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January 2004

Working Paper Number: 2004-06

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October, 2003

The authors gratefully acknowledge financial support from the
Institute for European Studies, University of California at Berkeley

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1. INTRODUCTION

The United States and the European Union have taken alternate approaches to the interface between agricultural and environmental policy. In both regions, agri-environmental programs have been recognized as a trade-friendly way to transfer income to farmers while responding to growing pressure from an expanding environmental lobby. It is notable, however, that agricultural conservation policies have evolved in strikingly different ways in the two regions. In this paper, we propose three organizing concepts within which to classify these differences. To establish the validity of our classification, we gather evidence obtained from a detailed analysis of agri-environmental programs in the United States and European Union. We then consider alternative explanations for the observed differences, distinguishing between purely economic considerations—primarily differences in factor endowments and stakeholder preferences—and political considerations, ranging from differences in the way lobbying activities are organized to the structure of the policy-making process.

Our ultimate goal is to better understand the implications of these differences for trade negotiations and policy harmonization. Stated simply, our position is that if the differences we observe in the agri-environmental policies of the United States and EU are attributable primarily to variations across regions in the nature of the externalities and market failures associated with the agri-environmental nexus, then attempts at agri-environmental policy harmonization may be counter-productive and trade agreements should be designed with sufficient flexibility to allow for these policy differences. If, on the other hand, the observed policy differences reflect nothing other than variations in the relative abilities of different stakeholders to extract political-economic rents, then greater policy harmonization, implemented through trade agreements, may provide a useful tool to counter-balance the bargaining power of the various protectionist lobbies who have been using policy as a guise for trade-distorting industrial support.

Of the three differences we identify, the second and third are subsidiary to the first. Our primary difference concerns the fundamental relationship between agriculture and the environment. The agri-environmental programs that have been developed in the United States reflect a view that there is an intrinsic conflict between the goals of expanding (or maintaining) agricultural production and preserving the environment. The policies developed in Europe, on the other hand, reflect a quite different view, which is that the expansion of agricultural activity can actually benefit the environment, provided that it is undertaken in an appropriate manner. As a consequence of these orientations, U.S. policy focuses primarily on the negative environmental externalities—while EU policy focuses primarily on the potential positive externalities—generated by agricultural production.

The EU does address some negative externalities. The second difference we identify is that to the extent that the EU does so, its policy focus has been on negative externalities resulting from *intensification* (e.g. high livestock density, increased use of chemical inputs). By contrast, the focus in the United States has been on environmental problems resulting from *extensification*: pollution has traditionally been associated with the use of marginal land (e.g. highly erodible soil, drained wetlands). Our third difference relates to the targets of agri-environmental programs in the two regions. In the United States, these programs typically focus on the anticipated environmental outputs (e.g. soil erosion, water quality) associated with certain agricultural activities, so that competing proposals for funding under these programs are ranked in accordance with their potential for either mitigating the negative, or enhancing the positive, impacts of these outputs. In order to receive agri-environmental payments in the EU, by contrast, it is typically sufficient to commit to using agricultural inputs, or farming practices, that have been designated as environmentally friendly (e.g. organic production methods, livestock practices that respect animal welfare).

After elaborating on the nature of these three differences, we will consider a number of alternative explanations, distinguishing between *economic* and *political* considerations. Within the class of economic explanations, we further distinguish between *supply-side* and *demand-side* considerations. The supply-side explanation is the familiar one that factor endowments ratios are

quite different in Europe and the United States. Evidence suggests, however, that differences in factor endowments cannot fully explain the policy variations we observe. For example, one might argue that the EU is more concerned with pollution associated with intensive agriculture because land is a relatively scarce factor in Europe. To be persuaded by this argument, we would expect it to have some explanatory power at the level of individual member states, since within the EU (although not in the United States), member states have considerable discretion to determine how to spend the agri-environmental euros assigned to them by the EC. If land scarcity were a primary determinant of agri-environmental policy orientation, we would expect EU member states with the least land (and most intensive agricultural operations) to be doing the most to target the negative environmental externalities associated with intensive agriculture. We are unable to find evidence of this correlation. Demand-side economic explanations relate the observed policy differences to differences in preferences, either at the social level or at the level of stakeholders who participate in the agri-environmental policy-making process. For example, commentators have noted a fundamental clash of agri-ecological social preferences: Europeans view the natural environment as having been produced in part by generations of farming and ranching, whereas in the United States, nature is seen as being undisturbed by any human activity (Burrell, 2001; Hodge, 2000). This clash might contribute to an explanation of why European farmers are subsidized to pursue traditional farming methods and restore pasture on lands that would otherwise be abandoned, while farmers in the United States are subsidized to return farmland to its original state of wilderness. A complementary view is that the policy differences we identify reflect two very distinct patterns of alignment of political-economic and institutional forces. Both supply- and demand-side economic considerations will play central roles in any political explanation. For example, the different views of nature alluded to above are bound to differentiate the shapes of the political bargains that are struck in the two regions. Moreover, we would argue that this is entirely appropriate. The view we take in this paper, however, is that the observed policy differences go well beyond those that economic analysis would advocate, based purely on social welfare theoretic criteria. In the language of this paper, policy differences that cannot be justified on economic grounds must be attributed to political considerations.

This paper is organized as follows. Section II presents our classification of the agri-environmental policy differences between the two regions. In section III, we support our classification with evidence based on a detailed analysis of United States and EU agri-environmental programs. Section IV evaluates this evidence and concludes that while economic differences have some explanatory power, there is much that cannot be explained in purely economic terms. We then lay the groundwork for an intensive, comparative study of the political-economic determinants of agri-environmental policy¹. In section V we consider some policy implications of the differences we have identified. Section VI concludes.

2. A COMPARISON OF EU AND U.S. AGRI-ENVIRONMENTAL POLICIES

In Europe, the shift from direct commodity payments towards agri-environmental and rural development programs has been a cornerstone of the region's response to the Uruguay Round. The EU is currently debating major reforms to the Common Agricultural Policy (CAP) that would reduce traditional price supports, focusing instead on rural development and environmental sustainability. Some traditional member states, such as France and Spain are fighting to retain a higher level of price support, and some of the incoming EU members have also stated their reservations. Meanwhile, Robert Zoellick, the U.S. Trade Representative, stated that the reforms were a necessary condition for the WTO to move forward (Farming Life Reporter, 2003). On May 10th, 2003 the World Wildlife Fund, Oxfam and other groups called for the reforms to go further, and to ensure that all funds saved from reducing price supports and ending export subsidies go to rural development. The groups also called for stricter environmental conditions to be associated

¹ This study is outlined in Baylis et al 2003

with the CAP (Europe Information Service, 2003). More recently, the WTO talks in Cancun collapsed in large part because the developed countries were unable to agree to substantially reduce their agricultural subsidies.

The linkages between agriculture, the environment and the development/management of rural areas have become encapsulated in the concept of multi-functionality. The European Union, supported by its farm organizations, has taken the position that these additional benefits are typically not marketable and, consequently, are under-produced relative to the levels that societies desire. Further, it argues that these outputs will be under-supplied to an even further extent if agricultural support prices are reduced by trade liberalization. Simplifying drastically, the argument is that farm income support through-production-linked agricultural policies can be justified on conventional economic grounds once the positive externalities generated by agriculture are taken into consideration. In the view of many commentators, this argument is a thinly veiled repackaging of protectionism, pre-Uruguay Round style: “[the EU] has gone to enormous lengths to create, both domestically and internationally, the camouflage of multifunctionality to justify the continuation and probable increase of expenditure of more than 40 billion a year on bolstering an industry which is quite capable of surviving without subsidies.” (Agra Europe editorial, September 28, 2001)

As in the EU, the U.S. administration has taken the view that one of several ways to comply with WTO provisions is to merge agricultural and environmental policy. During the recent debate over the 2002 Farm Bill, there was a great deal of pressure by environmental groups and by legislators from non-farm states to shift funding from direct price supports to conservation programs. Although these attempts were not wholly successful, the 2002 Farm Bill did substantially increase the size and scope of conservation programs, and viewed them in part as a trade-neutral way to transfer income to farmers. While motivated by concerns similar to those that motivated the EU, the U.S. approach to agri-environmental policy is quite different from Europe's. While the Europeans focus largely (though not exclusively) on the positive implications of agricultural activity for the environment and rural areas, the U.S. administration tends to focus on the actual and potential negative relationship between agriculture and environmental goals. The administration's view is reflected in a recent document by the Economic Research Service (Roger Claassen et. al 2001): [farm] payments should be de-coupled from production, mitigating environmental degradation due to overproduction resulting from policy-induced distortionary signals; they may be conditioned on compliance with certain environmental standards and they may be provided in the form of compensation to offset the cost of adopting best-management practices (e.g. Environmental Quality Incentives Program). Meanwhile, the traditional farm lobby groups, along with their representatives in Congress, have been militant in their resistance to the administration's approach. For example, in both the House and Senate, amendments were put forward to transfer large sums of money (\$2 billion per year in the House amendment) from commodity programs to conservation programs. Both of these amendments were unsuccessful largely due to opposition from members representing farm constituencies. In the end result, the 2002 farm bill did increase funding for conservation programs, but it also increased funds for commodity programs such as the new countercyclical program, and increased loan rates.

