An economic perspective on land abandonment processes*  
Adele Coppola†  

Abstract  
Land abandonment is the ultimate evidence of a modified economic profitability in land use and land ownership. The paper first analyses how this phenomenon can be assessed using census survey data and shows the path of land use changes that occurred in Italy during the last thirty years. Second, it lists the main economic and social factors which can affect agricultural abandonment at macro, meso and micro level and analyses how those factors act in marginal and central areas. Particular attention is devoted to factors acting at the farm level and their relevance is outlined by taking into account the characteristics of the household farms in Campania. The role of agricultural policy in influencing both the path of land use and the speed of land abandonment processes is then analysed.

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1 Introduction

This paper wants to discuss the land abandonment process from an economic perspective. Hence, attention will be focused on the main economic factors that can influence the categories and the intensity of land use at different levels of analysis. Among these factors, particularly important is the role of agricultural policies, whose recent evolution in Europe is going to affect, more than before, the path and the speed of land use changes.

A preliminary issue to tackle is related to the object of analysis, namely what is that we refer to, in agricultural economics, when we speak about land abandonment and how we can estimate the magnitude of this phenomenon within the agricultural sector. Such a clarification is useful, given that the same term can been used with different meanings depending upon the different perspective within the various disciplines that have studied the phenomenon.

In our jargon, abandonment occurs when land is not used as an economic resource. If the analysis is focused on the agricultural sector, we refer to the exit of a factor from the production and this exit is directly related to the behaviour of a productive unit. In the agricultural sector who manages the firm often is the owner of the land. That implies that land use changes reflect choices that take into account land as an asset, too. Hence, the analysis of economic factors of land abandonment should consider land use choices in a double perspective.

Abandonment is a way of factor use change, an extreme change, and it is the ultimate evidence of a modified economic profitability occurring when either the returns from agricultural activity are negative or the opportunity cost of land, that is the land value in the best alternative use, is greater than agricultural rent. A change of economic profitability could depend on a wide range of factors, not only on the characteristics of the natural resources
on which agricultural productions is based and on other factors of the agri-
culture sector proper, but also on institutional, economic and social factors
that can affect the relationships between agriculture and other sectors and
between rural and urban areas.

The way in which the intensity of the phenomenon is assessed also de-
epsends on the objective of the analysis. In Italy, the official data used in the
analysis of the agricultural sector are those collected in the periodic agricul-
tural census, which collects information on farms’ structural characteristics
and on the main types of land use. Objects of the census’ survey are all
kinds of farms, namely crops, forests and grazing activities. Some catego-
ries of land use are not included in the census survey: for example, parks are
not included, so as it is totally abandoned land, unless it is part of what is
classified as farm area. That means that, because the unit of observation is
the farm, the census can yield a measure of the abandoned area strictly
within the agricultural sector, but is not able to allow for a correct measure
of the magnitude of this phenomenon at a whole regional level. Neverthe-
less, the comparison of census data over time can give us some information
on how the abandonment process has evolved, allowing for the analysis of
the decrease of both the agricultural areas within a region, and of the utilised
area within the agricultural sector.

Particularly, two variables can help assessing the evolution of land use:

- Total Agricultural Area (TAA). Its change tells us how agricultural
  and non-agricultural uses of land have modified. A decrease of TAA
  shows the effects of competition among sectors and among different
  land uses (agricultural, industrial, or residential use, infrastructures
  and so on). Therefore, it is a sign of the exit of land from the agricul-
tural sector and it may be a proxy of the falling of the sector, particu-
larly when it is coupled with the reduction of farms number.

- Utilised Agricultural Area (UAA). Its change synthesizes how land
  use varies within the farm systems. It is a sign of agricultural intensi-
  fication/ extensification processes.

More information can be derived from the analysis of the relationship
between the evolution of these two variables.

When TAA falls more than UAA does, it can be interpreted as evidence
that the exit from the agricultural sector has concerned the more extensive
farms, those with a higher share of forests and unused areas, that is farms
where a reduction of land utilisation had already occurred. On the other
hand, a reduction of UAA greater than that of TAA provides evidence of an
adjustment path, in which the change from cultivated land to forest or un-
used area is accompanied by an insufficient demand for non-agricultural
land uses. However, it could also be linked to the exit of the more intensive farms, those with an high ratio UAA/TAA, and usually those with a good quality of natural resources and therefore a greater competitive pressure for land use.

