

Environmental Policy under CAP Reform in the Hilly Central Italy

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Abstract

The economic sustainability of some 2078/92 EEC reg. subset acts is explored by simulating the impact of their adoption on representative farm models. Attention is focused on a Central Italy hilly area where the adjustment process to the CAP Reform is generating the reduction of fodder crops and the disappearance of small dairy farms with low livestock number per hectare. The abandon of those productive models threatens the ecological balances of those areas. The analysis' results show that those trends could be counteracted by steering the 2078 programs in order to sustain productive growth and technological improvements, which would render economically viable low environmental impact farm typologies.

Introduction

With the 2078/92 EEC reg. the European policy maker chosen a subsidy based approach, with unitary top levels of contribution, to diffuse low impact agricultural practices. Local institutions are charged with implementing this rule, and given the unitary subsidy levels and the global European financial contribution to their jurisdiction, have to effectively spend the money for agro-environmental objectives. Unfortunately, many regional institutions in Southern Europe have no experience in *targeting* agricultural soil and water conservation programs, that is abating more where it will be most effective and least costly (Braden et al). Hence, it could be precious for them turning to short-cuts both to identify significant environmental threatens related to the farm activities, and to assess the farm income impact related to the adoption of alternative agricultural management practices.

At this proposal it is useful to consider possible environmental implications of the structural and productive adjustments induced by the Reform of the Common Agricultural Policy (CAP). In this note those changes are highlighted by considering the results of a recent study that, based on a field survey in a Central Italy hilly area, treats of the adjustment problems of the small farms (Dono et al.). The models and the methods of this study are used to simulate the economic impact related to the adoption of the 2078 practices, and to assess if economic viability could be gained by steering this regulation's incentives of towards those low environmental impact productive models.

CAP Reform and environmental problems in a Central Italy hilly area

Relevant environmental impacts can be related to the agricultural policies. A recent study analyses the effects of the structural and productive adjustments originated by the CAP Reform on representative farms of a Central Italy hilly area (Dono et al.). Those models' productive patterns are based on annual and pluriennial crops, on dairy and dairy-beef, on sheep breeding, and on mixes of crops and sheep milk production. Budget analysis are executed at 1991 prices, at conditions generated by the CAP Reform, and finally with adjustments to this scenario. In order to assess those farms' economic performance, their income per unit of utilised family labour (*competitiveness index*) is compared to the year off-farm salary per unit of labour. When the farm's activity does not provide larger or equal values, the under-payment of labour is considered to push for efficiency reallocations. Short term evaluations are also provided by an income index for family owned land, capital and labour used on farm (*viability*).

The analysis suggests that the CAP Reform reduces the family labour income in the annual crop, dairy-beef and crop-sheep small farms. Based on this and on the structural and economic constraints in the area, various adjustment strategies for those models are simulated. As a result, even the most profitable changes do not always significantly increase the meagre labour remuneration, table. For example, the crop-oriented farm finds convenient joining the general CAP regime by increasing oilseed crops, introducing set-aside and reducing forages. However, this adjustment, though appealing in the short run, does not reverse the insufficient labour income. The economic performance of the dairy-beef farms is affected by the expected reduction in meat prices and by the new sanitary regulations and, even the increase in milk production and income, obtained by renting-in new quotas, does not change their condition. New sanitary regulations also affect sheep farms with dramatic impacts on smaller and not specialised ones, where even the efficiency gains related to specialisation do not adequately remunerate the family labour.

In synthesis, those farms should disappear in the long run, even if some adjustments make it possible surviving in the short run. At this proposal, crop farms could reduce or abandon the fodder crops' cultivation and increase the EU subsidised oil-protein-seed crops. On the other side, many small dairy farms could abandon the livestock sector and become crop oriented, dedicating most of the land to the highly subsidised crops.¹ The reduction of winter cover crops which follow those changes, and the harder tillage necessities of the substitute cultures can have significant environmental impacts. Moreover, those solution are only attractive in the short run, and most of those farms could completely cease the activity, with the significant impacts due to the abandon of the marginal areas. The environmental policies for the hilly areas could hence use 2078 to counteract the fodder crops reductions and the disappearance of farm models with low environmental impact. Some of the 2078 measures are particularly suited at this proposal. In the next pages they are described and then simulated in their application to the most endangered farm models.

