DETERMINING AND OPTIMIZING THE ECONOMIC DIMENSION IN AN AGRICULTURAL FARM FROM CENTRAL MOLDAVIAN PLATEAU USING THE METHOD OF STANDARD GROSS MARGIN

Stejărel BREZULEANU [1], Carmen Olguța BREZULEANU[1], George UNGUREANU[1], Ion-Valeriu CIUREA[1], Roxana MIHALACHE[1]
E-mail: stejarel@uaiasi.ro

Abstract

The efficient process of activities in farms requires that providing production resources, and combining their allocation should be made in order to lead to: full valorization of production capacity of the farm, to obtain greater quantities of product per hectare and animal feed with as reduced costs as possible per unit of product, continuous growth of return on resources used by the application of modern technologies, improved technical resources and the non-pollution of the environment through waste.
Obtaining agricultural products can occur through very different combinations of factors specific to the conditions and possibilities of the farm. The factors of production in their various combinations, give different results, both in physical terms of production and cost and benefit.
In Romania and the EU, there are numerous and diversified farms, thus being a complex reality. In order to facilitate the unitary analysis of characteristics related to size (economic size) and economic results, it is necessary to use appropriate terms. This notion is the ***standard gross margin (SGM).***

Key words: standard gross margin, economic size, Central Moldavian Plateau

MATERIAL AND METHOD

To achieve this work we used case study as major research strategy and in analysis of performance level of the company level we used the model of determination of total standard gross margin realized in Excel worksheets. For data collection and analysis we used techniques and specific tools of qualitative research, analyses of internal documents, technological records and discussions with managers of farms from Central Moldavian Plateau.

RESULTS AND DISCUSSIONS

The efficient process of activities in farms requires that providing production resources, and combining their allocation should be made in order to lead to: full valorization of production capacity of the farm, to obtain greater quantities of product per hectare and animal feed with as reduced costs as possible per unit of product, continuous growth of return on resources used by the application of modern technologies, improved technical resources and the non-pollution of the environment through waste.

Given these requirements, the specialists of agricultural farms face technical and economic issues related to the options on the use of production resources.

The case study was done at a farm in Central Moldavian Plateau, S.C. Elba Rom Agroservice S.R.L which does its activity on an area of 726 ha located in Erbiceni village, 25 km west of Iasi County.

The structure of production for 2010-2011 is presented in figure 1.

S.C. Elba Rom Agroservice S.R.L seeks to merge the lands by entering new areas or exchanges made with competitors or people who exploit their land privately. The structure of land capital presents some peculiarities: the 726 ha composed of about 200 plots distributed in 30 tax blocks and the maximum area of a parcel is 26.23 ha.

Analyzing the data from the Profit and Loss account for 2009 and 2010 shows that the turnover is doubled in the years analyzed, this indicator being supported by the indicator of production sold (tab. 1).

The structural analysis of the resulting indicators of SC Elba Rom Agroservice SRL reveals the precarious economic situation of the farm, some features related to production activities (lack of equipment, high costs of external mechanization and weather conditions) are

[1] University of Agricultural Sciences and Veterinary Medicine Iasi

complemented by substantial financial expenditure, all these make the indicators to be negative, the rest of the indicators calculated according to them having the same result. Rates of return were negative in the analyzed years, but we can observe a trend for improvement due to the growth and development of the activity (tab. 2).

These indicators are a warning signal to management regardless of the source of funding the work and available resources.

The principles and basic rules for calculating the standard gross margins (SGM) are set out in Annex. 1 of Commission Decision 85/377/33 CEE07, June 1985 establishing a Community typology for agricultural farms (OJ no. L220, 17.08.1985) and still in force. Outline presented in this document provides an overview of official rules regarding the calculation of standard gross margin and contain some additional explanations.

