Profitability of the productive factors granted by the farmer

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Introduction

Over the last few years, the focus of consulting services moved from themes closely linked to the production techniques aimed at reducing costs and increasing unit yields to others linked to the farm economic management, respect of agronomic practices compatible with the environment, and rural development. The farmer, in fact, had to measure himself to a greater extent with more and more stringent market logics and this led to a search for new productive attitudes and a higher level of farm efficiency, aimed at guaranteeing suitable and proper remunerations to the productive factors used, and assuring their competitiveness. The Community agricultural policy, starting from the so-called Fishler reform, has in practice progressively reduced the protection to companies by exposing them more to problems typical of economic sustainability and competitiveness.

This justifies a new attention towards the adjustment of economic analysis methods for farms and towards advice to management. Within this context, INEA has first created a study group and later on started a collaboration with the Centre for Training in Economics and Politics of Rural Development of Portici, with the main aim of giving the right value to the considerable knowledge of the structural and economic farm data obtained from the Farm Accountancy Data Network (FADN).

1. Methodology

One of the tools to assess the managerial competitiveness of companies is measuring profitability, meant as the parameter able to bring out, through the analysis of its components, the possible inefficiencies and/or strengths.

The earliest applications of such criteria concerned the analyses of production costs, starting from the surveys on single productive processes (Tosco, 2006) or on the accounts of specialised farms (Pomarici, Rocco, Santangelo, Tosco, 2006) and the overall profitability of recorded farms (FADN Basilicata 2003 and 2006).

Such an approach is based on the assessment of the farm's **Net Income** (NI) and the unit remunerations of the factors conferred by the farmer. In order to make this assessment, we defined a **Reference Net Income** (RNI) as the whole of remunerations of conferred factors figured by using the concept of opportunity cost.

The Real Net Income of each farm is calculated, within the FADN, as the difference between the value of the Saleable Gross Production (SGP) and the sum of Fixed Costs (FC) and Variable Costs (VC).

The Reference Net Income is calculated in a standard way by referring to the context in which the analysed farms are included, on the basis of values taken from the **Reference Unit Remunerations** (RUR).

Then the first step was the identification of the Reference Unit Remunerations of productive factors conferred by the farmers, namely by labour, of the land capital and working capital, assessed by means of the criterion of cost opportunity.

Within the experience had with FADN Basilicata, as far as the remuneration of family labour (**RUR_lav**) is concerned, we took under consideration the data coming from the "National Collective Contract" in force of agricultural and nursery-gardening workers, relating to the workers employed permanently with the highest salaries. It is presumable, in fact, that a farmer and his family have higher levels of responsibility and a highly qualified job in the farm.

The Unit remuneration rate of the land capital (**RUR_capf**) takes into consideration the rents applied in the farms which are FADN members. In order to avoid distortions linked to contingent factors, the datum must be calculated as the ratio between the values of the rented land capital and those of the rent concerning the last three years.

The remuneration of the working capital (**RUR_cap**) was determined by considering the reference rates for the national debt of the accounting year considered.

On the basis of the actual uses of capitals present in the single farms, we were able to measure the Reference Net Income of each farm[1] of the FADN sample analysed. The same procedure can be applied to a homogeneous group of farms, thus calculating an Average Net Income (ANI).

The measurement of the profitability of the factors used can be expressed through the profitability index (PI), given by the ratio between the farm's actual net income (NI) and the reference net income (RNI), which assesses the gap level between the actual and expected remunerations.

In order to classify farms, we identified 4 classes of profitability:

Tab.1 Profitability classes

Code	Value	Description
IR1	< 0,33	Low profitability
IR2	>0,33 e < 0,66	Medium-low profitability
IR3	>0,66 e < 1	Medium-high profitability
IR4	>1	High profitability

The assessment of the profitability of productive factors finds its applications on different levels of aggregation, selected on the basis of the variables we want to analyse. The comparison between the farms' data thus assumes a value of comparison within homogeneous groups. The aggregation variables used in the study were:

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[1]
RTR_lav = RUR_lav*LAVFAM
RTR_capf = RUR_capf*CAPFOND
RTR_cap = RUR_cap*CAPESER
RNR = RTR_lav + RTR_capf + RTR_cap
Where:
RUR_lav = Reference remuneration per working hour
RUR_capf = Rate of reference remuneration of land capital
RUR_cap = Rate of reference remuneration of working capital
RTR_lav = Total reference remuneration of labour
RTR_capf = Total reference remuneration of land capital
RTR_cap = Total reference remuneration of working capital
RNR = Corporate net reference income
LAVFAM = Total family labour employed (in hours)
CAPFOND = Land capital owned by the farmer
CAPESERC = Working capital owned by the farmer

- the size class expressed both in physical, thus referred to the classes of agricultural area used, and economic terms as for the classes of Economic Size Unit (ESU)[2];
- the productive trend, expressed through the classification on the basis of the Type of Farming (TF)[3];
- altitude areas, differentiated by means of ISTAT classification.
- the management form.