In the classification we advance in this paper, the primary difference between agri-environmental policy in the EU and United States is that the former mainly addresses the positive environmental externalities generated by agricultural production, while the latter mainly addresses the negative externalities. A consequence of this difference is that most of the agri-environmental policy euros spent in the EU have the effect, *ceteris paribus*, of *increasing* aggregate agricultural output, while most of the agri-environmental policy dollars spent in the United States have the effect of *decreasing* aggregate output². In this sense, agri-environmental spending and agricultural output

² By *ceteris paribus*, we mean that we do not take into consideration how a euro *might* have been spent if it had not been allocated to an agri-environmental policy. For example, an EU program to promote organic production will clearly increase aggregate agricultural output *ceteris paribus*. However, to the extent that the euros allocated to this program might otherwise have been allocated to a traditional production subsidization program, then the *net* effect of the reallocation might be to reduce aggregate agricultural output.

are *complements* in the EU and *substitutes* in the United States. An anecdotal example of this distinction was provided during a discussion about alpine hiking at the international conference from which this volume resulted, the European contingent voiced a more or less unanimous preference for hiking through alpine pasture, while the Americans, with one exception, preferred wilderness terrain! To the extent that these preferences are representative, it is not so surprising that an argument widely voiced in the EU—continued use as pasture of farmland in certain regions creates more important habitat than would be created if the land were abandoned—would not be raised in the United States

The distinction is further evident in the differing ways that the two regions approach the issue of environmental stewardship. The direction which EU agri-environmental policy has taken indicates that in parts of Europe, land is perceived to attain its highest environmental value when used for farming. For example, a significant fraction of EU agri-environmental payments are targeted at limiting land abandonment. Linked is the idea that farmers are stewards of the land, and that simply removing land from production is an environmental loss. On the other hand, the direction which U.S. policy has taken indicates that in large parts of America, land is perceived to attain a higher environmental value when it is taken out of farming and returned to its natural state. Either it is perceived that stewards are not needed for the land, or that farmers do not act as the best stewards. Thus, while European policy attempts to limit land abandonment, farmers in the United States are often specifically paid to abandon farmland, for example, through the Conservation Reserve Program (CRP). Furthermore, farmers are paid a premium through the CRP if they seed traditional cover crops or plant native trees, attempting to return the land to its pre-farmed state.

The EU does, of course, acknowledge that agricultural production generates some negative externalities. The ones that cause most concern in Europe, however, differ from those that matter most in America. The first of our two subsidiary differences, then, is that agri-environmental policy in the EU focuses mainly on externalities that are a byproduct of the intensification of farming—i.e. the use of too many non-land inputs per unit of land—whereas U.S. policy focus mainly on the bi-products of extensification—i.e. the use of an excessive amount of land. A recent study commissioned by the European Commission notes that the more severe environmental concerns tend to arise from intensive farming systems, either because of increasing chemical use or increased number of livestock per acre (Baldock, Dwyer and Sumsi-Vinas 2002). Indeed, when European agricultural stakeholders were asked to identify the most important environmental concerns associated with agriculture, they listed water pollution caused by chemical leaching and soil sediment, unsustainable levels of irrigation, air pollution, and a decline in biodiversity as primary issues. All of these sources of pollution are linked to intensive agriculture. Stakeholders also specifically raised the concern that “high nature-value” farming systems were either lost to intensification or abandonment (Baldock, Dwyer and Sumsi-Vinas 2002). Unsurprisingly, these are precisely the types of pollution that are addressed by EU agri-environmental programs. On the other hand, most of the negative environmental externalities targeted by U.S. conservation policy are caused by increased use of farmland that is marginal, either because it is highly erodible or because it has been reclaimed by draining wetlands.

The second subsidiary difference that we identify relates to the targets of agri-environmental programs in the two regions. In the United States, these programs typically focus on the anticipated environmental outputs associated with certain agricultural activities. Moreover, competing proposals for funding under these programs are ranked in accordance with their potential for either mitigating the negative, or enhancing the positive, impacts of these outputs. To receive agri-environmental payments in the EU, by contrast, it is typically sufficient to commit to using agricultural inputs that have been designated as environmentally friendly. In some instances, the input choices themselves are deemed to have intrinsic environmental merits. For example, European farmers receive funding for enhancing the welfare of their livestock and or farming in accordance with traditional methods. In others, input choices are subsidized not because of their intrinsic merits but because they are expected to result in valued environmental outputs. Indeed, a recent EC document goes so far as to say: “adherence to organic production standards is more likely to lead to general improvements in environmental quality than the production of specific environmental goods” (Lampkin et. al, 1999, p. 40). To illustrate the

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difference, both regions are concerned about chemical runoff. In the United States, the runoff is targeted directly; in the EU, farmers are paid to use organic production methods, at least in part because these methods will reduce runoff.

A closely related issue is that agri-environmental programs in the two regions tend to differ in their degree of focus. Relative to the United States, EU programs tend to be oriented towards multiple, sometimes nebulous goals. Multifunctionality, by definition, is a broad concept, encompassing many targets simultaneously. The very concept stems from the idea that agriculture generates a number of externalities, which are not easily measurable, but that have social value, and therefore their production should be somehow compensated. Similarly, the objectives which EU agri-environmental payments are designed to accomplish tend to be quite general in nature. For example, these objectives include protecting biosphere, keeping farmland from being abandoned, and preserving various broadly defined features of the rural landscape. U.S. programs tend to be focused more narrowly, and on targets that are more easily measured. For example, in contrast to preserving the biosphere, the United States has programs to preserve habitats for specific species. Consider also the U.S. Conservation Reserve Program, which targets multiple outputs, such as the expected environmental improvement in soil resources, water quality, wildlife habitat, and other resource concerns. All of these output objectives are sufficiently measurable that each land parcel offered for enrollment in the Program is assigned an EBI score, measuring the contribution that retiring the parcel would make to a weighted sum of these objectives.

3. EVIDENCE SUPPORTING OUR CLASSIFICATION

Agri-environmental programs in the United States are organized under the Conservation Title of the U.S. Farm Bill (see Fig. 1).

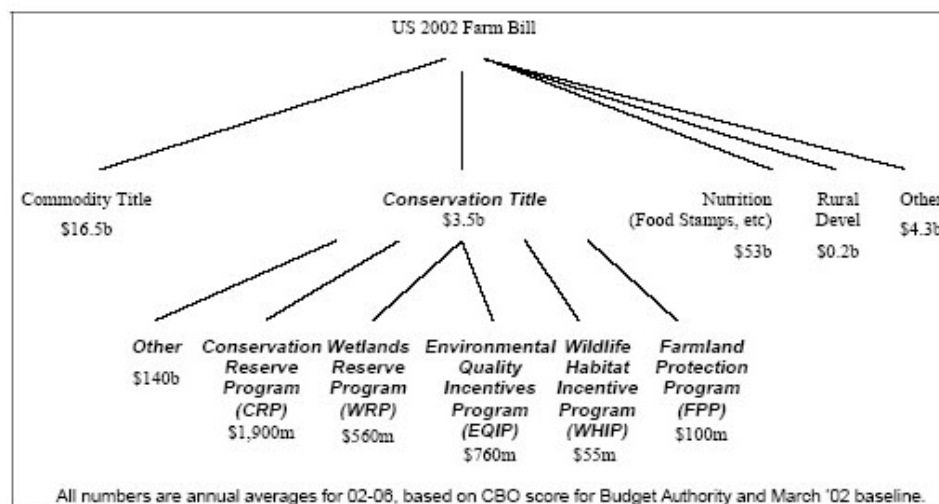


FIGURE 1. The 2002 U.S. Farm Bill

The primary conservation programs in the United States are the Conservation Reserve Program (CRP), Wetland Reserve Program (WRP), the Environmental Quality Incentives Program, (EQIP), Wildlife Habitat Incentives Program (WHIP), and the Farmland Preservation Program (FPP). The first two programs, CRP and WRP, both pay farmers for taking their land out of production. Farmers can agree to set aside environmentally-sensitive land for an extended period³ in return

³ 10 to 15 years for the CRP, 30 years for WRP.