## 2 The magnitude of abandonment processes in Italy and in Campania

The following table shows the evolution of Italian agricultural areas and of different categories of agricultural land use in the last 30 years. From 1970 to 2000 TAA has been reduced by approximately 5.5 millions of hectares, that is, more than one fifth of the total agricultural area was lost during that period. 78% of such reduction concerns the loss of utilised agricultural area.

### Table 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Utilised Agricultural Area</th>
<th>Forest and Woodland</th>
<th>Other Area</th>
<th>Total Agricultural Land</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ARABLE LAND</td>
<td>PERMANENT CROP</td>
<td>PERMANENT PASTURE</td>
<td>TOTAL</td>
</tr>
<tr>
<td>1970</td>
<td>8,939,917.31</td>
<td>3,381,869.11</td>
<td>5,466,480.96</td>
<td>17,891,468.38</td>
</tr>
<tr>
<td>1980</td>
<td>8,334,672.81</td>
<td>2,994,435.04</td>
<td>4,022,145.94</td>
<td>15,251,253.79</td>
</tr>
<tr>
<td>1990</td>
<td>8,159,718.66</td>
<td>2,787,309.28</td>
<td>3,158,897.77</td>
<td>14,014,925.61</td>
</tr>
<tr>
<td>2000</td>
<td>7,540,211.16</td>
<td>2,487,850.84</td>
<td>2,444,071.37</td>
<td>12,475,133.31</td>
</tr>
<tr>
<td>Data 1970-2000</td>
<td>-7.5%</td>
<td>-11.0%</td>
<td>-21.5%</td>
<td>-17.4%</td>
</tr>
<tr>
<td>Data 1970-2001 (%)</td>
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Generally, each category of land use has decreased during that period, even though at different rates. The larger reduction, both in absolute value and in percentage terms, has characterised permanent pasture (-37.6%), whose decrease accounts for 48% of the UAA change, while forests and woodland, (which includes Mediterranean shrub) changed to a smaller extent. In particular during the seventies, forests and woodland increased and that is the evident sign of land abandonment within the farms.

A second aspect should be pointed out, related to the speed of those phenomena: during the last ten years, there has been the higher rate of decrease within each category of land use, and also a strong reduction of woodland and of the “other area”, which includes agricultural unused area. This is evidence of an increased exodus of farms out of production and of land abandonment in the more marginal regions. Of course, in such conditions, the competition for land use is less intense than what we might have in richer and more populated areas; hence, it might be legitimate to say that
some kind of naturalisation processes has been occurred. Nothing more we can say about land use changes within the sector, changes that could be better picked up by aerial-photographs or by the comparison of land use maps between different times. Neither we can ascertain whether land that was previously used in agriculture has been totally abandoned or rather directed to alternative uses.

Some more information can be found at a less aggregate scale of analysis. Looking at the Campania region, the graph 1 shows the evolution of the number of farms and of agricultural area in each province from 1970 to 2000. For the Campania region the TAA reduction accounts to 271,000 hectares, while UAA decreases by 207,000 hectares (one fourth of the amount recorded in 1970). Many differences exist among provinces. In particular, a strong reduction characterised the province of Naples, where urbanisation processes and a strong competition for land use have determined a reduction of half of the agricultural area over the thirty years.

The proportion of reduction of agricultural areas is generally lower in the two inner provinces, (Avellino and Benevento) where a process of land abandonment, intended as a naturalisation process, could be assumed to have happened.

Graph 1

3 Some causes of land abandonment processes

Land use changes are the results of the interaction between natural factors and human activities; the latter are influenced by many economic and social
forces that act at different levels: at a global level (macro), at meso level, so as at micro level, that is at the farm unit level. As far as the meso level is concerned, it can be referred to two dimensions: the region, with its resources endowment and its specific development path, and the institutional system which defines the rules of economic and social organization. Interaction between natural factors and socio-economic factors determines the profitability of production and, hence, the opportunity to use the land as an input, and/or to retain the property of the land that, if the agricultural activity continues, means to keep land within the agricultural sector.

