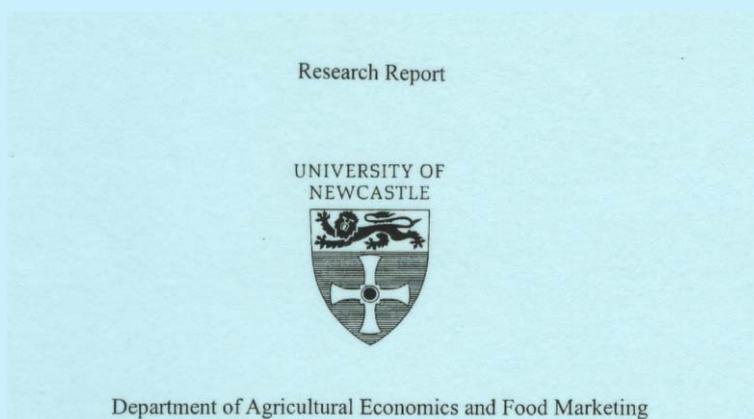# ADMINISTRATIVE COSTS IN AGRICULTURAL POLICES:

THE CASE OF THE ENGLISH ENVIRONMENTALLY

SENSITIVE AREAS

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Research Report

Administrative Costs in Agricultural Policies: the Case of the English Environmentally Sensitive Areas

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SUMMARY

This report explores transactions costs in the context of agri-environmental policy schemes based on management agreements, taking the Environmentally Sensitive Areas (ESAs) scheme as a case-study. While transactions costs are interpreted as encompassing the whole range of organisational costs of economic systems, the focus here is on the public, administrative costs of policy implementation as a sub-set. If agri-environmental schemes based on voluntary, compensated management agreements with landowners are to be extended in future, policy budgeting and evaluation should take into account the non-trivial costs of organisation, and the factors affecting the magnitude of such costs.

Empirical administrative cost functions were explored using panel data spanning five years for the 22 English ESAs. Participation rates were found to be important in explaining administrative cost variability across areas and regional administering agencies. The types of activity needed in relation to participation at different stages of the scheme's life are important explanators of cost levels. However, the influence of activity-related factors on costs must be untangled from the contribution to administrative cost reduction related to factors such as economies of scale and the effects of experience and fine-tuning to reap administrative economies. Other characteristics of ESAs such as their location within Less Favoured Areas and the number of years since their designation are also associated with differences in the organisational costs of ESAs.

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1. INTRODUCTION

The management of land for primary production in the UK is driven mainly by the aims and objectives of farmers and foresters with regard to the level and stability of their incomes. The level of agricultural support in the EU is thought to have led to rising levels of intensity of land use in recent decades, threatening widely-valued characteristics of the countryside. Although historically the provision of environmental goods has been largely taken for granted as an automatic side-effect of production, a common belief now is that environmental and amenity public goods are no longer produced jointly with primary products. Hence the development of policies seeking to encourage their provision.

The main financial cost component for many agri-environmental schemes across the EU at present, such as those implemented under Regulation 2078/92 and Regulation 746/96, relates to land-holder compensation for adherence to environmental management agreements[1]. However, the *gross* public exchequer costs encompass both payments to farmers and the organisational costs of scheme operation, which are incurred in both the public and the private sectors. Whereas only some agri-environmental schemes involve payments to farmers, all schemes, regardless of their type, cause administrative costs to be incurred by the implementing agency. Such costs are a potentially substantial component of the total policy costs borne by the public exchequer, and consideration of them should, therefore, be an important element in

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[1] The implementation of some schemes may also induce indirect changes in exchequer costs for other policies, such as agricultural commodity supports, so the net costs of a scheme should be calculated and used in any evaluation (see Saunders 1996).

policy decision-making. For example, there may be barriers to participation in voluntary agri-environmental schemes if farmers have to bear significant transactions costs related to making the initial enquiries or related to actual participation. The existence of cost-barriers may jeopardise the achievement of policy objectives[2]. So, the question, how can transactions costs be reduced, is a critical one in the agri-environmental sphere, particularly given the dominance at present of voluntary schemes.

Most governments currently fail to report the organisational costs of scheme implementation, hiding a significant element of scheme costs. This has the potential, consequently, of failing to ensure the best value for money for tax-payers. While the existence of administrative costs does not imply government failure, there is certainly a problem of invisibility at present. It is unusual to find policy evaluations in the agri-environmental literature which include them, despite widespread recognition of their importance (see, for example, Stavins 1993)[3]. Contrastingly, transactions cost analysis is well-advanced in areas such as agricultural land-leasing (see, for example, Nerlove 1996, and Allen & Lueck 1996) and food marketing chains (for example, Loader 1996) and also, increasingly, in the health management literature (for example, Ashton 1998). The underlying concern of this research is with the tendency to systematically under-state the crucial role of organisation,

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[2] Some ESAs require farmers to draw up a conservation plan, at their own expense, before management contracts may be made. However, the size of any associated legal and surveying costs is currently unknown.

[3] McCann & Easter (1998) carried out some empirical estimation of transactions costs for schemes to reduce phosphorous pollution. Whitby & Saunders (1996) for some analysis with regard to ESAs and SSSIs. A substantial amount of empirical transactions cost data has now been collected for agri-environmental schemes across eight EU member states; see Falconer & Whitby (1999).

i.e., transactions, within the policy system (and the related resource use), in most economic analyses of the provision of public goods. The transactional sphere in agri-environmental policy has received only slight empirical attention in the economic policy evaluation literature to date. Assessment is needed of the type and magnitude of administrative costs involved in policy implementation, the factors affecting them, and the implications of such costs for policy development.