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for an annual payment⁴. Unlike the CRP and WRP, EQIP and WHIP are programs intended to decrease environmental damage on farmed land. EQIP is primarily a cost-share program that pays farmers to adopt more environmentally sound farming practices. EQIP funds activities such as building better manure storage facilities, planting windbreaks, etc. Likewise, WHIP helps defray costs associated with providing wildlife habitat on the farm. WHIP funds are available for either farmed or set-aside land. The FPP is a program designed to keep farmland from being converted into urban sprawl, by allowing the government to purchase from a farmer the development rights to his property. The United States also has two cross-compliance provisions, sodbuster and swampbuster, that are credited with greatly reducing pollution associated with farming. Sodbuster restricts farmers from farming highly erodible soil whereas swampbuster limits the draining of wetlands. In order for farmers to receive income supports under the Commodity Title, they must comply to these regulations. Thus, these compliance provisions effectively act to remove land from production.

EU agricultural and rural development programs are financed by several different funds (Fig. 2).

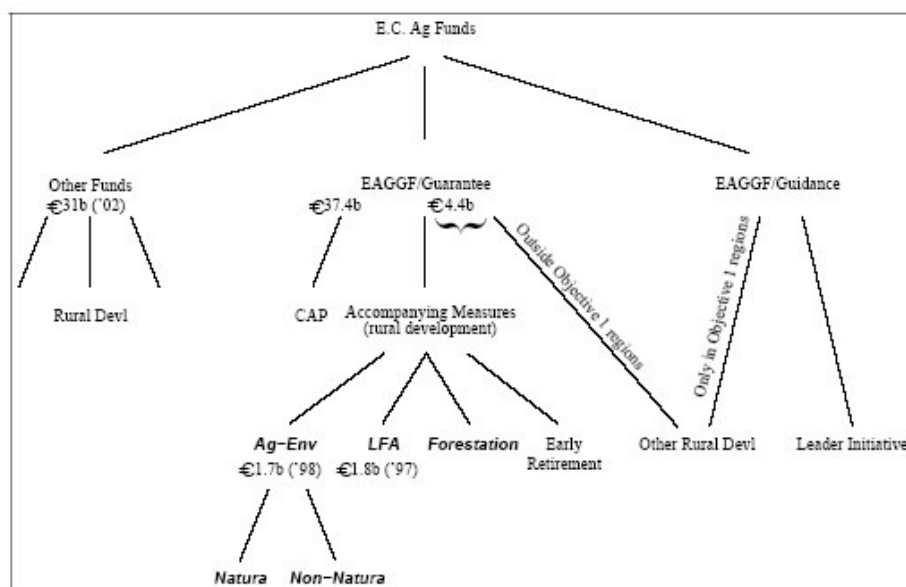


FIGURE 2. EU Funding for Agriculture and the Environment

The primary fund is the European Agriculture Guidance and Guarantee Fund (EAGGF), the guarantee section of which is used to fund the CAP. In the 1992 MacSharry reforms, four “additional measures” were also placed under the fund. The goal of these measures was to support non-commodity aspects of agricultural production, such as rural development and the environment. Specifically, these additional measures included money for early retirement of farmers and farm laborers, agri-environmental measures, compensatory allowances to support for farmers in mountainous or other environmentally challenging regions called Least Favored Areas (LFAs), and measures to support forestry. Each of these additional measures require matching funding by member states. The required level of co-finance varies by region. For agri-environmental payments to economically depressed regions (called Objective 1 regions), member states are required to match EU funds on a 1 to 3 basis, while for payments to other regions,

⁴ The 2002 Farm Bill instituted a new program, the Grasslands Reserve Program which applies to pasture. However, unlike the CRP and WRP, land in the Grasslands Reserve Program can still be used for its previous agricultural purpose as pasture. The idea is to keep virgin pasture from being broken up, and used for crops, and to keep it from being overgrazed.

matching on a 1 to 1 basis is required⁵. Each member state negotiates with Brussels a total level of EU commitment for the four additional measures; the distribution among these measures is at the discretion of the member state. The growth rate of the EAGGF (Guarantee) fund is capped at 74 percent of GDP growth. The EAGGF (guidance section) is one of the EC's structural funds, and is used to fund certain rural development programs in Objective 1 regions. These programs include such activities as farmer training, on-farm investment, investment in value-added, etc. These same programs are also available to non-Objective 1 regions, but in this case are funded through the EAGGF (guarantee section). There are other structural funds that are used to support rural infrastructure spending etc, but we do not consider these in this paper.

The main source of funds to environmental measures is the "additional measure" known as agri-environmental payments. These payments cover a broad range of activities, and are largely directed at worked lands. Payments can be used for reducing input use and stocking rates, for sustaining farming on marginal land, for preserving landscape as well as for setting aside some land for biotope preserves. Agri-environmental payments can be made on Natura or non-Natura lands. Natura, which is a designation of sensitive environmental lands in the EU, contained 9 percent of EU territory in 1999, and increased to over 10 percent in 2000. On Natura lands, agricultural and forestry practices are regulated. Initially, Natura lands came from areas designated under the Birds Directive (1979) and under the Habitats Directive (1992). Land is first designated by member state for species of interest, including components such as size, quality, density of species etc. Member states must designate land in their territory by 2004 and must gradually introduce programs to regulate activity on that land. Next, the land is ranked by EC by relative value, and payments are determined. The programs are therefore not a freeze on use (thus, it is unlike a set-aside programs such as the CRP); instead sites will be managed through productive use, which may involve activities such as farming or grazing. Lastly, member states also receive payments designated for Least Favored Areas (LFA's). The payments are available to farmers in remote and less productive areas. Although sometimes coupled with environmental regulations governing farming practices, the payments generally vary with the severity of the natural handicap faced by farmers, and are intended to keep farmers active in these less productive regions.

Table 1 compares the allocation of agri-environmental funding in the EU and United States, distinguishing between funds earmarked for land retirement versus working lands. Programs that fund the cessation of farming on land in the name of preserving the environment are, obviously, extreme examples of policies that decrease aggregate agricultural output. In the United States, the vast majority of funding under the Conservation Title (88 cents of every dollar) targets the retirement of environmentally sensitive land whereas in the EU, there is only a small set-aside program associated with biotope preservation. This figure demonstrates the extent to which the United States perceives that idled farm land generates more environmental benefits than farmed land. Indeed, the 87% figure actually under-estimates the U.S. emphasis on land retirement, because the cross-compliance sodbuster and swampbuster provisions amount, in effect, to an additional transfer from agriculture to the environment. Compare this to the expenditure on land retirement in the EU, where these programs are only offered in a few member states. Land retirement payments are only offered in Greece, Ireland and a few states in Italy and Germany, and payments for planting trees on cultivated land are less than 15 percent of all agri-environment and forestry payments (see the top-left box of Table 1). It should also be noted that these forestry payments are intended to produce working forests as well, so even the afforested land is not truly retired from production.

⁵ It is reported that in the next round of CAP reform, EU support will be increased to 85% for Objective 1 regions, and 60% for other regions (EC 2003).

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TABLE 1. Program Expenditures in the EU and the United States
(Percentage of total direct conservation payments ^a)

Program type	EU		United States	
	Program description	Expenditure (%)	Program description	Expenditure (%)
Land Retirement	• Afforestation of arable land		CRP	79
	• Incentives to convert cropped land to pasture		WRP	8
	• Biosphere preservation		Sodbuster and Swampbuster	
	<i>Total Land Retirement</i>	<i>14^b</i>	<i>Total Land Retirement</i>	<i>88^c</i>
Working Lands	All other Agri-environmental payments for:		EQIP	8
	• Organic	8	WHIP	2
	• Extensification	35	FPP	2
	• Other working lands	41		
	<i>Total Working Lands</i>	<i>83^d</i>	<i>Total Working Lands</i>	<i>12</i>

^a For United States, average of 1997-2001 (ERS-USDA 2002); for EU, based on expenditures for programs approved by March 1996 (CEC 1997).

^b EU funds for land retirement taken to be total non-productive land management, as defined by the CEC.

^c The total for U.S. land retirement is higher if one adds the production costs of swampbuster and sodbuster.

^d The total for EU working lands is much higher if one includes Least Favored Area (LFA) payments.

In 2001, the majority of EU agri-environment payments were targeted at landscape and wildlife management (Buller 2001). In the United States, there are no payments for landscape and payments for wildlife habitat fall under the Wildlife Habitat Incentives Program (WHIP) which receives only about one half of one percent of total U.S. agri-environmental funding⁶. As well, a large portion of agri-environmental payments support organic farming in the EU, while organic farming is not subsidized at all in the United States.

