ENVIRONMENTAL CROSS COMPLIANCE - PANACEA OR PLACEBO?

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Abstract

Environmental Cross Compliance is one policy by means by which government can seek to influence farmers so that they to give greater weight to environmental goods in their decisions. The policy is evaluated from both a theoretical and pragmatic viewpoint and its strengths and weaknesses are discussed. The necessary conditions for the success of environmental cross compliance policies are identified and problems with its implementation are highlighted.

Introduction

Until recently, much agricultural policy was centred on the need to provide food security for a growing urban population. This was to be achieved by encouraging technically efficient farming practices and investment in new technologies. The resulting 'productivist' policies have been so successful that food shortages - at least in developed countries - are now considered to be a thing of the past. However, it is increasingly accepted that the success of this policy has been achieved at a cost. That cost is the damage that agriculture does to the environment, both in its consumption of natural resources and its production of pollutants. As awareness of these problems has risen, so policy makers have attempted to redesign policy measures so that they meet the twin objectives of providing support for agriculture and, at the same time, limiting environmental damage. The name given to this concept is environmental cross compliance. The term originated in the US where farmers wishing to participate in one programme had also to meet conditions in a second programme (Benbrook, 1994). However usage has since broadened to include more general linkages between agricultural and environmental policies.

The Development of Environmental Cross Compliance

Environmental cross compliance (ECC) may thus be defined as the linking of environmental conditions to the receipt of agricultural support payments (Baldock and Mitchell, 1995). This is a relatively recent policy option that has been introduced in recognition that rational responses by farmers to price signals from some agricultural support measures can lead to damage to the environment. While ECC is a relatively recent concept, it is not the first instance in the UK of agricultural policy where there has been a trade off between price support and some desired effect. An example from the middle of the last century was the 1947 Agriculture Act that introduced price guarantee measures to support farmers' incomes. At the same time the Act gave the Government powers to remove those farmers who failed to practise good husbandry. Although this power was seldom used and eventually discarded, agricultural landlords still retain the right to evict tenant farmers who fail to practise good husbandry.

ECC was first explicitly introduced in the 1985 US Farm Bill. Examples of ECC policies in the United States are:

- the 'Sod Buster' programme that discouraged ploughing up of erodible land and requires farmers to implement a conservation plan,

- the 'Swamp Buster' programme that withdrew eligibility for farm support from farmers who planted arable crops on land converted from wetland in the period since 1985.

More recently in the European Union, ECC was introduced into the Common Agricultural policy as part of the Agenda 2000 package at the European Council meeting in Berlin in March 1999 (EU Council, 1999). The Regulation can be applied to all direct payments drawing on European Agriculture Guidance and Guarantee Fund except those paid under the Rural Development Regulation 1257/1999 (Dwyer, Baldock and Einshutz, 2000). Member states have to ensure that national ECC regulations conform to guidelines set out in Council Regulation 1259/1999.

In the UK, examples of ECC include stocking density restrictions that are used to constrain or prevent overgrazing under the Sheep Annual Premium Scheme, the Beef Special Premium Scheme, Suckler Cow Premium Scheme, Extensification Premium and Hill Livestock Compensatory Allowances under the Less Favoured Area scheme. Specific provisions that are designed to protect habitats and species in cultivated land are made conditions for farmers who claim arable area payments and set-aside payments under the Arable Area Payments System (AAPS).

Alternative Forms of Environmental Cross Compliance

A number of variants of ECC have been proposed and these can be classified as follows (Batie and Sappington, 1986, Baldock and Mitchell, op cit):

- Red ticket approach where there is partial or complete withdrawal of agricultural support if a farmer does not comply with a pre-determined set of environmental conditions.
- Orange ticket approach where eligibility for agricultural support payments is dependent on farmer enrolment in an otherwise voluntary agri-environmental scheme.
- Green ticket approach where payments in addition to standard agricultural support are offered to farmers who exceed a given set of environmental standards.