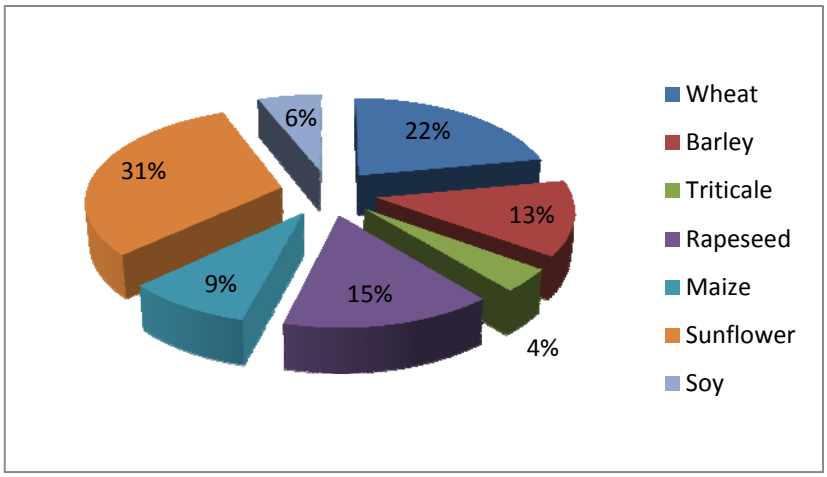

Figure 1 **Weight of crops in the production structure**

Table 1

Results obtained in 2009-2010

Nr.crt.	Indicators	2009	2010	Indices %
1	Turnover (CA)	593.702	1.290.027	217
2	Production sold (Pv)	348.787	1.105.685	317
3	Output stored (Ps)	84.472	1.252.959	1.483
4	Capitalized production (Pi)	0	0	0
5	Exercise production (Qe)	433.259	2.358.644	544
6	Value added (VA)	-1.558.025	-1.308.059	84
7	Gross result of the farm(RBE)	-1.339.576	-1.184.790	88
8	Operating result (RE)	-1.539.225	-1.558.680	101
9	Financial result (RF)	-287.863	-524.104	182
10	Current result (RC)	-1.827.088	-2.082.784	114
11	Extraordinary result (Rext)	0	-25.543	0
12	Gross profit of the farm(Rb)	-1.827.088	-2.108.327	115
13	Net result of the farm Rn)	-1.827.088	-2.114.777	116
14	Self-financing capacity(CAF)	-1.585.451	-1.515.554	96
15	Self-financing (AF)	-1.585.451	-1.515.554	96

Table 2

Indicators of efficiency

Nr.crt.	Indicators of efficiency	2009 - %	2010 - %
1	Economic return (Re)	-162,06	-70,62
2	Financial return (Rf)	51,93	38,77
3	Commercial profitability (Pc)	-259,26	-120,83
4	Profitability of operating income (Pvexpl)	-213,75	-61,28
5	Profitability of operating expenses (Pchexpl)	-68,13	-38,00
6	Profitability of total revenues (Pvt)	-233,35	-74,47
7	Profitability of resources consumed (Prc)	-70,00	-42,68

According to the methodology of calculation of the standard gross margin for the 2010/2011 there were calculated following indicators specific for each culture in three possible scenarios: the current situation, optimized situation and objective situation.

Situation "Present" shows the value of technical and economic indicators of the present structure of production (figure 2).