Table 2 below provides a more detailed breakdown, by objective, of agri-environmental programs in the EU and United States. This comparison lends further support to our assertion that agri-environmental spending and agricultural output are complements in the EU and substitutes in the United States. Several aspects of Table 2 are notable. First, the EU supports both traditional extensive farming practices and non-abandonment of land whereas the United States supports neither. Second, although the EU targets negative externalities to some extent, these are often linked to promoting farm processes such as organic production or extensive agriculture, which are viewed as generating positive externalities as well. In addition, the EU pays farmers for producing other positive externalities such as landscape, habitat and rural employment on their active farmland. On the other hand, the United States has virtually no programs that promote any positive externalities. Third, the EU focuses very little attention on reducing on-farm pollution (Buller et al 2000), whereas this is a primary focus of U.S. policy. In fact, in the United States, agri-environmental payments—e.g. those used for manure storage under EQIP—are often geared to help farmer comply to external (EPA) regulations restricting on-farm pollution. The CRP, as mentioned above, was initially designed to reduce soil erosion, and this is still considered its primary success (USDA 2001). Fourth, the EU through its LFA payments also subsidizes farmers to keep them farming less productive land. These subsidies are primarily

⁶ The Farmland Protection Program (FPP) may be a small exception, although it is targeted at limiting development and does not vary with the aesthetic appeal of the farmland.

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intended to keep the rural populations from dropping, reflecting an emphasis on the positive externalities flowing from having active farmers staying in these areas.

TABLE 2. Objectives of Programs in the EU and the United States

Output		Program	
Positive externality	Negative externality	EU	U.S.
	Soil erosion		CRP
	Chemical and nutrient runoff	Payments for Organic farming; Payments for low stocking rates.	EQIP CRP
	Water pollution	Agri-environmental payments in Greece, the Netherlands and Italy ^a	EQIP CRP
	Habitat	Natura	WHIP WRP CRP
Habitat		Natura Non-abandonment	WHIP
Landscape		Agri-environmental payment	N.A.
Biodiversity		Payments for rare breeds in Portugal, Greece, Ireland, Italy and Sweden. Pasture preservation in France, Italy, Germany, Greece, Sweden and Finland.	N.A. ^b
Rural economic development		Agri-environmental payments for organic farming in most member states; LFA payments.	N.A.
Cultural heritage		Payments for traditional methods; LFA payments.	N.A.

^a It is worth noting that although there are funds allocated to improve water quality, these are not specifically tied to farm activities. In fact, the discussion of these programs does not mention pollution from the farm at all.

^b One might think of aspects of the new Grassland Reserve Program as a program that encourages the production of positive wildlife habitat on active pasture.

In addition to the differences that emerge from Table 2, the U.S.'s use of cross-compliance rules (sodbuster and swampbuster) further support our main thesis. While similar provisions are technically feasible in the EU, they have been little used to date (Legg 2002, IEEP 2002), reflecting the fact that up until now, the negative environmental side-effects of the CAP have received relatively little attention. This may soon change: the recent Luxembourg Agreement (June 2003) of the EU Council of Ministers emphasized the increasingly important role that cross-compliance will play in the future administration of the CAP (EC 2003). Consistent with the theme of this paper, however, it appears that the proposed new cross-compliance criteria for EU commodity payments will focus as much on positive externalities (e.g. avoiding land abandonment) as negative ones.

To summarize our observations from Table 2, the EU spends more funds on the positive externalities associated with agriculture whereas the United States spend more on programs mitigating the negative externalities. In the United States, the majority of agri-environmental

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spending is targeted to farmland retirement, implying that taking land out of agricultural production yields greater environmental benefits than leaving it in. As well, United States production subsidies are linked to environmental rules that attempt to limit the degree to which additional production will generate additional pollution. Again, these rules reflect the underlying idea that agricultural production causes pollution, in contrast to the idea of multifunctionality, which is that production results in under-supplied environmental benefits.

Table 3 below provides evidence supporting the first of the subsidiary differences that we have identified. To the extent that the EU acknowledges the negative externalities created by agriculture, it focuses on externalities generated by intensive rather than extensive land use, whereas U.S. policy focuses on the negative externalities generated by farming land that is marginal in an environmental sense.

TABLE 3. Agri-Environmental Programs in Support of Extensive vs Intensive Agriculture

Program Target	E.U.	U.S.
Reduce Intensification	Chemical reduction payments; Payments for organic farming.	None
Reduce Extensification	None*	CRP WRP Sodbuster, swampbuster
Support Intensification (and limit pollution therefrom)	Additional LFA payments for intensive production in Italy and Spain	EQIP payments for confined animal feeding operations.
Support Extensification	LFA payments; Non-abandonment payments	None
Support move from Intensive to Extensive	Payments for low stocking rates.	None
Support move from Extensive to Intensive	None	None

* Some biodiversity payments might be included, but it is unclear how exactly they are allocated.

A strong indication of this difference is that EU agri-environmental payments actually encourage farmers to keep marginal land in production, by subsidizing them to maintain pasture and keep land from being abandoned. For example, EU infrastructure and landscape funding can be used to preserve dykes; the farms on which these dykes have been build would in the United States be considered wetlands, and farmers would be subsidized to allow them to revert to their natural state. On the other hand, some EU member states address the concerns associated with intensification by paying farmers to stock lower numbers of livestock per hectare and to reduce the use of chemical inputs. The United States has no comparable programs. The United States' EQIP program does provide a small amount of support for improving manure storage and lowering nutrient runoff. However, EQIP does not address the fact that these problems may occur due to intensification. Indeed, by subsidizing the cost of reducing pollution caused by intensification, the design of EQIP actually allows farmers to farm more, rather than less, intensively while mitigating the attendant environmental problems. Moreover, farmers can use EQIP funds to improve their pasture, allowing them to increase their stocking rates.

The second of our subsidiary distinctions is that U.S. agri-environmental programs tend to target environmental outcomes, whereas EU programs target either the inputs or the agricultural processes that are applied in order to achieve these outcomes. For example, European policy subsidizes inputs and processes such as organic farming, extensive agriculture and animal welfare, whereas U.S. policy targets environmental outcomes such as soil erosion or nitrate runoff. To appreciate the nature of this distinction, suppose that a collection of farmers who are producing under a diverse range of exogenous circumstances—such as, for example, soil factors and proximity to a water source—all seek funding to improve an environmental output such as water quality by, say, reducing their use of nitrogen as an input. Depending on the exogenous

factors, the same change in the level of input usage will result in quite different changes in the environmental output. In the United States, these differences in the effectiveness of the remedy being considered will be taken into account when the farmers' applications are ranked. Using the EBI (in the case of the CRP) or farm plans (in the case of EQIP), the appropriate authority⁷ estimates the expected environmental benefits that will result from each proposed farm action—e.g. setting aside land or taking some environmental action—and scores each proposal according to the difference between the benefits that it is expected to generate and its expected cost. Projects whose scores exceeds some cutoff threshold will then be funded. In the EU, by contrast, each of these farmers will be equally eligible for funds provided that they satisfy certain administrative regulations, but these regulations, and the farmers' eligibility, do not depend on the balance between the specific costs and specific benefits of the farmers' proposed actions. The distinction we are drawing here must be qualified to take account of the Natura program. This program requires each Member State to designate a percentage of its agricultural land as environmentally sensitive and many states allocate a portion of their agri-environmental payments specifically to Natura lands. Natura recipients of agri-environmental payments have thus been "pre-screened," in a sense: their Natura designation ensures that the land they are farming is above average on some environmental sensitivity scale. This kind of pre-screening is, however, a very coarse, macro kind of filter: it cannot, of course, take account of distinctions at the farm level, such as proximity to a water source.

LFA payments provide an excellent example of the way the EU targets inputs rather than environmental outputs. Although these payments were originally designed to redistribute income and sponsor rural development, a side-objective has been to promote the environmental benefits purportedly created by retaining farmers on the land in these areas. It is assumed that farmers in the LFAs are producing environmental benefits by farming. For example, in steep mountain areas where terraces have been built and maintained, continued farming along traditional lines will generate positive environmental externalities relative to land abandonment, since soil erosion will result if the terraces fall into disrepair. However, farmers are able to receive LFA payments whether or not they maintain these traditional methods (in particular whether they maintain their terraces)⁸. The point here is that one of the goals of LFA payments is to mitigate a negative environmental output (soil erosion), but by conditioning eligibility for these payments on an input consideration alone (the land input is in a LFA), the linkage between the program and the objective is weaker than it would be if the payments were conditioned more directly on the output itself. Another, related point is that in contrast to the Natura program, the criteria used for determining Least Favored Areas are production-oriented rather than environmentally-oriented. If one agrees with the assumption made by many authors⁹ that there is a negative correlation between land productivity and environmental sensitivity, then some LFA's may well not benefit environmentally from continued farming.

Table 4 distinguishes between programs that target inputs and environmental outcomes. Note that the majority of EU programs fall into the first category while the majority of U.S. programs fall into the latter. The exceptions in the United States are the FPP and the cost-share component of the CRP. The FPP inherently is an input-related program in that its goal is to keep farmland in production to limit urban development, not as a means of producing a specific environmental benefit. Likewise, in the CRP, planting trees is viewed as an intrinsic benefit, as opposed to the environmental outputs associated with the creation of a woodlot. The argument used by the USDA is that once the trees are planted, it is harder to revert the land to crop land. In this sense, this component of the CRP that is classified as targeting an input rather than an output.