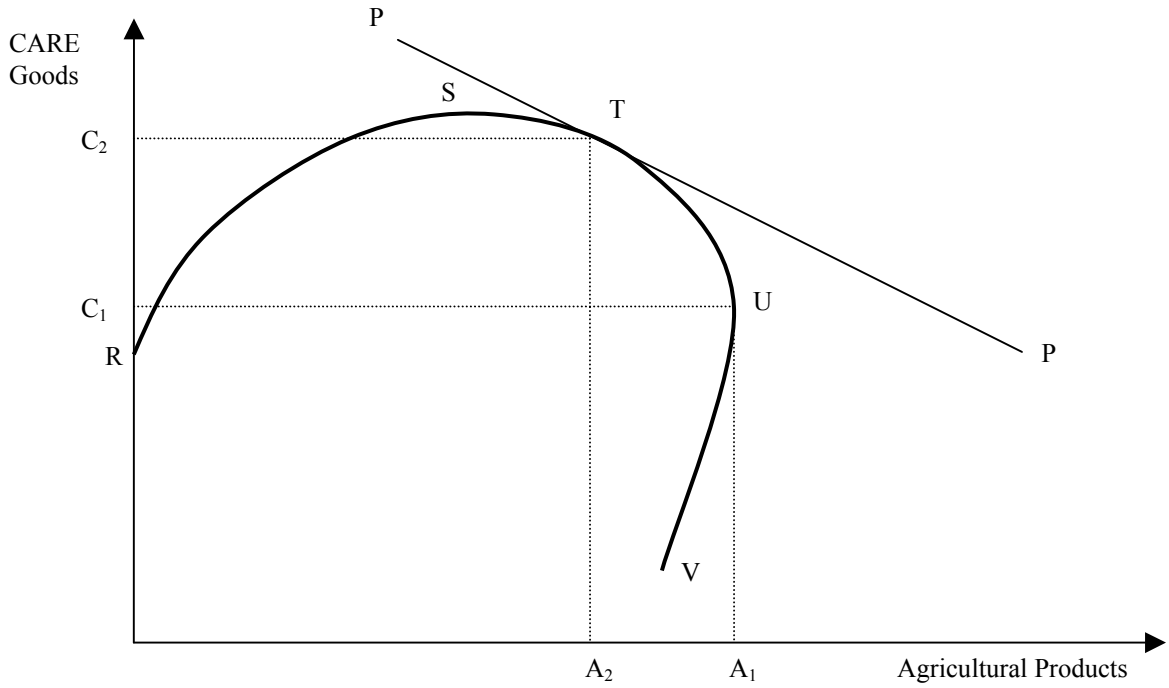
It is worth noting at this stage that the Green ticket approach cannot properly be regarded as an ECC measure since payments are in addition to standard levels of support. On the other hand, both Red and Orange versions imply some specified minimum level of environmental quality to be achieved as a condition for the receipt of agricultural support.

The Production of Environmental Goods and Agricultural Products.

Before developing specific proposals as to where EEC policies might be useful, it is appropriate to investigate a generalised model of the relationship between the production of agricultural commodities and the provision of environmental benefits.

McInerney has shown how the relationship may be viewed in two-dimensional space (McInerney, Turner, Barr and MacQueen, 2000). So-called 'environmental benefits' were classified rather more explicitly as CARE goods (Conservation, Amenity Recreation and Environment) but for the purpose of the argument, the precise definition is not important, he suggested a relationship as drawn in figure 1. With no agriculture, a level of CARE goods, R, is produced. However, between points R and S, there is a complementary relationship between agricultural production and CARE goods. (It is worth noting that arguments for supporting agricultural production on the basis of 'multi-functionality' rely on the existence of complementarity). CARE goods are maximised at point S and, as agricultural production increases, a competitive relationship sets in to point U where production is maximised and some level of CARE goods is foregone. Beyond point U, the environment becomes degraded (e.g. soil erosion, lack of natural predators etc.) such that agricultural production is also reduced at point V.

Figure 1. Relationship of the Production of CARE Goods with the Production of Agricultural Products.



Simple production economics tells us that the profit maximising farmer will operate where the rate of substitution for his resources between CARE goods and agricultural products is equal to their inverse price ratio.

$$\Delta CARE / \Delta AP = P_{AP} / P_{CARE}$$

where P_{AP} is the price per unit of agricultural product and P_{CARE} is the price per unit of the CARE goods. The difficulty is that CARE goods are generally unpriced so the incentives to the profit maximising farmer are to maximise agricultural production at point U. If P_{CARE} is zero, the isorevenue line is vertical and the farmer operates at U, providing a level of CARE goods at C_1 and a level of agricultural products at A_1. Suppose society wishes to move to point T on the frontier where the provision of CARE goods is increased from C_1 to C_2, the issue then is how best to achieve the necessary adjustment in farmer behaviour.