2. Analyses outcomes

The explained methodology was used to analyse the data of the FADN farm sample of Basilicata for the years 2003 and 2006. The study on the profitability of factors was carried out by examining several aspects of both the farm management and the impact of public subsidies in agriculture, an extremely topical issue with relation to the CAP changes introduced by the so-called Fishler reform. The analysis concerned several stratifications, both economic and territorial, and was aimed at offering the surveying technicians of the Lucanian Agency of Development and Innovations in Agriculture (ALSIA) a tool for interpreting the economic results of recorded farms. We noticed, in fact, the need for supplying the farmers involved in the accounting survey with a technical assistance aimed at solving the problems linked with the technical and economic management.

2.1 Overall analysis on the profitability of factors

The distribution of Lucanian farms which were FADN members in 2006, per profitability class with reference to ESU classes, highlights substantial differences with relation to the two above-mentioned variables (Tab. 2)

Tab. 2. Farms per profitability class within the several ESU classes gross of subsidies

Profitability classes	Number of farms					Total nr. of farms
	4 – 8 ESU % on the total	8 – 16 ESU % on the total	16 – 40 ESU % on the total	40 – 100 ESU % on the total	>=100 ESU % on the total	
IR 1	74,6	56,3	25,0	13,0	0,0	325
IR 2	19,3	26,1	27,8	7,0	0,0	184
IR 3	6,1	13,4	21,3	17,4	0,0	132
IR 4	0,0	7,3	25,9	62,6	100,0	224
Total	100,0	100,0	100,0	100,0	100,0	865

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[2]   Farm classification, according to Community criteria, is based on the determination of the economic weight of the productive activities present in the farm, and their combination. To this aim, we use the "Standard gross incomes" (SGI), which are economic parameters identified per single productive activity or groups of crops (for example hard wheat, corn, vegetables in open field, citrus fruit, etc.); they are calculated as the difference between the value of gross production and that of some specific costs. The gross income calculated like that for each productive activity is defined "Standard" since it is determined on a three-year average and with reference to the average productive situation of an area. The farm's economic size is given by the amount of the total SGI, obtained as the sum of the SGI of each productive activity present in the farm. It is expressed in Economic Size Units (ESU) and, for the period considered, each ESU corresponds to 1,200 Euro of SGI.

[3]   The TF of a farm is determined by calculating the economic size of each crop and each breeding of the farm, namely by multiplying the number of hectares cultivated or heads bred by the related Unit SGI referred to the region where the farm is. The size of farm's productive processes measured like that allows determining the different productive combinations and thus assigning the TF according to the Community type scheme. The EC typology includes 58 possible combinations.

The number of farms belonging to the first profitability class tends to decrease, as it is logic to expect, with the increase of Economic Size. In this group, which can be defined as marginal and gathers overall more than 37% of the sample, we find the worst remunerations of productive factors: one hour of family labour can be paid less than 3,00 Euro. It is clear that for such typologies of farms it is difficult to hypothesize interventions able to give them their competitiveness back since, probably, their structural facilities do not allow substantial modifications in the management and productive organization but, nonetheless, in a logics of sustainable development we should identify the suitable policies in order to make these farms continue to play their role of territory defence.

It is also interesting to notice that 26% of farms, belonging to the highest profitability class (IR4), is thus able to remunerate its productive factors beyond the Reference Unit Remunerations. These are farms with remarkable physical dimensions, since all the analyses carried out showed a strong correlation between the size and the profitability of the factors, mainly due to scale economies that medium and big farms are able to achieve in the employ of labour and capitals. The UAA analysis per classes shows, in fact, that all the farms with more than 50 hectares are in the highest profitability class.

2.2 Analysis of the impact of public subsidies on profitability and of profitability of the factors per TF

The subsidies to income take part in the formation of the saleable gross production of FADN farms and thus affect the profitability of the factors. In order to purify this effect, an analysis was carried out by considering the farms' actual net income net of Community subsidies. The distribution of farms per profitability class and ESU changes consistently (Tab. 3).