⁷ For the CRP, this is the USDA. EQIP applications are ranked at the state or local level, and sometimes by land-use.

⁸ Some member states have, however, introduced environmental regulations associated with LFA payments (Dax and Hellegger, 2000).

⁹ e.g. Lafrance et al 2000; Classen et al 2001

TABLE 4. Programs by Environmental Target

	Input Only	Area Target	E (outputs) with explicit ranking
EU			
Agri-environmental payments		Natura	
	Organic		
	Reduction of chemical inputs		
	Afforestation		
LFA Payments			
U.S.	CRP cost-share component: 7%		CRP rent: 93%
			EQIP
	WRP cost-share: 9%		WRP rent: 81%
			WHIP
	FPP		

Percentages based on 2001 expenditure (ERS-USDA 2001).

While the U.S. programs are focused on specific types of pollution (e.g. soil erosion, water quality), the EU programs are listed by the type of action required by farmers (e.g. land use, input use). As a consequence, EU programs tend to be limited in terms of the actions they sponsor, while the U.S. programs tend to be limited in terms of the environmental externalities they target. For example, one could not obtain EQIP funding for producing a positive environmental externality, such as providing use value by allowing public access to one's wood lot. On the other hand, in an EU member state that sponsors farmers who convert to organic production to reduce nitrogen run-off, one could not use EU Agri-environmental payments to fund run-off reduction in some other, perhaps more efficient, manner. Similarly, while the United States, through its use of the EBI, attempts to equate net marginal environmental benefits across payments types and actions, the EU system has no mechanism with which to accomplish this goal.

4. EXPLANATIONS

In this section we explore some alternative explanations for the policy differences outlined above. We begin by considering whether they can be explained in purely economic terms. Specifically, we consider variations across the two regions in production possibilities and social preferences, and assess the possibility that the observed variations can be interpreted as optimal policy responses to region-specific externalities and market failures. On the supply side, the EU and United States are distinguished by markedly different factor endowment ratios. A plausible explanation for the EU's relative preoccupation with pollution caused by intensification is that European farmers use land more intensively because it is scarce relative to other productive factors. U.S. policymakers, by contrast, may be primarily concerned with the environmental effects of farming marginal land, because their farmers have access to a much larger land base, and hence use fewer inputs per acre. On the demand side, there may be regional differences in aggregate preferences for environmental goods, perhaps reflecting different cultural values. For example, EU consumers seem to prefer a lower degree of pesticide residue than U.S. consumers, or attach a higher weight to picturesque farm scenery than Americans, who seem to prefer land unaffected by human activity. These preference variations could potentially explain why the externalities targeted by policies in the two regions are so different.

We present evidence demonstrating that economic considerations alone cannot fully explain the policy differences we have observed. We conclude that politics must also be playing a role and then develop the hypothesis that the distinct political structures in the EU vs. the United States give rise to disparate policy outcomes. Specifically, we postulate that policy outputs are a result of a domestic bargaining game, and argue that the utility functions of the participants in the bargaining process, their relative political power and the structure of the bargaining process will all play roles in determining policy outcomes. The political and the economic explanations are of course closely linked, since the bargainers' utility functions are necessarily determined, at least in part, by economic considerations such as production possibilities and social preferences. For example, demand considerations such as consumer preferences will play a role to the extent consumers are represented at the bargaining table, while supply considerations such as relative factor endowments will play a role because they affect farmers' profit functions, and farmers are also at the table. The explanations differ, however, in the kinds of outcomes they predict: a decision-making process driven purely by economic considerations would result in policies that maximize some kind of social welfare function, given economic constraints, while a process driven primarily by political considerations will give rise to policies that distribute rents to bargaining participants, at the expense of social optimality.

4.1. ECONOMIC CONSIDERATIONS

The primary difference between United States and EU agri-environmental policies identified in section 1 is that the former focuses primarily on the negative—while the latter focuses primarily on the positive—environmental externalities, generated by agricultural production. The position we take in this paper is that this difference can be attributed to purely economic considerations if it is the case that (a) the marginal dollar currently being spent on reducing negative externalities in the United States generates a larger net social benefit than would be generated if this dollar were redirected towards promoting positive externalities and (b) the reverse inequality holds for the EU. This leads us to enquire: is it the case that the last U.S. program dollar allocated to the CRP provides a larger environmental “bang for the buck” than an additional dollar spent on some agriculture-promoting environmental program, such as landscape preservation? Similarly, is it the case that the last EU program dollar spent on promoting organic agriculture generates a higher net social benefit than a dollar spent on, say, a land set-aside program?

While a detailed analysis of these questions is well beyond the scope of this paper, it is worth noting that variations in consumer preferences could conceivably lead to an affirmative answer to one or both of them. Since Europeans in many EU member states live only a few hours drive from farmland, it seems plausible that the appearance of the rural landscape is more important to Europeans than to most Americans, who are located much further away from the agricultural heartland. It could well be that the use-benefit derived by the European non-farm population from agriculture could justify policies that subsidize farmers for producing “landscape,” whether it be in the form of retaining a hedgerow, an old stone fence, or a large oak tree in a field. That said, if the policy goal were to subsidize farmers for providing public amenities, then we would expect to see a higher level of compensation provided to farmers whose fields are closer to urban centers, and/or more accessible to the public. However, this does not appear to be the case. Moreover, there are areas in the United States which also benefit from agri-tourism, such as the wine region in California, farms in Vermont and the Shenandoah Valley, there are no U.S. programs to preserve these landscapes¹⁰.

We have much more to say about the first of the two subsidiary policy differences that we identified in section 1, i.e., the different priorities assigned to environmental problems arising from intensive vs extensive farming. As noted above, a leading candidate to explain these differences is the variation in relative factor endowments between the United States and the EU. In terms of

¹⁰ The FPP may be a possible exception. However, the amount and ranking of its payments do not depend on the use-value, scenic beauty, or other amenity-value of the land.

simple factor endowments, the EU has 130.4 million ha of agricultural land with a population of 378 million, while the United States has an agricultural land base of 377 million hectares, and a population of 285 million (U.S. Ag Census 1997, ERS 2003). Both regions have similar levels of capital. To the extent that factors are not freely mobile across continents, one would expect that factor price ratios will reflect differences in relative factor endowments¹¹. Because the United States has more land per capita than the EU, we would expect the ratio of farmland prices to farm labor prices to be lower in the United States than in Europe, and, provided land and labor are substitutable in production, for U.S. farmers to utilize land more—and labor less—intensively than their European counterparts. Similarly, to the extent that the United States has more land per unit of available capital than the EU, we would expect the ratio of land prices to capital costs to be higher in Europe, and for European farmers to use more purchased inputs (i.e. more capital) per unit of land than U.S. farmers.

Differences in factor endowments and prices cannot, *per se*, provide an economic rationale for policy differences; there must be some forms of market failure involved, and the extent of these failures must be related to factor ratios. In our context, it is reasonable to suppose that there are externalities associated with the use of each kind of factor, and that these externalities increase at an increasing rate with factor intensity. For example, an application of herbicide or fertilizer that is small per unit of land will have a negligible environmental impact, whereas once the chemical reaches a certain concentration, it may have a severe environmental damage. For a slightly different reason, intensity of use plays a similar role in relation to land: generally a farmer will first use less erodible soil because it has higher productivity; as the farmer cultivates more and more land, however, more highly erodible land is brought into production, increasing the intensity of this kind of externality¹².

To investigate the explanatory power of relative factor endowments as determinants of agri-environmental policies, it is instructive to investigate this relationship at the level of individual EU states. The factor endowment ratios of these states vary a great deal and each state has a high degree of autonomy in setting its own policy priorities. Accordingly, we would expect that if policy variations can indeed be attributed to supply-side considerations such as factor endowment ratios, this pattern would also be apparent at the member state level. To summarize the comparison of individual states that follows, we observe a strong relationship between the scarcity of land relative to other factors and the prevalence of the kinds of environmental problems that are associated with intensive farming. However, there is barely any discernible pattern relating the environmental problems resulting from land scarcity to policy priorities at the member state level.¹³

The data we consider is presented in Table 5 below. The table demonstrates that the ratio of land to other inputs (col. 2) varies greatly by EU member state and that as the land per capita ratio increases, so do a number of indicators (cols 4-8) of farming intensity and the environmental problems associated with it. To highlight these relationships, we represent the data in scatter-plot format in Fig. 3. In each panel of the figure, col. 2 of Table 5 is plotted against one of cols 4-8. In each case, a moderate negative correlation is clearly evident.

¹¹ Under the Heckscher-Ohlin model, factor prices will be completely equalized under trade. That said, there is a great deal of empirical evidence that the factor-price equalization theorem does not fully hold (see Krugman and Obstfeld, 2003). That is certainly the case here.