Plant culture				Production						Variable cost (CV)							Gross margin	Neces.of factors	
Production direction				Production vandable			Production Second	Subvent	incomes total	Seed	fert	plantelor protect	CV mecaniz.	Services	Other CV	Total CV		Neces. curr means	Work ore de
Cod	Dimens.	u.m.	Name	Average t	Price RON/t	incomes RON	RON	RON	RON	RON	RON	RON	RON	RON	RON	RON	RON	RON	lucru
1001	70	ha	Maize	700	1.000,00	700.000	14.000	33.040	747.040	37.800	56.000	28.000	49.000	24.500	28.000	223.300	523.740	111.650	1.190
1015	128		Triticale	320	420,00	134.400	19.200	60.416	214.016			32.000	49.920	16.128	44.800	142.848	71.168	71.424	2.176
1003	158	ha	Wheat	869	520,00	451.880	23.700	74.576	550.156	50.560	79.000	39.500	63.200	19.908	15.800	267.968	282.188	133.984	2.686
1004	70	ha	Soy	245	900,00	220.500	7.000	33.040	260.540	21.000	14.000	24.500	29.400	10.920	19.530	119.350	141.190	59.675	1.190
1005	150	ha	Sunflow er	450	800,00	360.000		70.800	430.800	25.500	45.000	37.500	86.100	20.400	22.500	237.000	193.800	118.500	2.550
1007	150	ha	Rapeseed	450	600,00	270.000		70.800	340.800	18.000	40.500	18.000	64.200	18.900	15.000	174.600	166.200	87.300	2.550
	726	ha	Summ			2.136.780	63.900	342.672	2.543.352	152.860	234.500	179.500	341.820	110.756	145.630	1.165.066	1.378.286	582.533	12.342

Figure 2 **Calculating "Present" gross margin**

In the calculation methodology it is outlined the lack of mechanization costs, due to lack of equipment, SC Elba Rom Agroservice SRL using different service providers in order to carry out agricultural works. For the crop, the gross margin index has a minimum value for triticale crop and a maximum value for maize culture (fig. 3).

The economic result obtained when "Present", although it has a positive value, does not fully recover all the inputs involved (fig. 4).

This correlation is due to the high cost of provision of services and a poor production structures. If the reduction / elimination of costs of services provided by third important investment efforts are needed, organizing the production structure requires minor financial implications.

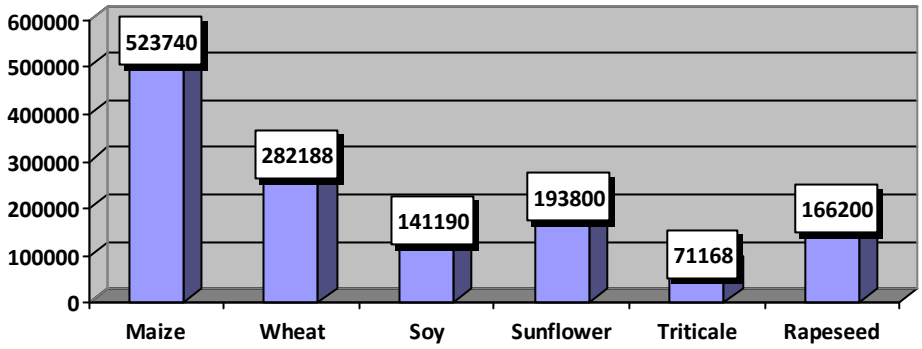

Figure 3 **"Present" Gross Margin on crops**

	Total gross margin*)	1.460.481
+	Other agricultural income	250
–	Fixed costs per year	4.941
=	**Revenues from farm**	1.455.790
–	Salarial costs per year	6.000
=	**Gross income**	**1.449.790**
–	Interest expense per year	0
+	Income from interest rate	254
–	lleasing and rental expenses	500
+	Income from lease and rentals/year	345
=	**The operating profit (excluding tax)**	1.449.889

*)Salaries, interest, leasing is not low !

Aproximation of fixed costs into the,,Present"

depreciation		2.000
Variable overheads	Services	100
	Car maintenance, repairs	250
	Lubricants	100
	Energy, heat, w ater	500
building maintenance		600
General insurance		800
Contribution to agricultural association		350
taxes and fees of unit		121
Other expenses of the unit		120
Sum of fixed costs and overheads costs		**4.941**

Figure 4 **Profit from "Current" operation**

In the **Optimized situation**, keeping all the other conditions unchanged, in particular, prices of agricultural products and purchase factors for use in production processes, the economic results and therefore the size of a farm will be differentiated according to these potentials. Under

these conditions, in order to optimize the economic dimension, farm management can act only on the structure of production or applied technologies.