One alternative is to value the CARE goods and to price them in such a way that the slope of the new iso-revenue curve for farmers, PP, induces the farmers to operate at point T. Unfortunately, except in some very specific circumstances, it is difficult either to set an appropriate social price for the various components of CARE goods or to create a market such that they are valued automatically. But the above analysis does emphasize that, for a move to T to take place, the price which would need to be attached to the CARE goods is highly dependent upon the rate of substitution between agricultural production and those CARE goods. The point is that such benefits may be relatively cheap to obtain in some cases, whilst in others they may be relatively expensive.

A second alternative is to follow the ECC route and to specify the desired level of CARE goods, making the receipt of support payments for agricultural products conditional upon achievement of the desired level. By tying the eligibility for payments to the provision of an identifiable level of CARE goods, the policy puts a constraint on production such that C_2 must be produced if farmers are to receive the payments. The

way in which farmers will adjust their systems to move from U to T will depend on the details of the scheme and on the flexibility of their resource base.

It will be noted in passing that there is a third alternative, which is to place regulations around farming systems such that it becomes illegal to farm in a way which does not provide the required CARE goods. Whilst such an approach is widely used to control what might be termed 'negative' CARE goods, such as pollution emissions from intensive livestock operations, it is difficult to see it operating to increase the production of many 'positive' CARE goods, such as populations of emblematic birds, rare insect species and other desirable environmental benefits.

Farmers' Response to Environmental Cross Compliance Schemes.

Farmers' adjustments in response to a given ECC policy will depend to some extent upon the mechanism of the support payments scheme for which compliance is required. Support payments may relate to holdings, to areas of crops, to numbers of livestock or to physical production levels. These differences in support payments may be predicted to lead to different farmer responses in terms of area cropped, yields achieved and to the amounts of variable inputs applied. Table 1 summarises the possible reactions by farmers to ECC measures in relation to the different categories of support payment being received.

If the support payments are fixed per farm, then farmer adjustments in response to ECC are likely to include changes in the cropping system and also in the use of variable costs, since there is nothing to be gained by retaining either a specific cropped area or a specific level of input use in the face of declining product prices. If the support payments are paid on a per hectare basis, there is less likely to be an adjustment in the number of hectares planted (since this would result in diminished payments) but there might be a shift to lower production levels per hectare and in attendant variable costs. Finally, if the support payments system is product price based and so not decoupled from production, farmers are unlikely to change either the area planted or the production techniques employed; rather, they would look for other ways to provide the CARE goods that are required to demonstrate compliance and so ensure continued receipt of product support.

Table 1. Effect of Decoupling of Support from Production upon Likely Farm Adjustment in Response to an Environmental Cross Compliance Scheme

Mechanism of Existing Support Payments	**Likely Adjustments of Column Variable in Response to CCE under different support mechanisms**			
	Number of farms	Hectares of crop planted per farm	Tonnes per ha of crop produced	Variable inputs per hectare used
Flat rate per farm	No effect	Reduced	Reduced	Reduced
Flat rate per hectare of crop	No effect	No effect	Reduced	Reduced
Flat rate per tonne (t/ha x ha.)	No effect	No effect	No effect	No effect

The above analysis has implications for the way that the desired CARE goods can best be delivered by ECC. If they are most likely to be supplied as a result of reduced use of variable inputs and reduced cropping intensities, then ECC payments should be designed around schemes that involve payments per farm, rather than per hectare or per tonne produced. In other words, the more decoupled the payments are from production, the more responsive farmers are likely to be in their reaction to the cross compliance requirement.

But that is not the end of the problem. Major difficulties with any ECC scheme arise as a consequence of the heterogeneity of farms within countries such as the UK. Farms differ with respect to size, production systems, resource base and existing endowment of

environmental capital. Thus any ECC scheme should take account of these variables if it is to deliver the desired outcomes in a coherent and consistent manner.

Practical problems with the implementation of ECC policies

There are a number of practical issues that must be addressed if ECC is to be an appropriate tool for changing farmer behaviour in a desired direction.

Firstly, if a scheme is to influence the farmer at all, he or she has to be producing a supported commodity. For example, without direct EU support, producers in the dairy, pigs, poultry, fruit, vegetables and flowers sectors will not be amenable to pressure. Producers in other sectors will vary in their susceptibility to ECC measures to the extent to which they are dependant upon programs such as the IACS system. The coverage of an ECC scheme is thus not necessarily dependant upon the required CARE goods, but rather on the extent and nature of the support already provided.

