FROM THE CONCEPT OF MULTIFUNCTIONAL AGRICULTURE TO THE MEASURE OF MULTIFUNCTIONAL FARMING

BLASI E.
DEAR – Facoltà di Agraria,
Università della Tuscia,
Viterbo, Italy.

CICATIELLO C.
DEAR – Facoltà di Agraria,
Università della Tuscia,
Viterbo, Italy.
E-mail: claracica@yahoo.com

PASSERI N.
DEAR – Facoltà di Agraria,
Università della Tuscia,
Viterbo, Italy.

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Abstract

The objective of this paper is to deeply analyze some of the theoretical and methodological implications linked to the definition, the characterization, the evaluation and the estimation of the economic results of a multifunction agricultural farm. A deep study of these aspects seems essential for two reasons. On one hand, society is pressing farms to enlarge the existing set of goods and services; on the other hand, sector policies offer to farms new opportunities, which regard the allocation of services linked to the different functions that agriculture is able to carry out. In these conditions, in order to make the entrepreneur able to decide which services to set in motion, considering the economical input that their activation could bring to the farm, it is fundamental to identify an analytic method that is capable to estimate and evaluate the economic results of a multifunction farm.

Key words: multifunctionality, economic indicators, rural development

Introduction

The vast literature on multifunctionality in agriculture has focused so far, other than on the definition of the concept, especially on the description of the single functions, on the role which such functions can play in the development of a rural territory and on how politics, both agricultural and of rural development, can support the subjects through which such multifunctionality is expressed.[1]

Existing literature tends to define multifunctionality as directly, although not exclusively, linked to the different functions agricultural land fulfil (Jongeneel, et al, 2008), so that the unfolding of multifunctionality reflects the fact that nowadays agriculture is expected to support the development of rural areas through functions other that primary ones only (Labarthe, 2009). But despite a growing consensus among both scholars and policy makers around the need of recognizing and valuing a wide range of farm production outputs "multifunctional agriculture" is by no means clearly and uniformly conceptualized or understood (Wilson, 2007).
Less attention has been paid to the analysis of a multifunctional farm, to its theoretical framework, to the identification of different typologies, to the identification of the methods to use for a correct evaluation and interpretation of the management results and, key aspect, to the definition of criteria to measure a farm's level of multifunctionality.

[1] For the definition of multifunctionalty and a view of the main works on this topic see OECD, 2001 e Van Huylenbroeck, et al, 2007.

The objective of this work is going more in depth with reference to some of the methodological implications linked to the definition, evaluation and interpretation of a multifunctional farm results.

The availability of such tools represents the preliminary requirement in order to define farm multifunctionality indicators based on the incidence that the linked activities have on its total economic results. Such indicators, besides improving the evaluation and interpretation of management results, can be seen as operative tools in order to analyse the impact of the sector policies at a microeconomic level.

In this paper, after having drawn a classification of the extra-productive functions which can be carried out in the farm, a scheme is suggested in order to highlight the economic dimension of such functions in the frame of management results, and in order to measure, on the basis of the dimension reached by the activities linked to the single extra-productive functions, the farm multifunctionality. In the last part, in order to clarify the suggested methodology, a case study is showed. This case study makes reference to a farm where the extra-production activities have a remarkable importance and in which the different multifunctionality indicators which have been suggested will be evaluated.

A Profit and Loss Account proposal for a multifunctional farm

The turning of agriculture into multifunctionality can be summarised in two different dynamics: a process of *deepening* of the agricultural dimension and a process of *broadening* of the activated functions (Van der Ploeg, 2003). The first remains implicit and influences the agricultural activities by binding the productive processes; whereas the second one allows enhancing the synergic effect between ordinary and extra-ordinary in the agricultural sector in terms of economic results. In this situation, it seems necessary to distinguish with clarity between these two components within farms, with reference both to the activities carried out and the contribution to economic results.

In order to get to the definition of an operative model through which the role of multifunctional components can be highlighted among the farm economic results, it is useful to make reference to the scheme in figure 1. It highlights how the ensemble of the activities carried out in the farm, determined by the context and its structural and entrepreneurial characteristics can fall within two function macro-typologies: productive and extra-productive.