¹² This kind of argument is only applicable when the externality being considered is negatively correlated with the factor's productivity.

¹³ The reader may wonder why we do not undertake a comparable study of the individual states of the United States. The reason is that this would not provide us with useful evidence, because for the U.S. programs that interest us, policy priorities are set at the federal level, with little regard for local differences. What can be said about the United States, however, is that there is a striking absence of a policy response to mounting environmental problems resulting from intensification, in spite of growing public concern about large-scale livestock operations and highly publicized concerns of nitrogen and phosphorus runoff.

Agri-Environmental Programs in the United States and European Union

Column 9 of Table 5 provides a crude indicator of the priority that each state assigns to addressing the environmental problems generated by intensive farming. Member states receive funds designated for so-called “accompanying measures” under the EAGGF. The states have the discretion to allocate these funds either to rural development projects or for agri-environmental payments. Column 9 indicates the percentage of each country’s “accompanying measures payments” (see Fig. 2) that are devoted to agri-environmental payments. If supply-side economic considerations such as factor endowment ratios were a key determinant of European agri-environmental policy priorities, we would expect these percentages to be negatively correlated with land per capita (col 2), and positively correlated with indicators of intensive farming (cols 4-5) and the environmental problems that result from it (cols 6-8). As the scatter-plots in Fig. 4 indicate, the data provides little evidence any such correlation.

TABLE 5. Factor Endowments and Measures of Intensive Farming

Country	Endowments		Input Intensity			Pollution		Expenditure
	Land (ha) per person	% of arable land under irrigation	Head per holding (1995)	Nitrogen applied (t/km ²)	Pesticide applied (t/km ²)	% of land severely degraded due to agriculture	Nitrogen balance 1995-97	Agri-environmental expenditure as % of all rural development
1	2	3	4	5	6	7	8	9
Austria	0.42	0.27	20	8.7	0.25	38	27	54.6
Belgium	0.24	4.78	69	18.4	0.92	65	181	87
Denmark	0.69	20.8	69	11	0.15	0	118	43.6
Finland	2.72	2.92	26	7.2	N/A	11	64	33.2
France	0.67	10.21	60	13.3	0.59	9	53	19.3
Germany	0.35	4.03	55	15.8	0.29	31	61	52.9
Greece	0.62	36.9	N/A	7.6	0.29	48	38	14.9
Ireland	1.36	0	51	47.4	0.25	0	79	44.7
Italy	0.29	24.92	29	7.7	0.78	28	31	58.4
Luxembourg	0.41	N/A	N/A	N/A	N/A	51	N/A	31.1
Netherlands	0.12	59.85	83	35.6	1.06	5	262	35.6
Portugal	0.51	23.36	10	4.4	0.43	21	66	44.5
Spain	0.63	19.98	23	5.5	0.18	38	41	12.7
Sweden	1.58	4.25	42	6.4	0.06	25	34	91.2
U.K.	0.27	1.82	87	20.1	0.58	19	86	45.3
U.S.	1.36	11.96	N/A	6.3	0.21	30	31	N/A

Source: OECD and FAO

Agri-Environmental Programs in the United States and European Union

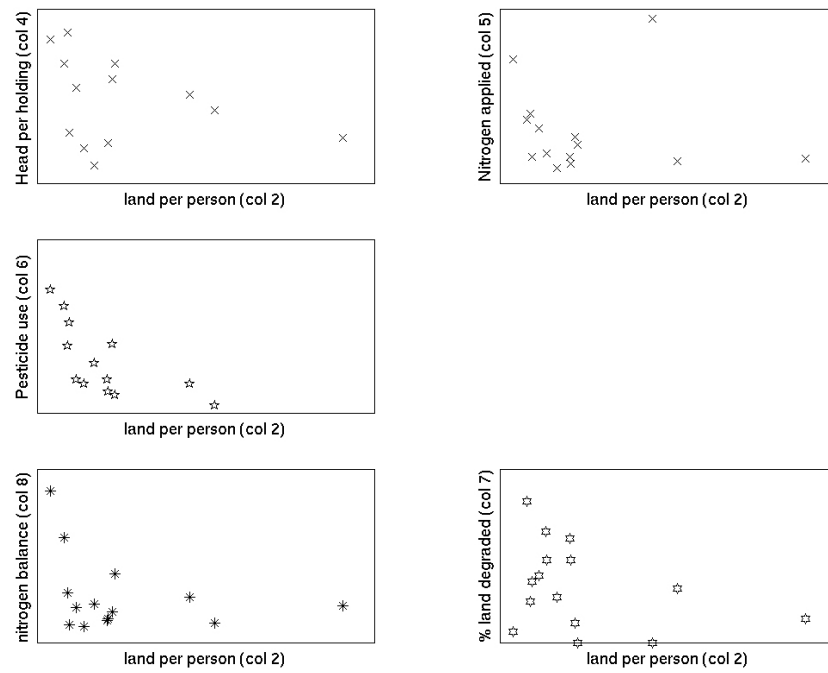


FIGURE 3. Factor Endowment vs Input Use/Environmental Indicators

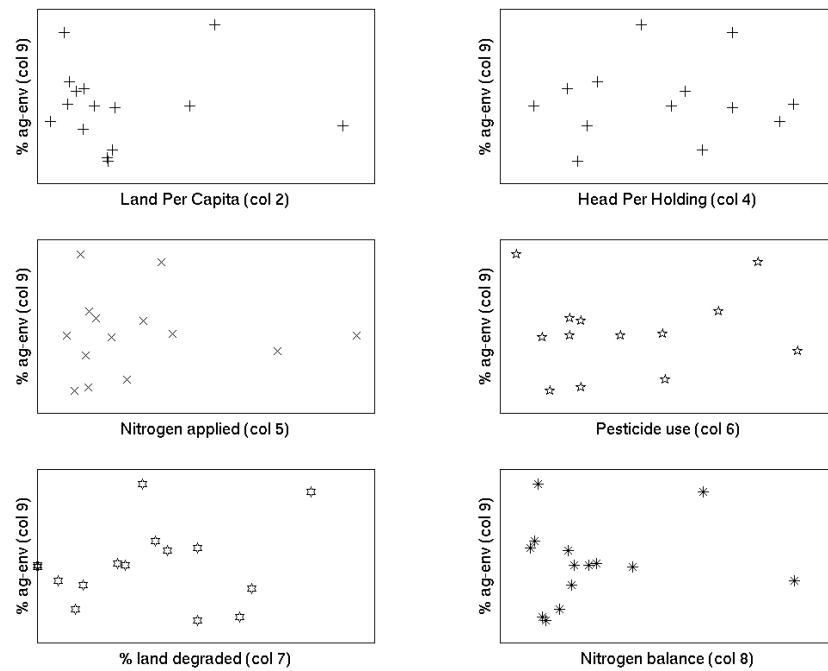


FIGURE 4. Input Use/Environmental Indicators vs Agri-environmental Priorities

Agri-Environmental Programs in the United States and European Union

A close inspection of Table 5 reveals why so little correlation is evident in Fig. 4: Luxembourg, Greece and Spain have among highest levels of land degradation yet are in the lowest quartile when ranked by col 9. In the Netherlands, a huge quantity of nitrogen is applied and the level of nitrogen balance, and hence runoff, is extremely high, yet its rank by col 9 is below the median. By contrast, Sweden is top ranked by col 9, yet ranks close to the bottom in terms of most measures of intensive farming and the environmental problems associated with it. Indeed, since Sweden (and Finland as well) has more land per capita than the United States, an economic explanation of policy choices would conclude that the Nordic countries would spend more on land-retirement policies—which by their very nature discourage extensification—than even the United States. In fact, however, Swedish policy actively encourages extensification: the largest component of Swedish agri-environmental payments is the management of working pastures, meadows and leys (EC, 2000). While we cannot include the United States into the present comparison, it is worth noting that while a huge fraction of the U.S.'s water is devoted to agriculture, very few of its conservation programs are directed at preserving this resource.

Table 6 provides further evidence of the lack of correlation between environmental problems and policies across EU member states. Of the four countries that list reduction of nitrogen as one of their policy objectives, three are below the median in terms of nitrogen applied and nitrogen balance. Likewise, very few countries target soil erosion, even though it is a serious concern for many.