Tab. 3. Farms per profitability class within the several ESU classes net of subsidies

Profitability classes	4 – 8 ESU % on the total	8 – 16 ESU % on the total	16 – 40 ESU % on the total	40 – 100 ESU % on the total	>=100 ESU % on the total	Total nr. of farms
	Number of farms					
IR 1	95,7	81,9	60,8	36,5	16,0	570
IR 2	4,3	12,8	18,0	13,1	0,0	111
IR 3	0,0	3,3	7,7	13,0	0,0	50
IR 4	0,0	2,1	13,5	37,4	84,0	134
Total	100,0	100,0	100,0	100,0	100,0	865

We noticed a remarkable increase (+28%) in the percent weight of the farms included in the first profitability index class, thus close to "marginality", which confirms the remarkable weight assumed by the subsidies to income on the farms' profitability. The quasi totality of farms has in fact used public subsidies (from the uncoupled single payment to those for agro-environmental measures) and, on the whole, such amounts equalled 41% of the total net income.

This incidence remarkably varies according to the productive activities practised in the farm (tab. 4). It is determining for the farms with a "Specialized cereals, Oleaginous and Proteaginous crops" TF, equal to 18% of the sample for which even in some ESU classes the net income would stabilize to negative values in the absence of subsidies. For the farms having productive organizations which have benefited from extremely low direct payment or which have not benefited from them at all, such as milk cattle, vine and fruit sectors, the

incidence of subsidies is remarkably lower (ratio Net Income Without subsidies NIW on Net Income NI).

Tab.4 – Profitability of productive factors per TF (average values)

Technical and economic trend	Nr. of farms	PI	hours/ha	NI/ha	Unit remunerations			NIW/NI %
					Family labour (€/ore)	Working Capital (%)	Land Capital (%)	
Cereals, Oleaginous, Proteaginous	156	0,63	47	310,33	5,5	1,7	1,1	-16,2
Other Seed plots, Mixed Seed plots.	101	1,25	89	833,87	10,83	3,4	2,1	54,9
Vine growing	8	1,37	186	1.751,64	11,91	3,7	2,3	89,3
Fruit and/or Citrus growing	152	0,83	319	1.535,22	7,22	2,2	1,4	79,2
Olive growing	20	0,55	80	388,4	4,76	1,5	0,9	-1,7
Mixed Tree growing	33	1,65	125	1.485,05	14,39	4,5	2,8	72,8
Milk cattle	20	1,87	153	2.730,82	16,31	5,1	3,2	87,1
Meat cattle	46	0,85	38	303,98	7,43	2,3	1,5	57,1
Mixed cattle	47	1,49	114	1.677,32	13	4	2,5	80,4
Goat-Sheep and Other Herbivores	131	0,8	57	453,6	6,99	2,2	1,4	59,8
Herbaceous-Arboreal	65	1,44	136	902,02	12,49	3,9	2,4	65,8
Mixed Herbivores	11	0,68	48	268,27	5,9	1,8	1,2	6,4
Seed plots – Herbivores	60	0,88	48	421,88	7,66	2,4	1,5	42,5
Mixed Cultivations - Breeding	8	0,73	110	745,13	6,33	2	1,2	61,6

This table highlights that only a few TF reach a profitability whose levels are higher than the unit. On the contrary, in many cases the remuneration of the factors is much lower than the Unit ones.

In the study, the reading of these data is crossed with information related to the farm's structural profile, altitude and management form and the location of the farm itself according to the programme areas identified by the Regional Administration for the application of Community policies. All this gives technicians a rather comprehensive knowledge which allow them to understand, also through the comparison with similar farms, the reasons at the basis of the farm profitability results and propose managerial solutions which can guarantee better remunerations of productive factors.

3.Conclusions

The methodology thus allows the assessment of the farm profitability with different values of aggregation. The comparison between the RI values of farms with the same productive organisation and/or located in the same territory and/or belonging to the same class of economic size, together with the analysis of structural data, such as physical size, labour utilisation and equipments, gives the service system a tool for supporting the farm economic management. The reading of the farm economic results and their comparison within a homogeneous group of farms allow to assess, by means of opportunity costs, the satisfaction level of farmers' expectations and to analyse inefficiencies, critical points but also possible excellences which are at the basis of the results obtained.

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