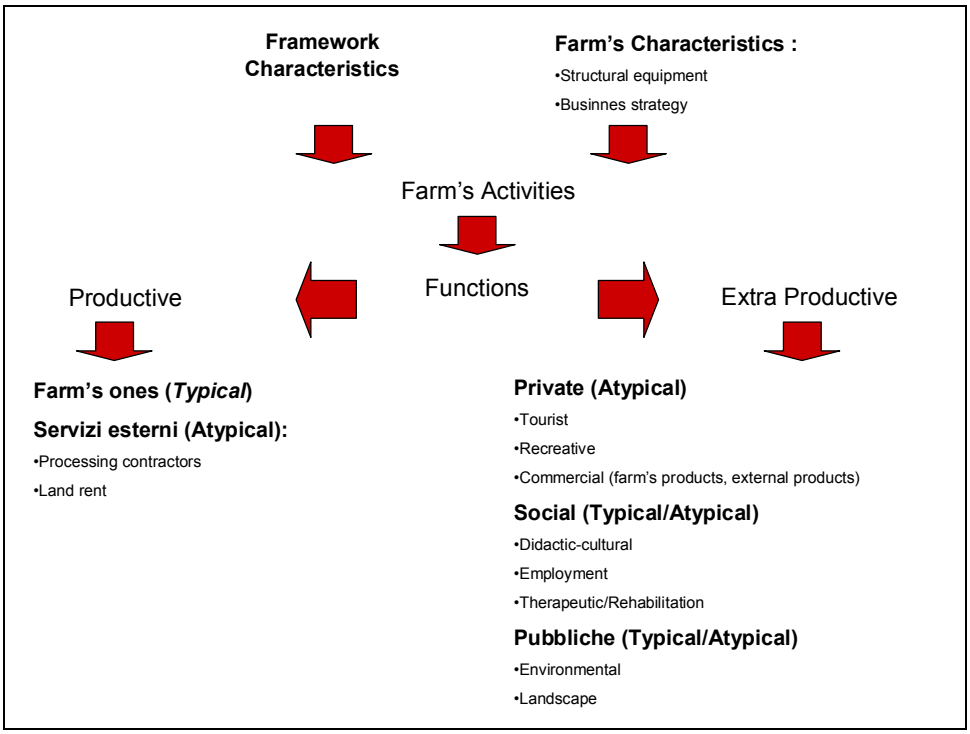

Figure 1 – Scheme of the multifunctional farm

Among the productive functions are all the cultivation, breeding and transformation activities which uses farm productive factors and which give origin to agricultural products, as well as the coupled payments. If such activities are carried out inside the farm itself, they are to be numbered among the farm "typical" activity[2] (since it is "typical" for a farm to carry out agricultural productive processes). On the contrary, when capital and work are at other farms' disposal, the resulting services (such as rental of farm land or works on behalf of a third party) fall within the "atypical" farm management.

When the farm productive factors are employed for activities linked to extra-productive functions, that is to say which do not aim to produce agricultural goods, they are always in the context of "atypical" management. The discriminate principle for the classification of extra-productive services can be the type of function they fall within and the level of remuneration they get on the market (Van Huylenbroeck, et al, 2007). It is therefore possible to distinguish (Franco, 2005):

[2] For typical activity is meant what already called in other studies "farming", while for atypical activity is meant what in the same studies is defined as "non farming". Without entering in a discussion about terminology, the definitions used in this paper seems more appropriated to the classification utilized along the study.

- *Private services*, which fall within the functions of tourist, recreational and commercial type and which are offered on the market.
- *Public services*, which fall within the landscape and environmental functions and which produce benefits for the community. It has to be clarified that, in the approach adopted, only the services generating positive externality are included; whereas all forms of reduction of negative externality produced by the agricultural activity fall within the productive function.
- *Social services*, which fall within the didactic, cultural and therapeutic-rehabilitative function and which supply services intended partially for the market, partially for the community, since they determine an impact on the whole society, contributing to the cultural growth and to the civil improvement of its members.

Starting from the division of the activities according to the suggested logic, it is possible to get to the definition of a profit and loss account scheme in which revenues and costs for each single component are highlighted. This makes it possible to determine in an analytic way the entity and the relative weight of single productive and extra-productive functions, and, consequently, how much multifunctionality weighs upon farm incomes.

A loss and profit account scheme which adapts to the evaluation of multifunctional farm results is offered in figure 2.