¹ Data on dairy quotas transactions confirm that many small farms are actually selling their rights and leaving the sector. Regional data on increases of sunflower and rapeseed areas, and on shrinks of fodder crops, meadows and pastures confirm this adjustments (Regione Lazio).

The evaluated acts subset and the environmental simulations

The simulations have been focused on some options of B, C, and A subprograms of 2078 rule. The options are related to the extensification of vegetable, sheep and cow production, and to the maintenance of previous pesticides use reductions. About subprogram B, it has been evaluated the fitness of low-production vegetable types adoption by durum wheat growers, the suitability of cropland conversion into grazing land, and the convenience of 5-years crop rotation including legume crops at minimum rate of 40%. For subprogram C, it was assessed the impact of the fodder crop hectare increase -renting of land- and of reduction in livestock heads. Subprogram A analysis has been focused on the maintenance of previous pesticides use reductions in olive-oil activity, act A2. Given that the farm models are representative of a wide hilly area in Viterbo and Grosseto provinces, the acts subset comprehends their belonging Lazio and Toscana administrations' decisions. However, also extra regional administrations decisions were considered. In fact, the evaluation of adjustment paths followed by representative farms gained substantially including Lazio, Toscana, and Umbria options simultaneously. For each subprogram an extensive set of rules was considered in order to make a highlighting survey of the economic sustainability of each subprogram for the representative farms.

Crop-oriented farms

The fodder-crops maintenance in crop-oriented farms implies a profitability reduction that can be compensated by adopting other 2078 subprograms. For example, if the Grosseto (with better economic performances) crop farm in Mac Sharry *special* regime adopts a set of 2078's subprograms -5-years rotation, low yields durum wheat, and maintenance of pesticides reductions on olive oil- its *competitiveness* index rises up to 20 millions Liras. In this condition the dependence of this farm from incentive aids rises to 31% of total production value. This dependence is better highlighted if the same set of subprograms is adopted by Viterbo farm, where, whatever the Mac Sharry regime adopted is, more than 40% of total production is represented by subsidies. The Viterbo farm does not become competitive; however farmers could still be interested to adopt the 2078 subprograms because of their capability to increase the short-run economic performances. The convenience to adopt 2078 is strongly bound by the economic size of farms and related with the being of crops in Mac Sharry *general* regime. In fact, the farms can achieve the highest level of *competitiveness* by adopting the whole set of 2078 subprograms and choosing Mac Sharry *general* regime (*competitiveness* rises up to 21 millions of Liras).

Dairy and dairy-beef farms

Two dairy, dried farms, the dairy and the mixed dairy-meat farms, constitute the second group. Their indexes' values are below the analogous for crop farms. However, given the productive orientation, the dairy farms have bigger economical dimension and number of family labour units employed. On the contrary, the direct subsidies' share on total production and income is definitively smaller. This is relevant because, should the farms become crop oriented, a total and per hectare increase of public aid would be requested. Hence, besides the environmental implication of losing those typologies, this stands as a further motive to explore the use of 2078 reg. to sustain those models economic viability.

A first group of simulations uses aids to reduce the number of livestock heads per hectare, both by eliminating cattle and by contributing to the land rent-in. The simulations are based on the old, inefficient characteristics of milk production in the farm, low milk yields per head, feeding, milking and other operations with highly time consuming systems. As it can be noticed by the table, even in the most profitable alternative, the technological conditions prevent the farm from reaching comparable income levels (analogously for the dairy-beef farm). Another possibility is explored by combining the previously considered 2078 incentives with slight, progressive improvements of the technology. This path succeeds and the farm's competitiveness level becomes comparable to the off-farm labour value (analogously for the dairy farm).² In this condition the absolute dependency on public aids increases, but still remains smaller than in the crop oriented farms, and shrinks in relative terms.