TABLE 6. Stated Objectives of Agri-Environmental Payments by Member States

	Complements									Substitutes			
	Extensification	Landscape	Animal welfare	Organic	Endangered Breeds	Biodiversity/ Biotopes	Traditional Practices	Conservancy (Natura)	Afforestation	Water quality	Soil erosion	Reduce Nitrogen	Set aside
Austria	x	x					x			x	x		
Belgium				x									
Danemark	x			x					x			x	
Finland		x	x	x		x		x					
France	x			x				x					
Germany	x		x	x									x
Greece	x				x	x		x				x	x
Ireland				x	x			x					x
Italy	x	x		x	x	x		x	x	x	x	x	x
Luxembourg	x	x		x		x	x			x			
Netherlands				x				x	x				
Portugal		x			x	x	x			x	x		
Spain	x			x		x						x	
Sweden	x	x			x	x	x	x					
UK		x		x		x		x					
United States						x		x		x	x	x	x

Source: Compiled from States' descriptions of their rural development programs, EC 2003

4.2. POLITICAL CONSIDERATIONS

While the evidence we have accumulated is by no means definitive, we believe that it is sufficient to enable us to conclude that economic considerations alone cannot explain the huge variations

in agri-environmental policies that were discussed in the preceding sections. This leads us to investigate the explanatory role that can be attributed to political factors. Specifically, we will explore the possibility that the observed variations in the nature of the agri-environmental nexus across the two regions can be explained by differences in the structure of the agri-environmental decision-making processes, and in the configuration and interplay of political interests.

The analytical structure introduced in Rausser-Simon (1991), and further developed in Rausser (1992), provides a useful organizing framework for thinking about some differences in the components of the political landscape which might explain these different policy orientations. This structure conceptualizes the decision-making process as a bargaining game within which stakeholder groups negotiate over policies. We cannot in the space available undertake a detailed Rausser-Simon analysis of the agri-environmental policy debate. Instead, we will briefly outline the role that four of the framework's components would play in such an analysis. These components are: (a) who has access to the negotiation process? (b) what is the space of issues over which the parties negotiate? (c) for each participant at the bargaining table, what is the mapping from the issue space to payoffs? (d) what are the "admissible coalitions," i.e. from which stakeholders must approval be obtained before a policy proposal can be implemented?

4.2.1. Who has access to the negotiation process?

In the United States, the key negotiators over farm policy are the commodity organizations, the key Agricultural States (through the House and Senate Agriculture Committees), and, possibly, the administration. In the EU, the primary negotiators at the table are the member states. Agricultural interests are represented primarily through general farm organizations, which lobby through their member states. These differences have important impacts on the returns to lobbying for certain kinds of programs. Naturally, a stakeholder group will lobby for a program that requires the group's constituents to bear significant costs only if most of the benefits resulting from that program can be internalized by the group. In agriculture, moreover, it is much easier to design programs whose benefits can be internalized by producers of a particular crop/product than ones whose benefits can be concentrated within a particular geographic region. Consequently, it is hard to imagine an EU member state lobbying to implement a land set-aside program within that state, unless the farmers at whom the program were targeted were the sole producers within Europe of some product. Otherwise, the costs of the program—i.e., acreage reduction—would be concentrated within the state, while the benefits—i.e., higher prices due to reduced supply of the product—would be dissipated across many states. By contrast, the CRP is targeted at farmland where the soil is highly erodible, and such land is used predominantly for growing wheat and barley. Because increased wheat and barley prices are unlikely to induce increases in the prices of other crops, the benefits, as well as the costs, of the CRP are to a large extent confined to wheat and barley farmers, whose representatives in Washington therefore have stronger incentives to lobby for the program.

Differences in the configurations around the bargaining table may also help explain why the EU—but not the United States—pursues programs targeted at exploiting the complementarities between agriculture and the environment. In certain (particularly southern) EU member states, two key policy goals are rural development and retaining rural population. Naturally, these states lobby for environmental programs that are "stewardship"-based, rather than programs aim at reverting the land to its "natural" state, from which it cannot generate employment. In the United States, by contrast, individual states have much less bargaining power, and are less effective at defending against environmental programs which may result in reductions in their rural populations. This issue arises recurrently during debates over the CRP. As the program takes land out of production, it also reduces the number of active farmers in a region. Indeed, some U.S. counties have argued that the CRP has caused drastic depopulation of their region.

However, these concerns did not carry sufficient weight to either prevent the creation of the CRP or cap later increases in its total acreage¹⁴.

4.2.2 What is the Issue Space?

The issue space consists of the universe of possible negotiating outcomes from which the participants in the bargaining process must select. The space is different in the United States and EU. Some possibilities are excluded explicitly in one of the regions—e.g. export taxes are proscribed under the U.S. constitution; others are, for historical, cultural or political reasons, simply never discussed. In the United States, national programs are specified within the Farm Bill. Most of the rules for these programs are set by the federal government and do not vary by state. Although the U.S. Farm Bill does include a rural development title, interventionist rural development programs are simply not on the table. In the EU, such programs play a much larger role. Moreover, the rules and objectives of agri-environmental and rural developments programs vary greatly across member states. Also, EU rural development and environment funds are fungible, and can therefore be allocated in a wide variety of ways, thus servicing a wide variety of clients.

The Environmental Treaty of the EU provides an example of how externally imposed restrictions on the issue space can influence the nature of the ultimate political bargain. One principle of this Treaty is that environmental programs must be financed in a manner consistent with the “producer pays” principle. This principle makes it difficult to negotiate a policy package in which the pollution outputs are directly targeted (cf. the third of our observed differences in section 1). If such policies were implemented, the government would be obliged by the Treaty to tax the producers that generate the negative externality, rather than subsidizing them along the lines of EQIP. Under these restrictions, it may not be politically feasible for the EU to target specific outputs. Because the United States has no such rule, it has more flexibility to design programs around which admissible coalitions can be constructed.

Other structural restrictions on the issue space do not have such explicitly external origins. One important distinction between the two regions is that in the EU, member states jointly finance the agri-environmental programs, whereas in the United States, the national programs are entirely federally funded¹⁵. Partly because of their joint financial responsibility, member states within the EU insist on the ability to tailor program specifics to meet their individual needs. Thus, in terms of the issue space, there is an implicit joint restriction on the set of negotiable policies: proposals for programs that are fully funded and centrally designed by Brussels are simply not on the bargaining table. In the United States, by contrast, individual stakeholder groups and geographic regions do not feel obliged to challenge programs that do not result in direct benefits to them, because they are not required to contribute to the financing of such programs. Consequently, the U.S. subscription rate to national programs varies greatly across the nation¹⁶.

4.2.3. What is the Mapping from Issue Space to Payoffs?

The utility function maps each policy package in the issue space to a vector of utilities, one for each of the bargaining participants. This mapping reflects the objectives of the various parties at the bargaining table, which in turn reflect the distribution across stakeholders of costs and benefits for each policy proposal. In addition to pecuniary considerations such as anticipated

¹⁴ They did carry sufficient weight to include a rule that no more than 25% of a county's agricultural land base could be enrolled in the CRP. This cap has actually been reached in many counties in the great plains.

¹⁵ One exception is the FPP.

¹⁶ e.g. The CRP has a very low rate of adoption in California.

producer profits, etc., the utility mapping depends critically on factors that are more difficult to measure, including among other considerations: the non-pecuniary benefits that farmers derive from farming; the relative weights that environmental lobbies assign to the range of environmental priorities; the use-value that consumers derive from environmental amenities. The evidence reported above clearly suggests that, in part because these less tangible considerations, the utility mappings in the U.S. and EU specifications will be quite different.

All of the factors mentioned above will also affect the nature of the social net benefit function, and hence will also play a role in any *economic* explanation of the observed differences. There are, however, *political* implications of differences in the utility mapping that extend beyond the specification of social net benefits. In particular, differences in preferences will impact the shape of the compromises that can be formed, as the parties negotiate with each other to build politically sustainable packages. For example, the nature of consumer preferences will determine, in part, the scope that rent-seekers have to build coalitions around packages that provide them with rents. Because taxpayers in the EU are far more sympathetic to the plight of farmers than are taxpayers in the United States, it is presumably easier to convince the former to support an approach to the environment that is quite closely aligned to the interests of rent-seeking farmers. Similarly, because U.S. environmentalists consider the environment to be best served when land is returned to its natural state, it is presumably easier to garner their support for programs such as the CRP, while raising prices—and hence creating rents—for the producer groups whose land is retired.

4.2.4. What are the Admissible Coalitions?

How many of the participants at the bargaining table must be on board in order for a policy proposal to become law? Are there some participants who have effective veto power? In the United States, it is generally necessary to obtain the support of the so-called traditional farm states (i.e. the mid-west), and most of the commodity organizations representing the program crops. Not all the traditional states or commodities are needed if the administration is willing to take a strong stance in the negotiations, as was the case in the debate over the 1996 farm bill, which resulted ultimately in the reform of agricultural subsidies. In the EU, Brussels plays a much weaker role than Washington plays in the United States. Moreover, the rules governing EU member state voting imply that any bloc consisting of one third of the member states has an effective veto. Because of this super-majority requirement, policy packages must be acceptable to the vast majority of member states, including those whose primary concern may not be agricultural production. This effective veto has probably enhanced the regional variability in programs, since to obtain their support, member states must be allowed to tailor federal programs to their individual needs. This in turn makes central targeting of specific environmental outputs more difficult. It also helps explain the interrelation between environmental and rural development objectives.