The section referring to the typical management describes the result of the agricultural productive activity to which the extra-productive component represented by the potential single farm payment provided by the CAP on historical bases has to be added. Indeed, if we take as reference the definitions of "Agricultural Activity" expressed in the Reg. 1782/03 and confirmed by art. 2 of Reg. 73/2009, and of "Conditionality", present in art. 5 and 6 of the aforementioned regulation, it can be inferred that the agricultural activity, even where it is not explicitly aimed to the production of goods, is tied to land care (EC, 2003; EC, 2009). The fact that maintaining good agricultural and environmental conditions (GAEC) and the respect of the statutory management requirements (SMR) is a foundation of agricultural activity entails that the single payment received by the farms holding CAP entitlements, even if calculated on historical bases, results inseparable from such an activity and therefore has to be introduced among the revenue components of the typical management.

Figure 2 - Loss and Profit account scheme for a multifunctional farm

A. Typical management
A.1 PRODUCTIVE COMPONENT A.1.a Revenues - *Value of products* - *Payments linked to production* A.1.b Costs - *Production variable costs* - *Production fixed cost*
A.2 EXTRA-PRODUCTIVE COMPONENT A.2.a Revenues - *CAP Payments* A.2.b Costs - *CAP Application*
B. Atypical management
B.1 PRODUCTIVE COMPONENT B.1.a Revenues - *External agricultural services* - *Rental of farm land* B.1.b Costs - *Machinery and Labour costs*
B.2 FINANCIAL COMPONENT B.2.a/b Active/passive interests
B.3 EXTRA-PRODUCTIVE (MULTIFUNCTIONAL) COMPONENT B.3.1 Private services B.3.1.a/b Revenues and Costs - *Tourist services* - *Recreational services* - *Commercial services* B.3.2 Social services B.3.2.a/b Revenues and Costs - *Cultural services* - *Didactic services* - *Therapeutic services* B.3.3 Public services *B.3.3.a/b Revenues/Costs* - *Environmental services* - *Landscape services*

In the extra-characteristic part, the items referring to the supply of productive services are present as well as the ensemble of revenue and cost components linked to the multifunctional extra-productive activities, divided in the three typologies described.

As it has been hinted at, the environmental contributions (good agricultural practice, integrated pest management, organic farming) are not to be introduced in these typologies, as well as the relative costs, because they do not fall within an atypical environmental service, but rather within a particular modality of carrying out the agricultural productive process. On the basis of this consideration, the possible costs for environmental certification have to be divided in two parts: one relative to the certification of the productive process (and therefore typical of the characteristic activity), and another linked to the possibility of commercialization with a communitarian brand, which represents a cost of private extra-productive services linked to the sale of products.

Another aspect involves the possible premium price obtainable in the commercialization of certified products; it configures itself as the revenue of a service intended for the market and linked to the commercial ability of the entrepreneur and, therefore, falls within the atypical management. Similarly, also the premium price obtainable through direct sale falls within private services.

Among the activities connected to private services, the incomes deriving from the hosting activity (farm holiday and restaurant) have to be included. They are determined by the difference between revenues and costs, included those linked to the possible depreciation charges for investments, after tax (in case of public aid obtained in order to realize them). A similar treatment has to be given to the activities linked to social services, and therefore the revenues and costs generated by didactic, cultural and therapeutic-rehabilitative activities carried out in the farm.

The interventions aimed to generating positive externality concerning the environment and territory safeguard are to be considered as services connected to the environmental function and should be evaluated by considering the investment costs and the relative public aid.

Lastly, a further section relative to financial management needs to be introduced in the scheme. It falls within the atypical extra-productive components but, obviously, it has to be distinguished from multifunctional activities.

Multifunctionality indicators

On the basis of the suggested loss and profit account, it is possible to identify a farm "multifunctionality gradient", given by the combination and intensity with which the different agriculture functions are linked (Wilson, 2007). Indeed, by comparing the results of different "managements", it is possible to calculate some indexes that highlight the economic contribution of multifunctional activities carried out in the farm, both in their ensemble and for single service typology (public, private and social).

