) is used to assess the impact of the Common Agricultural Policy (CAP) on the competitiveness of wine grape production after the accession of Bulgaria to the EU.

Today Matrix is widely used in scientific research in various countries - to assess the prospective consequences of full membership of Portugal in the EU (Pearson, 1987), Estonia (Yao,1997) and Slovakia (Michalek,1995).

Policy Analysis Matrix allows to calculate indicators for the analysis of policy - Nominal protection coefficient (NPC), Effective rate protection (ERC), Coefficient of internal resources spent (DRC).

The results of PAM analysis confirm that after Bulgaria's accession to the EU the applied CAP has a negative impact on the wine grape production.

Key words: assessment, impact, CAP, viticulture, PAM, Bulgaria.

1. Introduction,

The opportunities for sustainable development of viticulture in Bulgaria and its potential to enhance its competitive opportunities increasingly depend on institutional support in the context of the country's agrarian policy. After Bulgaria's accession to the EU this support has gained new dimensions that put wine grape production in a disadvantage compared with other sectors.

2. Policy Analysis Matrix (PAM).

To determine the impact of the Common Agricultural Policy on the competitiveness of the viticulture in Bulgaria is used Policy Analysis Matrix (PAM). This matrix is developed by Monke and Pearson (Monke E., Scott R. Pearson, 1989). Today Matrix is widely used in scientific research in various countries - to assess the prospective consequences of full membership of Portugal in the EU (Pearson, 1987), Estonia (Yao,1997) and Slovakia (Michalek,1995).

In Bulgaria Alexi Alexiev in his monograph "Competitive capabilities of the grain sector" (2012) is used a matrix to examine the impact of public support on the competitive capabilities of the grain sector. He develops two forms of the Matrix. In the first form he makes calculations based on one ton, and in the second form – based on one hectare. According to Alexiev in Bulgaria a second form has a greater reliability for the primary information.

For the purposes of this paper Policy Analysis Matrix (PAM) is used to assess the impact of the Common Agricultural Policy (CAP) on the competitiveness of wine grape production after the accession of Bulgaria to the EU. General form of the Policy Analysis Matrix is shown in Table 1.

Table 1. General form of the Policy Analysis Matrix

	Revenue	Costs for raw materials	Costs for local resources	Profit
Market prices	A	B	C	D
Cost-effective prices	E	F	G	H
Transfers	I	J	K	L

where:

D = A – (B + C);
H = E – (F + G);
I = A – E;
J = B – F;
K = C – G;
L = D – H.

Cost-effective prices are those that do not exceed import prices per unit of the same type. Economically efficient costs are those whose total amount (cost of raw materials imported and local raw materials) is lower

than the cost of import unit of the same type. Respectively economically efficient costs (permissible in terms of social benefit costs) are higher than revenues from exports unit of the same type.

Cost-effective prices of domestic factors of production (land, labor and capital) are evaluated by comparing the cost of this type, for example grapes with the lowest unit costs of other cultures (Monke and Pearson,1989).

3. Indicators for analysis of policy.

Policy Analysis Matrix allows to calculate indicators for the analysis of policy - Nominal protection coefficient (NPC), Effective rate protection (ERC), Coefficient of internal resources spent (DRC).

- **Nominal protection coefficient (NPC)**

This indicator determines the degree of difference in prices of domestic market and international reference prices. If the NPC is greater than 1, the domestic price is higher than the international price of production. In this case, the policy protects inefficient production. If the NPC is less than 1, the policy protects consumers. NPC is calculated as follows:

NPC = (A) / (E)

- **Effective rate protection (ERC)**

Effective rate protection is the ratio between the value added at market prices and the added value of cost-effective prices. When the ERC is greater than 1, the policy provides a positive impact on producers, when it is less than 1, there is public support for consumers. ERC is calculated as follows:

ERC = (A - B) / (E - F)

- **Coefficient of internal resources spent (DRC).**

DRC is used by Bruno (1972) for measurement of comparative advantages. According to Bruno (1972) and Krueger (1966 and 1972) with this ratio is estimated economic efficiency in the use of internal resources. If the DRC is less than 1, the internal resources are used efficiently. If the DRC is greater than 1, the internal resources are used inefficiently, and the competitive opportunities are low. DRC is calculated as follows:

DRC = (C) / (E - F)

The study of the impact on the competitive opportunities of viticulture is done by using different mathematical approaches and specific models. The results of PAM analysis developed by Monke and Pearson (Monke and Pearson, 1989) indicate the following.

Table 1 shows the income, the value of marketable production and own resources, and the profit generated by the production of one ton wine grapes for years after the accession of Bulgaria to the EU. In 2007, grape growers earn revenue from a tone of grapes in the amount of 587 leva at market prices or with 230 leva lower than at cost-effective prices. There is a transfer of funds towards consumers.