The results presented in the "Present" situation revealed some deficiencies in management decisions of the SC Elba Rom Agroservice SRL regarding, in particular, the share of different cultures in the production structure. While some cultures are required for rotation and rotating large area of barley has established a decision based on inadequate economic foundation (fig. 5).

Plant culture				Production						Variable cost (CV)							Gross	Neces.of factors	
Production direction				Production vandable			Production Second	Subvent	incomes total	Seed	fert	plantelor protect	CV mecaniz.	Services	Other CV	Total CV	margin	Neces. curr means	Work ore de
Cod	Dimens.	u.m.	Name	Average t	Price RON/t	incomes RON	RON	RON	RON	RON	RON	RON	RON	RON	RON	RON	RON	RON	lucru
1012	70	ha	Maize optim	805	1.000,00	805.000	392	33.040	838.432	10.808	38.335	29.400	49.700	24.500	28.000	180.743	657.689	90.372	1.190
1013	158	ha	Wheat optim	948	520,00	492.960	3.792	74.576	571.328	26.070	42.518	42.660	66.360	19.908	15.800	213.316	358.012	106.658	2.686
1004	70	ha	Soy	245	900,00	220.500	7.000	33.040	260.540	21.000	14.000	24.500	29.400	10.920	19.530	119.350	141.190	59.675	1.190
1005	150	ha	Sunflow er	450	800,00	360.000		70.800	430.800	25.500	45.000	37.500	86.100	20.400	22.500	237.000	193.800	118.500	2.550
1015	128	ha	Triticale	320	420,00	134.400	19.200	60.416	214.016			32.000	49.920	16.128	44.800	142.848	71.168	71.424	2.176
1007	150	ha	Rapeseed	450	600,00	270.000		70.800	340.800	18.000	40.500	18.000	64.200	18.900	15.000	174.600	166.200	87.300	2.550
	726	ha	Suma			2.282.860	30.384	342.672	2.655.916	101.378	180.353	184.060	345.680	110.756	145.630	1.067.857	1.588.059	533.928	12.342

Figure 5 **Calculation of "Optimized" Gross Margin**

An alternative to the culture of barley is found in the culture of triticale doubling its MBS per unit (hectare), while having the possibility of rotation and crop rotation compliance.

It also requires to increase the amount of rape area for economic reasons and soybean cultivated area for technical reasons (rotation). Acting for the purposes of weight change in the structure of crop production, in "Optimized" situation the following indicators are obtained:

Table 3

Optimized Gross Margin

Area	Culture	Incomes Total	Variable specific expenditure	Standard Gross Margin	Total Gross Margin
158	Wheat	571328	213316	2266	358012
128	Triticale	214016	142848	556	71168
150	Rapeseed	340800	174600	1108	166200
150	Sunflower	430800	237000	1292	193800
70	Maize	838432	180743	9396	657689
70	Soy	260540	119350	2017	141190
726	TOTAL	2655916	1067857	2187	1588059

The indices of gross margin on crops have identical values when "Optimized", the only change being found in the production structure of which the barley crop was excluded. The benefit obtained by reorganizing the production structure is the optimum, the maximum possible to be obtained respecting the limitations imposed by rotation and minimal costs.

It can be noticed, that at the level of Total MBS indicator when "Optimized", the superior share in the structure of production of crops that bring the greatest economic benefits.

The operating profit achieved simply by reorganizing the structure of production increased by 51% up on the "Present", highlighting the importance of grounding the management decisions.