These indexes, depending on their referring to incomes, revenues or costs, lead to the evaluation of the farm "multifuncionality gradient" from different points of view. If we make reference to revenues, the "commercial" value of the different extra-productive activities is emphasized; if the parameter of reference is income, the aim will be to estimate the contribution that such activities have brought to the total result: if, finally, costs are taken into consideration, the attention is focused on the entity of the investment on multifunctionality by the farm.

A first index able to evaluate the multifunctionality level is represented by the incidence of multifunctional service incomes on the total of farm management expressed by net income. This index (MF/NI), however, does not appear completely satisfying as it takes into consideration also the financial results and the productive services offered on the market which do not represent activities linked to agriculture multifunctionality.

A better understanding of the weight of multifunctional activities is provided by the ratio between the value of extra-productive services (private, social and public) and typical management, as the expression of the agricultural activity carried out in the farm. Such ratio (MF/ TM), as indicated previously, can be calculated in terms of revenues (MF/TM R), incomes (MF/TM I) and costs (MF/TM C).

Making reference to the "multifunctionality index" based on the revenues, values next to zero identify "traditional" farms, in which the offer of multifunctional extra-productive services is low; values around one indicate a substantial balance between the farm's agricultural and multifunctional identity; values above one characterize farms where multifunctional services are predominant as compared to agricultural productive activities. In the latter case, there is a weakening of the functional link between primary activity and supply of services connected to agriculture, which can result in the distortion of the farm's agricultural identity itself, making it closer to a different type of "rural" firm, a service provider, farther and farther from the agricultural dimension and, consequently, less and less multifunctional (Arzeni et al., 2001).

An empirical case of multifunctional farm

In this paragraph, the results obtained by the application of the loss and profit account and the multifunctionality indexes, as they have been previously defined, to a farm of central Italy are shown.

Description of the farm

The considered farm, which covers an area of about 140 ha located half on a plain and half on hills, represents an interesting case study for the variety of the productive processes which are carried out and for the recent development of different multifunctional activities.

Part of the land (80 ha) is rented and the farming carried out on the other 60 ha includes three productive processes: wheat, vine and olive tree. The harvested wheat is sold wholesale, while the oil obtained from the olives, which are processed in an external oil mill, is commercialized in the farm's shop. On the contrary, the grape is given to a wine cooperative that produces the wine and bottles it; afterwards, the farm repurchases part of the bottles in order to commercialize them directly.

Therefore, a first multifunctional activity is direct sale; moreover, the farm's premises, recently remodelled, are rented for events and weddings. Both these activities, being oriented towards the market, fall within the private services of multifunctional activities. In recent years, a didactic activity has been developed: laboratories for children and nature sightseeing, which can then fall within the supply of social services. Finally, the farm has intended some land for the feeding of wild fauna , for which it benefits from aid as envisaged in the local plan for the safeguard of wildlife and biodiversity and provided in the framework of the agro-environmental measures of the "Piano di Sviluppo Rurale del Lazio" (Rural Development Plan for the region Latium). Such an activity, since it generates a positive externality, definitely falls within the agriculture's environmental function and it is considered a public service.

Economic results

The economic data are taken from the farm accounting with reference to the year 2008 and they have been processed and reclassified according to the loss and profit account scheme suggested in paragraph two.

Table 1 - Economic results of the farm in the case study

Component	Description	Value (€)
A.1 Productive	Value of products	157.978
	Payment for organic management	30.155
	A.1.a Revenues	188.133
	Production variable costs	105.738
	Production fixed cost	69.694
	A.1.b Costs	175.433
A.2 Extra-productive	A.2.a Revenues (CAP Payments)	12.600
	A.2.b Costs (CAP Application)	3.000
A. Result of Typical Management		**22.300**
B.1 Productive	Rental of farm land and buildings	
	B.1.a/b Revenues-Costs	24.334
B.2 Financial	B.2.a/b Active/passive interests	-2.850
B.3 Extra-productive		
B.3.1 Private services	Commercial services (direct selling)	
	Tourist services (weddings and events)	
	B.3.1.a Revenues	70.064
	B.3.1.b Costs	67.014
B.3.2 Social services	Cultural services (didactic farming)	
	B.3.2.a Revenues	20.645
	B.3.2.b Costs	19.281
B.3.3 Public services	Environmental services (biodiversity)	
	B.3.3.a Revenues	7.200
	B.3.3.b Costs	1.205
B. Result of Atypical Management		**31.894**
A+B. Net income		**54.194**

As far as the farm agricultural part is concerned, the revenues coming from the products commercialized directly in the farm have been determined making reference to the wholesale market price and not the one which is applied in the farm shop: as it has been said before, indeed, the *premium price* which can be obtained by direct sale is part of the commercial activity (extra-productive) and it is included in the specific section of the loss and profit account. In the same way, the products' organic certification costs fall within the private commercial extra-productive services. Active rentals, even if they are an atypical component of farm management, are not to be considered as multifunctional activities because they maintain a productive connotation; for this reason they should not influence the calculus of multifunctionality indicators.