Secondly, the problems of setting and monitoring appropriate standards as the basis of the compliance scheme must not be underestimated. Direct measurements will be costly and subject to a good deal of variability. It is easier to monitor some variables such as pollution levels, than others such as bio-diversity or the abundance of rare species.

Thirdly, even if appropriate standards could be set for producers of supported commodities, we can expect there to be major differences in the costs of compliance on different farms. In terms of figure 1, the rate of substitution between agriculture production and CARE goods will differ between farms. Thus the level of production disincentive needed to achieve the chosen environmental standards will differ greatly between farms.

Fourthly, and as a consequence of the above, the regulator who must set the levels of the disincentive will not generally know the costs of compliance. Individual farmers are best placed to know the costs of compliance on their own farms, whereas policy makers are not. There is thus 'information asymmetry' in the design of ECC schemes, that may

lead to over compensation in some cases, or under compensation and non-compliance in others.

What the above discussion means is that, for any ECC system to work, a considerable bureaucracy would have to be created. Latacz-Lohmann and van der Hamsvoort (1999) analysed such a system in which the regulator chose the level of support withheld; the probability of being monitored; the level of fine if farmers did not comply but claimed otherwise, and the environmental conditions to be complied within. Using standard welfare economics, their analysis suggested that the ECC was most effective where the regulator maximised both the level of support withheld for non-compliance and the level of fine for defaulting participants. Maximising society's welfare was conditional upon the environmental benefits being gained from the ECC scheme being greater that the farmer's compliance costs in each case, together with the costs of administration and monitoring. They concluded that this rather brutal and not necessarily efficient regime was unlikely to find favour.

A more fundamental criticism of the principle of ECC is that it violates one of Tinbergen's (1952) prescriptions for optimal policy design, namely that there should be at least as many policy instruments as there are policy objectives. With a single policy instrument (ECC) and two policy objectives (agricultural production and environmental goods) there are bound to be trade-offs, which are likely to lead to sub-optimality. More generally, systems theorists will recognise yet another application of Ashby's Law of Requisite Variety, which states that variety within a regulatory system must equal variety found in the system which it is attempting to regulate Checkland (1981). As Checkland observes, regulatory schemes which do not obey Ashby's Law can be built; but they will not be very good ones. Proponents of multi-functionality might dispute this difficulty, but we would argue on the basis of Figure 1 that multi-functionality only exists over a restricted range of production (RS in figure 1). Society's interest lies within competitive range (SU).

The Future for Environmental Cross Compliance

Although the concept of ECC has achieved support from some environmental and farmer organisations, it does have limitations as argued above. The most fundamental

criticism is that ECC is based on a link between agricultural support measures and environmentally positive practices. If agricultural support is reduced, or, worse, if it is absent, then ECC loses its power of sanction. A scenario of reduced agricultural support is widely regarded as inevitable within the present EU as a result of pressure from the World Trade Organisation. The proposed enlargement of the EU to include the CEEC countries raises further questions about the role of ECC as some argue that the CEEC countries should have only a limited version of the CAP (Buckwell and Tangermann, 1999). Another question mark over ECC is its ability to deal with the range of negative environmental externalities that agriculture produces. The environmental impact of agriculture is wide and encompasses damage to natural capital such as water, air, soil, biodiversity and landscape, and to human health through chemical residues and disease agents (Pretty et al, 2000). In many cases, especially those relating to human health, direct control of farming practices through legislation is regarded as the most effective means of limiting or stopping such externalities. In other cases education or targeted environmental subsidies may be more effective.

Conclusion

In this paper we have described ECC, examined the theory underpinning ECC and assessed possible farmer response to it. While it is evident that ECC is not a panacea – depending as it does on an the existence of a support payment system - it is not totally without merit. Linking the receipt of agricultural support to the need to act in a way that in environmentally beneficial does help to raise farmer awareness of the environment as an agricultural output. Giving environmental goods a financial value, even indirectly, means that farmers will grow used to including them in their management and resource allocation decisions. Society, too, will become used to the idea that the environment produced by agriculture is not a free good and that it is logical to pay farmers to produce what the public values. However it is only one step on the way to providing an efficient market mechanism for the rural economy.

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Biographical Sketch

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