Sheep and crop-oriented farm

In this farm more than 50% of land is involved in legume crops for feed production. In a first simulation the farm skips the durum wheat, and increases the livestock, from 60 to 120 sheep, and the fodder-crops hectare. Another simulation reduces the herd size gaining the 2078 aids. Neither of those options allows relevant income improvements mainly because of the renounce to Mac Sharry aids, derived from giving up cereal production. In this condition, the economic performance emerges as unequivocally dependent by the herd size. In order to expand its economical dimensions, the farm should expand its dimension by renting extra crop-land. The 2078 rule provides an incentive aid to this. An increase in herd size is hence simulated by coupling it to the renting-in of land to maintain the previous ratio of animal heads per hectare. Based on the 2078 subprogram C aids, the farm rents 3,4 hectares, increases its total production and reverses its *competitiveness* position. It must be noticed that this result implies increasing farm dependence by public aids raising the subsidies share to 15,5% of total production, which is still below the analogous index for the crop farm models.

Conclusions

Local institutions charged with implementing the 2078 Reg. have often no experience in *targeting* agricultural soil and water conservation programs that is in effectively spending the money for agro-environmental objectives. They need short cuts to identify problems, and to assess the farm income impact of alternative farm management practices. Precious insights come by focusing on the environmental implications of agricultural policies, that the regional institutions are more familiar with. At this regard, a task for the Central Italy hilly areas is to counteract the adjustment process to the CAP Reform, which is inducing the reduction of fodder crops and the disappearance of small dairy farms. The loss of those *low environmental impact* productive systems could in fact severely threaten the ecological balances of the hilly areas. Attention is hence focused on the 2078 submeasures that could render economically viable those endangered farm typologies. The results show that, based on the unitary subsidy levels, it is often not possible to increase those farms' income levels so to ensure their long run survival. At this proposal the 2078 aids should be steered, jointly to other measures (i.e., the 2079/92 Reg.) and technical assistance programs, to foster technological improvements and productive growth of those farms. This is true for sheep and dairy small farms, and is relevant for other side effects. In fact, should those farms become crop oriented, a total and per hectare increase of public aid would be requested. Besides the environmental implication

² The simulated increases in productivity still leave it below the levels of more efficient dairy farm typologies in the area, which are not in crisis.

of loosing those models, this is another motive to explore the use of 2078 to sustain their economic viability.

Table 1: Main simulations results

Farm Models	Viterbo Crop	Grosseto Crop	Dairy	Dairy-Beef	Sheep-Crop
Post-CAP Reform Scenario					
HECTARES	13,1	18,3	12,7	18,8	16,9
Total Subsidies (000L)	8717	10612	1565	4141	3598
Subs. on Production	36,3	26,1	4,0	8,2	9,4
Viability (000L)	33403	35183	21032	24614	25412
Competitivity (000L)	14050	18436	9963	9183	9051
2078 Adjustment Simulations Results					
CTARES	13,1	18,3	22,7	31,3	20,3
Total subsidies (000L)	10229	13561	5274	5205	6996
% subs. on Production	40,7	31,0	10,0	6,8	15,5
Viability (000L)	34343	39437	24674	35328	32033
Competitivity (000L)	13295	20826	11338	16005	18983

*16000 (000L) is the off farm labour comparison income

References

- Braden, J.B.; Johnson, G.V.; Bouzaher, A. and D. Miltz (1989): *Optimal Spatial Management of Agricultural Pollution*. American Journal of Agricultural Economics, Vol.71, N.2, PP.404-413.
- Dono, G.; Severini, S. and A. Sorrentino (1995): Constraints to structural adjustment of an extensive agricultural area, In: *The regional dimension in Agricultural Economics and Policies*. Ancona, 40th EAAE Seminar.
- Regione, L. (various years): *Statistiche sulle superfici coltivate nelle provincie*. Rome.