Among factors acting at the global level, we could consider those forces that characterize the development processes and determine the evolution of an economic system. The processes of industrialization and of urban expansion, which in Italy have taken place during the sixties, acted on land use changes in two ways. First of all, they have increased the competition for land use among sectors and among activities. Secondly, they have modified the system of social values, rewarding a way of life much different from the peasant one. The effect has been a loss of agricultural land in the strongest areas and set aside processes in the more marginal ones. Besides that, they have considerably reduced the pressure in the rural areas and determined labour migration; those phenomena have been selective emptying the inner regions of human resources of higher quality and of younger people. Extensification and land abandonment processes, coupled with the increasing age of population, have increased over time.

Today, the main economic forces acting at the macro level are globalisation and free trade. These processes have emphasized the competition for both products and factors of production and threaten the persistence of the agricultural enterprises, once again mainly (but not only) in the more marginal areas, for two reasons. On one side, the strong interlinking of the markets rewards those products that are competitive in terms of price, pushing the less efficient productions out of the market; that is the case of products obtained in areas more marginal in terms of soil and climatic characteristics. On the other side, consumptions standardization does not reward the typical products and the local specificities. The diffusion of such a consumption pattern has some resistance within the EU, which, following the trend of a specific component of demand, is trying to affirm a production model that is mainly based on quality, on typical goods and on the valorisation of local cultures. The persistence of agriculture in the more marginal areas and, consequently, the speed of the abandonment processes in those areas, will depend on what will be the dynamic of demand and the ability of this production model to supply what consumers demand. More generally,
globalisation and free trade create a strong risk of land dismission from the production, at least for the more marginal land and the weakest areas. When land does not have alternative uses, this risk will involve extensification processes within the farm or land abandonment that will be visible at regional level.

At the micro level, we need to focus on elements that influence production choices. Some of these elements, as for example the level of prices, are exogenous to the farm and therefore can be analysed at a higher level; others factors, instead, do refer more specifically to the characteristics of the farms and of people operating in them.

Choices on what and how much to be produced depend closely on the farms objective function. In economics, it is usually assumed that the firm is driven by profit maximisation. Is this objective, subject to technical constraints and availability of inputs, that drives how much the firm will produce of each possible output and the level of use of the factors, including land and labour. A peculiarity of the agricultural sector, and particularly so in Italy, is the way farms are managed. It is a fact that agricultural firms are almost all household farms, in which the production choices cannot be distinguished from those of consumption and allocation of the family labour. First of all, that implies that other motivations, other than profit maximisation, should be considered, such as for example the production of goods for self-consumption or the maintenance of the land as an asset to be bequeathed. Secondly, the role that the farm and the agricultural activity have in the generation of family income and in the employment of its components depends on some specific characteristic of the household. The life cycle of the family affects the prospects of farm development, the agriculture model to which the farm conforms and the intensity of land use (extensification/intensification).

Hence, looking at endogenous causes that influence the abandonment processes, we cannot make reference only to the objective of profit maximisation, as is done in the neoclassical theory of the firm, and to strictly economic variables; production choices, including those regarding the reduction of the cultivated area or land abandonment, derive from a comprehensive assessment that is linked to a wider set of interacting endogenous factors:

- farm characteristics: structural dimension, farm plots, relationship between firm and ownership, quality of the natural resources;
- household characteristics: life cycle of the family, number of family members, full time/part time activity of the farmer, presence of other sources of family income.

The influence of these factors on land use can vary over time because,
when time is considered, the organisation of the social system, the technology, the system of social values (the factors that act at a macro level) can change. These are all elements that, even when keeping constant family and farm characteristics, can modify the production function and/or the components of the objective function (as an example, see what has been pointed out about the spread of the urban way of life during the sixties and seventies).

With reference to the effects that they can have for the abandonment phenomena, three characteristics of the family must be particularly emphasized: the age of the farmer, the presence of others family members working in the farm, and the amount of time the farmer and other family members are working within the farm. These aspects must be analysed in connection with the economic dimension of the farm and its level of market integration.

To this regard, it is important to underline that, in Italy, when we speak about agriculture we refer to many productive activities that differ in terms of structural and economic dimension, intensity of labour use, and in terms of integration within the product markets. The census’ unit of survey includes a variety of farm typologies: there are farms whose production is totally directed to self consumption, small farms that only have local market linkages, and farms more integrated in the agribusiness chain. At the same time, there are professional farms on one side and farms whose returns represent an integration of family income that mainly comes from some other activity, on the other side.