From the data of the loss and profit account (table 1), it is clear that the typical management result, even if bearing the remarkable investments for the planting of new vineyards, is largely positive, generating an income of € 22,300.

On the other hand, the ensemble of public, private and social services provided in the framework of multifunctional activities generates an income of € 10,409; here as well the result is definitely penalized by the costs met for the modernization of the structures dedicated to multifunctional activities (part of which have been co-financed in the framework of the measures pertaining to the Rural Development Plan). This is the reason why environmental services represent the main income item (among the multifunctional activities) at present, even though they show definitely lower revenues as compared to private and social services.

Multifunctionality indicators

As suggested in the methodological part, a first indicator in order to evaluate the weight of multifunctional activities in the farm is represented by the ratio between the income derived from the related services (€ 10,409) and the net income (€ 54,194), which has a value equal to MF/TI=0.192 in the examined case, that is to say that almost 20% of the farm income originates from multifunctional activities.

More information can be deduced from the three indexes related to the ratio between the value of multifunctional services and the typical management result, expressed in terms of revenues, costs and incomes (table 2). The three indexes have very similar values and, altogether, allow us to state that from the economic point of view the multifunctional activity weighs upon the whole management in a remarkable way, even if maintaining an equilibrated ratio with the characteristic activity.

Table 2 - Value of the multifunctionality indicators

	Typical management	Multifunctional services	Index	Value
Revenues	200,733	97,909	MF/TM_R	0,488
Costs	178,433	87,500	MF/TM_C	0,490
Margin	22,300	10,409	MF/TM_I	0,467

The fact that the three values are set a little under the value of 0.5, that is to say that the agricultural component doubles the multifunctional component, puts the farm in a traditional path where activities are being progressively diversified in a multifunctional prospective. Thus, this is a case where different provided services do not represent an alternative to the use of farm facilities, but they allow, by means of a tight integration with the productive activities, to enhance them for tourist, cultural and environmental purposes.

Conclusions

The aim of this work was to define a scheme in order to classify the farm economic results which allows us to highlight the revenue and cost components of the single

activities, with particular reference to the services linked to the various extra-productive farming functions.

Starting from this scheme, it is possible to calculate some descriptive indexes of the farm's "multifunctionality level". These indexes, in addition to their important contribution to the interpretation of management results through a targeted balance sheet analysis, represent a useful tool in order to evaluate the impacts of agricultural policies at the microeconomic level. Indeed, the analysis of the indexes' evolution allows verifying the spill over effects, in terms of sectors and territories, of the measures in support of economic diversification which are included in the second pillar of the CAP.

In the same way, knowing the multifunctionality level of farms which operate in a rural context can help improve the efficiency of the distribution of public financial resources. Indeed, if it is true that when the number of services provided rises, the farm becomes more and more multifunctional, it is also true that if the extra-productive services, in terms of income, revenues and costs, outnumber the typical activity, then the farm tends to progressively drift away from its agricultural identity. Thus it follows that a farm showing multifunctionality indexes with high values should be considered more as a rural firm providing services, rather than a multifunctional farm. In such cases, in the perspective of efficiency we mentioned before, it seems reasonable to take into consideration the eventuality of downsizing, or even revoking, the aid that such enterprises/firms receive within the first pillar. Indeed, these firms appear to be mainly the recipient of the resources budgeted by the second pillar, since they contribute in a significant way to rural development with their marked predisposition towards services, even in all those cases in which the agricultural activities are relegated to a marginal role.

A key point in this logic of reallocation of the communitarian resources is obviously the choice of the most adequate multifunctionality indexes and of the values which can discriminate between "multifunctional farms" and "rural firms", a process that cannot leave aside the involvement of local decision-makers.

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