Tab. 2 Policy Analysis Matrix for grape production (tons)

	Revenue	Costs for raw materials	Costs for local resources	Profit
2007				
Market prices	587	208	248	131
Cost-effective prices	817	175	278	364
Transfers	-230	33	-30	-233
2008				
Market prices	533	200	226	107
Cost-effective prices	765	163	266	336
Transfers	-232	37	-40	-229
2009				
Market prices	462	175	189	98
Cost-effective prices	805	171	277	357
Transfers	-343	4	-88	-259
2010				
Market prices	536	199	224	113
Cost-effective prices	845	183	287	375

Transfers	-309	16	-63	-262
2011				
Market prices	555	209	235	111
Cost-effective prices	804	177	265	362
Transfers	-249	32	-30	-251
2012				
Market prices	589	207	253	129
Cost-effective prices	871	190	298	383
Transfers	-282	17	-45	-254
2013				
Market prices	578	210	253	115
Cost-effective prices	843	179	293	371
Transfers	-265	31	-40	-256
2014				
Market prices	635	229	275	131
Cost-effective prices	843	170	303	370
Transfers	-208	59	-28	-239

Source: Eurostat, Faostat, Customs Agency, 2007 – 2013 and the author's calculations

At the purchase of raw materials occurs a negative impact on grape growers. The costs of marketable materials are with 33 leva higher at market prices than at cost-effective prices. The costs of internal factors of production during the survey period are higher than the costs of marketable resources, which is explained with the technology in the production of wine grapes. The costs of local factors of production are with 30 leva lower at market prices rather than at cost-effective prices, which have a positive impact on production.

The realized profit in 2007 from a tone of grapes at market prices is in the amount of 131 leva. It is relatively lower than the profit calculated by cost-effective prices. The result is a negative transfer to grape growers and it is equal to -233 leva per tone.

In 2014 the difference between the revenue generated from the sale of one ton of grapes at market prices and cost-effective prices is less than in 2007 and is in the amount of 208 leva. This affects disadvantageous to grape growers.

The costs for raw material in 2014 compared to 2007 remain still higher at market prices than at cost-effective prices, which have a negative effects. The costs of internal resources are 28 leva lower than those in a cost-effective prices, which have a positive effects.

The profit in 2014 for grape growers is lower than in 2007. The total transfer of funds is negative for grape producers and is in the amount of 239 leva per tone.

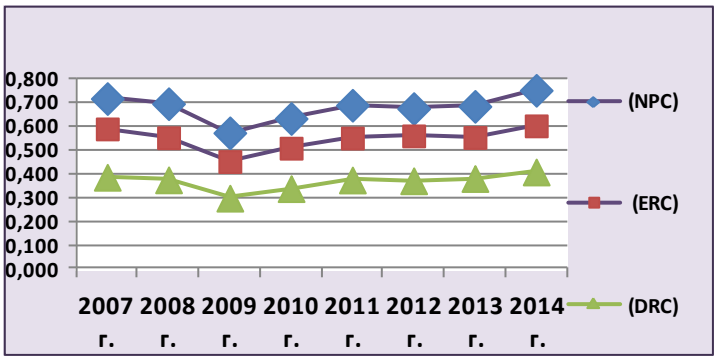
Figure 1 presents the values of the basic parameters defining the influence of the applied policy.

In grapes production, nominal protection coefficient during the period has tendency to reduce its value in 2007 it is 0,718, reaching levels of 0.686 in 2013, and in 2014 increased slightly to 0.753. It is less than 1, that is why the applied policy supports consumers and has no impact on grape producers.

The effective rate protection is also reduced and for 2014 is less than 1. Value added at market prices is less than that at cost-effective prices, which confirms the negative impact of the CAP for producers of wine grapes.

Only for local resources / labor, land and capital / results of PAM analysis give a positive conclusions. In production of wine grapes for the period 2007-2014 the ratio of local resources is spent from 0.386 to 0.409, which defines the use of internal resources as efficiently.

Figure 1 Evaluation of the level of support in grapes production



Source: Author's calculations

4. Conclusion

Generally the results of PAM analysis confirm that after Bulgaria's accession to the EU the applied CAP has a negative impact on the wine grape production.

To improve the image of the wine sector in the coming years, Bulgaria has to comply with the preferences of the consumers in the market for whose attention the competition is extremely high. In the sector is necessary control and compliance with the rules of fair competition. It is necessary to protect the names of products made from grapes and indications of origin for table and quality wines produced in specified regions. An important perspective for the future development of viticulture in Bulgaria is to create a new national strategy for development of Bulgarian vine and wine.

References:

1. Alexiev A., "Competitive capabilities of the grain sector", Agrarian University, Plovdiv, 2012.
2. Customs agency, 2007-2013.
3. Eurostat, 2007-2013.
4. Faostat, 2007-2013.
5. Ivanova, N. Statutory and Actual Nominal Protection on Agricultural and Food Products in Bulgaria and Impact on Producers – Consumers, Background Paper for FAO project TCP/BUL/7821. 1997.
6. Ivanova, N. „Economic Assessment of Agricultural Market. Distortions in Bulgaria during the Transition; PAM analysis", Bulgarian Journal of Agricultural Science, 5, p. 683 – 690, 1999.
7. Michalek, J., An Application of the Policy Analysis matrix for an Evaluation of Agricultural Policies in the Slovak Republic, Oxford Agrarian Studies, 1995, 23(2), 177-196.
8. Monke, E., Scott R. Pearson, The Policy Analysys Matrix for Agricultural Development, 1989.