To have an idea of the weight of these different components within the agricultural sector we can refer to data collected in the last census survey for the Campania region. In Campania there are 249 thousand farms and, of them, 40.6 thousands (16.3%) farmers declare to produce only for self consumption; the farms that sell their production entirely are 37 thousands (less than 15%); in the 69% of farms, production is partially sold and partially self consumed.

The age of the farmer, as already underlined, represents another important information to take in account. If we consider only those farms that have some relationship with the market (208 thousands in total), we can see that 34% of them (70 thousands) are managed by farmers of 65 years of age or more. The future prospects of these farms depend on the presence of relatives who can and want to take over the agriculture activity. This event is likely to happen depending on the ability to produce an adequate income and on the labour market conditions. Regarding the income generating potential of the farms, one data can be quite enlightening: measuring the farm Gross Standard Income (the income obtained by each crop considering
standard yields and prices), we estimated that in Campania 85% of farms managed by older farmers have an economic dimension under 4,800 Euro/year. That means that, even when there is some successor working in the farm and when the agricultural activity will be maintained, it can not represent the main source of income. With reference to that it should be pointed out that, for Campania region, in 35% of the 138 thousands farms having stronger linkages with the output markets and owned by farmer of less than 65 years old, the farmer is working part time. Even in these cases, the agricultural activity is just one component of the family income, very often not even the main one.

These data confirm that to analyse production choices just on the presumption of a profit maximization objective means to consider only a fraction of the entire agricultural sector. At the same time, it is evident that the land use changes and the risk of abandonment are phenomena affected by different factors for different farm typologies. Other exogenous factors and natural resources being constant, a specific development perspective is linked to each farm typology and therefore, their activity and their land have a different risk of abandonment.

If we consider the share of agricultural area that is not used or that is occupied by shrub as a proxy for the process of land abandonment within the farm, this phenomenon is more evident in farms managed by older people and in the less professional ones (when professional is defined in terms of amount of working time spent into the farm and of share of agricultural income on total family income).

For farms managed by old farmers, the problem is not only the land that can be set aside given the needs and working ability of the farmer, rather the future of the farm as a whole. To give an idea, in Campania the agricultural area owned by older farmers accounts for 216 thousands hectares of TAA and 153 thousands hectares of UAA.

The professional level of the agricultural activity, other variables kept constant, is positively correlated to a more intense use of the land. In fact, the share of set aside land is smaller in the farms that use more than 200 days of work per year than in other cases. The level of labour employment depends on the specific crops to be produced, but the choice on what to produce is a consequence of the available working time of the farmer and its family, given the other extra-farm activities they are involved in. Hence, in part time farms, the land set aside may be proportionally more when the farm is bigger. That is, there are structural factors – such as a larger farm area – that could allow higher earnings from the agricultural activity, but the choice to work out of the sector pushes towards a less intensive land use.
Between factors acting at a global level and those that have an influence at the single farm level, there is a third set of factors that act at an intermediate level and that can be linked to two different dimensions: on one side, there are the region’s specific characteristics deriving from the endowment and distribution of resources and from its development path; on the other side, the institutional environment within which the economic and social systems do act must be considered.

Farm characteristics being constant, the profitability of agricultural production depends on factors that in a given region influence the farm system as a whole and that can have effects on unit production cost and, therefore, on competitiveness. An example is the availability of infrastructures, and, more generally, the farm’s location with reference to the system of service facilities, accessibility to information, proximity to outlet markets, etc.. These factors can strongly affect the profitability and can have effects on the intensity of agricultural land use.

Very important, in that sense, is the institutional system within which the agricultural activity is conducted, that is the system of rules within which agriculture does act.

First of all, the rules aimed at environmental planning and management: territorial plans, building regulations, environmental constraints. Such rules define the relationship for land use among industries and, in some cases, they can mandate even the way in which land can be used in agriculture, thus potentially influencing the exit of land from the primary sector.

Second, the system of rules that mandates the relationship between the firm ownership and the labour employed (i.e., labour contracts) and between the farmer and the land owner (i.e., land rent contracts) has effects in terms of labour use flexibility and land mobility. It influences production costs and modifies the profitability of various potential forms of production organization and of the land owner possible decisions (to engage in production directly or not, to rent out the land or not; to keep the land without producing).

A third aspect to be considered is represented by the price system and the set of agricultural policies. These two elements must be considered together given that the EU, over the last forty years, has set the relevant system of prices as part of the overall agricultural support policy.