5. PRODUCTION, TRADE AND ENVIRONMENTAL IMPLICATIONS

Agri-environmental programs have been viewed in both the EU and United States as a way to achieve two goals simultaneously: providing income support to farmers in a trade-friendly manner, while responding to the pressures and/or opportunities that agriculture creates for the environment. In the light of these twin objectives, what are the implications of the policy differences we have been discussing?

Agri-environment programs can potentially serve as a substitute for commodity payments to farmers, benefiting trade by decoupling these payments from production. In this regard, the EU approach may have a greater potential for success than the U.S. approach. Because it focuses on land retirement, the U.S. approach is not well suited to providing support farmers who continue to farm. By contrast, the EU's focus on the complements between agricultural production and the environment may politically facilitate the continued support of active farmers through the conversion of commodity payments into "stewardship" payments. Moreover, the U.S. approach,

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with its focus on specific, measurable environmental outcomes, is primarily designed to provide short-term funding for transitions to more environmentally friendly practices, rather than long-term income support for ongoing farming in an environmentally sound way. (As we discuss below, this bias in the U.S. approach is problematic from an environmental policy perspective as well.) The EU programs, by contrast, are designed to fund ongoing farm practices that meet certain, loosely defined environmental criteria. Indeed, by one estimate (Buller, 200b), these types of programs comprise over a third of EU agri-environmental funds, and over half in a number of member states.

Whether or not agri-environment payments can effectively replace commodity payments also depends in part on the extent to which the recipients of the former overlap with the recipients of the latter. To the extent that they do not, political pressure to provide commodity payments in order to support rural incomes will not be assuaged by increases in agri-environmental payments. In the United States, many of the recipients of land retirement payments are either retired or hobby farmers, who would not otherwise receive federal support (USDA, 2001). In the EU, the degree of recipient overlap is less clear. Especially in the northern states, many farmers who receive commodity payments can (and do) also receive agri-environmental payments. On the other hand, many of the EU “rural development” payments, whether LFA compensation payments or agri-environmental funds going to extensive farming, are targeted at farmers who do not receive large amounts of commodity support. Indeed, it appears that farm interests have supported conservation payments in part to expand the claimant group—and hence strengthen the lobby for continued payments from the respective agriculture departments—rather than as a device by which to decrease existing commodity payments.

With respect to environmental goals, each region’s approach has potential costs and benefits. The U.S. focus on negative rather than positive externalities has wide-ranging ramifications. The negative externalities associated with agricultural production are generally seen as very specific, for example, soil erosion, nitrate run-off and water pollution. On the other hand, the positive externalities tend to be less easy to identify precisely, and therefore more difficult to measure, for example, aesthetically-pleasing landscape, biodiversity and cultural heritage. Because these positive externalities are hard to pinpoint, it is difficult to design policies that target them directly. For example, it is more straightforward to design and efficiently monitor a policy focused narrowly on reducing a particular type of pollution than one aimed at promoting bio-diversity.

A problem with policies that are narrowly targeted and efficiently designed to realize a specific objective is that other, perhaps more diffuse by-products of the policy tend to be ignored. Indeed, the cost of reducing one negative externality may be to exacerbate another. For example, one criticism of land retirement programs is that they have negative effects on rural development, by encouraging the depopulation of rural areas. Similarly, certain soil-erosion mitigation schemes, such as no-till, have been criticized because they increase chemical input use. On the other hand, the EU’s approach of targeting input choices may not be the most efficient method of either mitigating negative externalities or promoting positive ones. In many of the EU’s input-based programs, farmers who make the same input choices will be equally eligible for funding, even though, because of other distinguishing circumstances, their choices may result in quite different levels of the environmentally valued outputs. Suppose, for example, that one farmer is working with light soil located immediately above an aquifer while another (within the same Member State) is located much further from any water source, and is farming less permeable soil. In the EU, the second farmer can receive funds to convert to organic methods on the same basis as the first, even though conversion by the first will have a significantly greater impact on water quality. If these farmers were located in the United States and applied for funding under EQIP to undertake actions that would improve water quality, the first farmer’s application would be given priority over the second’s.

A related implication of this difference is that by targeting environmental outputs, the United States will tend to target farmer actions that have predictable (and preferably measurable) environmental outcomes. Moreover, EQIP will fund the adoption of an environmental-friendly practice, but will not compensate a farmer for ongoing expenses associated with the same practice, if it was adopted some time in the past. Also, EQIP tends to fund one-time capital

expenditures, such as manure storage facilities, windbreaks and fencing, rather than projects that require ongoing funding. Thus, the U.S. focus on environmental outputs creates a bias in favor of actions that are expected to result in discrete changes in some tangible, measurable environmental output, and against actions oriented towards either (a) less tangible, less certain or less measurable benefits or (b) the long-term maintenance of environmental outputs that are already in place. It seems entirely possible that the net marginal environmental value of the latter kinds of project exceeds the marginal value of the former. In this sense, the U.S. bias may be unfortunate.

6. SUMMARY AND CONCLUSIONS

In both the United States and EU, agri-environmental programs have been viewed as a way of transferring income to farmers while conforming to trade agreements. The two regions have, however, approached the agri-environmental nexus in quite different ways. First, programs in the U.S. have focused on the negative environmental externalities generated by agriculture, while those in Europe focus on the positive ones. Second, to the extent that the EU does acknowledge negative externalities, it focuses primarily on those generated by agricultural intensification—excessive use of non-land inputs per unit of land—whereas the United States focuses on the extensive margin—excessive use of land. Third, while U.S. conservation programs target environmental outputs such as soil erosion or water pollution, the EU targets producer actions and input choices, with the consequence that EU environmental objectives are broader and often less readily measurable.

Our analysis suggests that these differences can only partially be attributed to economic considerations.. Because EU and U.S. agri-environmental policy orientations differ so dramatically, our welfare-theoretic criterion for an economic explanation can be satisfied in both regions only if there are commensurately dramatic differences in social preferences and/or production possibilities. Certainly, differences between the aggregate factor endowment ratios in the EU and United States could potentially explain, at least in part, why programs in the relatively land-scarce European Union tend to focus on pollution caused by intensive versus extensive agriculture. However, the data we present in section 3 suggests that at the level of individual member states, there is little evidence of correlation between relative land scarcity, intensive agriculture and associated environmental problems, on the one hand, and, on the other, a high priority being assigned to the mitigation of such problems. Alternatively, variations across regions in marginal net social benefit computations may arise because of differences in consumer preferences. It has been noted that Europeans assign a higher value than Americans to traditional farm landscapes, while Americans assign a higher value than Europeans to undisturbed wilderness. This “demand-side” difference could explain in part why U.S. policy promotes land retirement, while EU policy subsidizes farmers *not* to abandon land. The plausibility of this explanation is diminished, however, by the fact that in neither region is use-value taken into account to determine funding.

We conclude from our study that political factors play a significant role in explaining the observed policy variations. We have identified a number of differences in the political economies of the two regions that may be germane. First, the distribution of political access is different. Having a direct voice at the negotiating table, the EU member states have been able to tailor agri-environmental programs to their individual needs, resulting in greater regional variation and, possibly, limiting the extent to which specific environmental outcomes have been targeted. Second, the structure of the lobbying process in the U.S. is more conducive to land-retirement programs, because each individual commodity group can to a large extent internalize the benefits of a higher price for its commodity; in the EU, by contrast, farm groups lobby through their member states, and it is more difficult to limit diffusion of the price benefits of land-retirement. Third, the issue space in the EU is larger than in the United States, including in particular rural development. The close linkage between agri-environment and rural development programs within the EU may help explain why European agri-environment programs support rural communities rather than depopulate them.

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The two approaches to agri-environmental policies have different production and trade effects. The programs in the United States will discourage production of crops on environmentally sensitive land, resulting in some decrease of those crops, however it may encourage intensification, and the commodities that are more easily produced using intensive farming methods. The EU, on the other hand, by encouraging extensive production, will presumably increase the output of those products that are best produced using these methods. The different approaches to agri-environmental policy also affect the degree to which the two regions can use agri-environmental to offset commodity payments. This difference in flexibility will, in turn, affect how easily the two regions can accept a trade agreement that mandates greater reductions in trade-distorting price supports.

If the reasons for the differences are purely due to economics, there should be gains from specialization in the two regions. If the different policies come from differences in factor endowments for example, moving to a regime of free trade should allow each country to specialize in the goods in which they have a comparative advantage, and optimal environmental policy would probably differ between the two regions. If, however, the reasons for the differences in policy are primarily political, then there may be gains from changing the domestic policy bargain through trade agreements. By harmonizing rules and restricting policy outcomes, trade agreements can limit the ability of groups to rent-sseek. Since the differences are in part political, at least partial harmonization of rules may lead to an increase in welfare.

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