In "**Objective**" situation, keeping production structure presented in the "optimized" situation, it was taken into account the acquisition of machinery and equipment needed for land use and replacement of cost provision of services with the financial effort involved in their own mechanization, achieving the following results: (figure 6)

Plant culture				Production						Variable cost (CV)							Gross margin	Neces.of factors		Prod.furaj.
Production direction				Production vandable			Production Second	Subvent	incomes total	Seed	fert	plantelor protect	CV mecaniz.	Services	Other CV	Total CV		Neces. curr means	Work ore de	de baza
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1012	70	ha	Maize optim	805	1.000,00	805.000	392	33.040	838.432	10.808	38.335	29.400	49.700	24.500	28.000	180.743	657.689	90.372	1.190	
1016	14	ha	Potatoes	448	600,00	268.800	1.400	6.608	276.808	63.000	16.800	10.500	28.000	2.800	12.600	133.700	143.108	66.850	3.500	
1013	158	ha	Wheat optim	948	520,00	492.960	3.792	74.576	571.328	26.070	42.518	42.660	66.360	19.908	15.800	213.316	358.012	106.658	2.686	
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	740	ha	Suma			2.551.660	31.784	349.280	2.932.724	164.378	197.153	194.560	373.680	113.556	158.230	1.201.557	1.731.167	600.778	15.842	

Figure 6 **Calculation of "Objective" gross margin**

Using their own mechanized machines, the specific variable expenses decrease by 15.5%, influencing important growth of MBS level on crops. Thus, the same structure of production but by 15% less variable costs produces total MBS by 33% more than in the "Optimized" situation.

The operating profit increases by 24% in comparison with the "Optimized" offering a real alternative for the management but with significant financial implications.

The purchase of their own equipment offers to the management many benefits: superior economic performance, higher use of production factors, control over the technologies applied, the possibility of obtaining additional revenue.

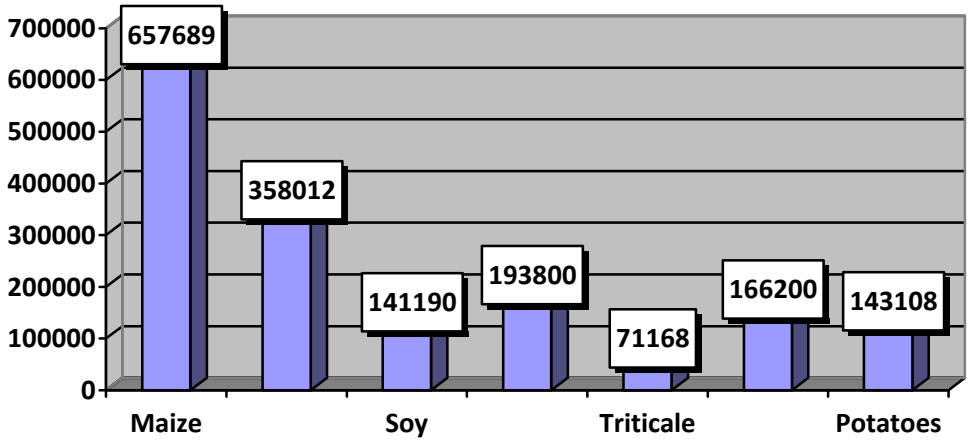

Figure 7 **Total gross margin "Objective"**

CONCLUSIONS

The contribution of foreign capital in the Romanian agriculture, especially from Germany, is a tendency of post-accession years, but the trials of German management to adapt to local conditions raised serious problems to investors. The economic results of S.C. Elba Rom Agroservice SRL reinforce this idea, the company recording losses in the years analyzed.

To optimize the economic dimension of society, the standard gross margin method was used, providing a realistic picture of the management team of the results may be obtained in the current production structure and two alternatives of economic and technical guidance.

In order to achieve the goals, i.e. business development and raising economic efficiency it must be imposed a continuous improvement of the farm management by adopting the most effective methods and management tools, the fundamental requirement for achieving the proposed economic performance consisting of possession of real information and intelligence on specific conditions of development of the company's business.

The alternatives offered by the use of standard gross margin to optimize the economic dimension of the holding represents opportunities

to achieve efficiency: minimal financial implications, if reorganization of the production structure and major financial implications, the necessary means of mechanization pay for their but significant benefits.

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