The Common Organisation of the agricultural markets, set right after the birth of the European Community, granted to farmers higher prices than those which would prevail under free market. As a consequence, the intensity of the production increased, more land has been cultivated, even areas with lower quality and in marginal areas.
Apart from a judgement on its merits, the CAP price system has kept within the primary sector farms that otherwise would have been not competitive and would have disappeared. Hence, it has acted as an incentive against the exit of land, reducing the rhythm of abandonment processes. The negative effects of such a support system (surplus of production, increase of the outlays for the European budget, tensions on the international trade arena) called for a deep reform process of the CAP that started in the nineties and brought to a considerable change of European agricultural policies in July 2003. It is worth to synthesize the main elements of this reform, given that it will likely have some important effects on agricultural activity and on the degree of land utilisation.

The first set of reforms occurred in 1992 (Mac Sharry reform), when intervention prices were reduced for some production sectors (in particular, cereals, oilseed, beef and veal) and introduced a system of compensatory payments intended to offset the reduction in income that farmers would suffer from the decrease of the institutional prices. In 1999, with the so-called “Agenda 2000”, the intervention prices have further been reduced and the compensatory payments became “direct aids”. On July 2003 a further reform has been implemented by setting a single payment per farm, which will start in 2005, and which unifies the payments farmers had received so far from the various market organisation schemes. The farmer will receive a payment entitlement estimated taking into account the total amount of direct payments each farmer received during a reference period and the number of hectares which granted the right to those payments. This support scheme aims at obtaining a complete decoupling of farm aids from production. In order to avoid negative effects for the environment, this latest process of review of the CAP, by the so-called cross-compliance requirement, introduces the principle of conditionality, that is, farmers can receive the aids provided they maintain their land in good agricultural condition and comply with environmental standards. For some products, the Member States could elect to keep a certain share of the payment coupled with the production, in order to assure a minimum level of production for some commodities. This partial decoupling represents a possibility for the Member States to maintain a certain level of land use in areas where crops that are traditional or that could be strategic for the agro-food system are produced.

During the process of reform planning, an intense debate has been occurring and many studies have attempted to analyse the potential effects that could derive from each of the possible choice in terms of partial or full decoupling, especially in terms of land abandonment. As a matter of fact, at present land abandonment is the most feared effect of this reform, especially
for the option of fully decoupling.

The risk of land abandonment can be linked to two characterising elements of this reform: the possibility to receive an aid even if the farmer decides not to produce at all, and the removal of the intervention mechanism based on guaranteed prices that becomes only a safety net. This last action will likely determine a reduction of the level of European agricultural prices and consequently the exit of the less competitive farms. In a scenario of decreasing prices in which farmers can freely choose what to produce, many different simulation models, run to assess the effect of the reform, show that it will generally lead to a reduction of gross margins and to a decrease of the shadow prices of land and labour, that is of those inputs whose availability is constrained. The shadow prices reduction eliminates all incentives to keep these inputs within the agricultural sector and, hence, will lead to the decrease of the cultivated areas and employment. The incentives deriving from adherence to good agricultural practices, ruled by the cross-compliance principle, are likely not enough to make certain the maintaining of agricultural production in many areas. As a matter of fact, the farmer could get higher gross margins by keeping the land unused and by bearing the cost incurred due to the agronomic practices needed to comply with the requirements of conditionality, rather than those from any other crop. The reduction of margin will be higher the weaker and more marginal is the region.

The results of the different simulations depend on the hypothesis that are at the base of farm behaviour and on the way some input are considered within the model. This is especially true for family farms. When the farmer is young enough to keep on working and when the agricultural activity is his prevalent source of income, the reduction of gross margin and of shadow prices could not necessarily lead to cease the farm activity and to an exodus from the sector; it could rather mean an under-remuneration of the labour and of other inputs the farmer owns (among which land).

Having presented the potential impact of various factors which could, at various levels, potentially affect land abandonment, it must be said that, of course, there is not a clear-cut division among them, and land abandonment processes are rather the result of their interaction. Taking into account one or the other level of analysis, by keeping constant all others, allows to assess, in a distinct way, the effects of each element. A comparative static analysis is a simplified way to look at a phenomenon that, on the contrary, is a very complex. Nevertheless, it can help to understand some basic relation-

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1 The reform mandates that land gives an entitlement to an aid that cannot be used for permanent and horticultural crops.
ship and to find the policy instruments that more adequately could act to reduce or address land abandonment processes.

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