In a world of scarce resources, organisational costs should be minimised whilst maintaining sufficient levels of activity to fulfil the objectives of the policy. The costs of agri-environmental schemes to public administrations are of growing contemporary importance in practical policy-making discussion; see, for example, the recent National Audit Office report (NAO 1997), which considered the organisational effectiveness of Environmentally Sensitive Areas (ESAs). This report was followed by a hearing on whether the administrative costs involved were too high. Although agri-environmental policy accounts for only a small proportion of overall public expenditure at present, its share looks set to expand in the future, hence the importance of assessing as accurately as possible the resource implications, including organisational aspects, of policy development under different scenarios. The identification of factors related to relatively high or low administrative costs could aid reductions in scheme costs to be made while still allowing policy goals to be achieved.

The focus in this research is on schemes based on voluntary management agreements between the state and private producers, which are the dominant policy approach at present across the EU. Section 2 examines

the nature of agri-environmental transactions; a conceptual analysis of agri-environmental organisation is then developed in Section 3, and used as a basis for the development of an empirical model of the administrative costs of the English ESA scheme as a case-study. Section 4 presents the results of some preliminary econometric work, and Section 5 discusses the findings in their broader context. Section 6 concludes the paper.

2. TRANSACTIONS COSTS ANALYSIS FOR AGRI-ENVIRONMENTAL POLICY

The current situation in the EU is one of the perceived under-supply of agri-environmental goods. It would be useful, therefore, to understand why under-provision exists (and persists), and then to ask how provision could be increased. A starting point for agri-environmental policy analysis lies in the breakdown of classical contracting for agri-environmental goods. An externality exists when the private economy lacks incentives to set up a market for a good (i.e., the costs of change exceed the anticipated gains), and when the non-existence of this market results in a Pareto sub-optimal resource allocation. Transactions costs are fundamental to the existence of externalities, presenting barriers to the efficient resolution of conflict through the market mechanism.

In the broadest sense, transactions costs may be defined to encompass all those costs that cannot be conceived to exist in a 'Robinson Crusoe' economy where neither property rights nor transactions, nor any kind of economic organisation can be found (Cheung 1987). Arrow (1969) defined transactions costs to be the costs of running the economic

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system. Niehans (1971) defined them as those costs that arise not from the production of goods, but from their transfer from one to another. At root are the information deficiencies faced by one or both of the transacting parties, and the costs of removing such deficiencies (Dahlman 1979, 1980). The chief reason for their existence is the degree of heterogeneity of the characteristics of the type of commodity to be exchanged; hence, for example, the need for monitoring and compliance enforcement, given the presence of opportunism.

Free-market exchange of agri-environmental assets between individuals is often prohibitively expensive, given the high search costs and co-ordination costs where the agri-environmental goods and services demanded are produced in non-separable ways by different land-owners (for example, landscape). Information costs are high given characteristics such as the variable, often highly location-specific, nature of agricultural production technology and opportunity costs, and the variable natural heritage value of any parcel of land and the potential to increase it. The complexity of the management required for both agricultural and natural heritage production, and the low observability of much management, also contributes to high information costs. Information asymmetry gives rise to significant problems. Variability in the attitudes (objective functions) of each individual land-owner means that there will be different levels of opportunism against which to safeguard. The influence of stochastic environmental factors, such as weather conditions, also means that there is a level of uncertainty inherent in agri-environmental production.

These characteristics pose significant hurdles to private contracting with regard to agri-environmental goods and services, leaving resource use conflicts frequently unresolved. Furthermore, the transactions costs that inhibited free-market provision of goods will also have implications for the cost-effectiveness of policy mechanisms to provide them, as the nature of the goods remain unchanged. If transactions costs are zero, the form of economic organisation will not influence resource allocation: firms and markets will be equally efficient (see Coase 1960, Williamson 1985). However, the real world of course, is characterised by positive transactions costs: hence, designers and evaluators of economic systems should take them into account, since their omission from the decision calculus could well result in sub-optimal policies.

Given positive transactions costs, the form of economic organisation must be chosen carefully if efficiency is to be achieved. For economic efficiency, that scheme or mix of schemes which minimises *total* costs - i.e., scheme compliance costs (the opportunity costs of producing agri-environmental goods) *and* administrative costs - should be chosen (see Williamson 1985). However, there are likely to be different trade-offs between these two components under different scheme organisational structures: consideration of either component in isolation may mean that the policy framework develops in a sub-optimal direction. Since unknown organisational inefficiencies will probably not correct themselves, it would be very useful to understand and assess the determinants of policy-related transactions costs, in order to set these costs against the effectiveness of policies later. Such work could improve policy evaluation and ultimately to improve the value for money of public expenditure on agri-environmental schemes. Administrative

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activities are vital in bringing policies into existence and running them successfully, to achieve their objectives, so given non-zero transactional costs, consideration of the organisational resource implications should be a core element of policy design.

Work on economic organisation by Williamson (1985) might guide thinking with regard to agri-environmental policy design, and provide some insights into the relative cost-effectiveness of different approaches to policy. An important hypothesis is that the organisational forms of economic systems will differ, because the constraints that arise in the production and exchange of a particular commodity vary. Given the varying characteristics of different agri-environmental goods, some policy instruments will be more appropriate than others to improve the provision of any given good.

Consider existing agri-environmental schemes in England. Governments in many countries (and especially in Western Europe) have tried to stimulate agri-environmental goods production through the development of 'administrative' markets for them. Compensation payments are made by the State in return for commitments from land-owners to manage the land in specified ways with the objective of producing environmental goods and services. The state is thus, in effect, a buyer, and landowners are sellers. Such mechanisms work primarily through 'collectivising' agri-environmental transactions, i.e., by reducing the search costs of buyers and sellers, facilitating transactions, and thus allowing improvements in the resource allocation to be made. The question, thus, is, if a 'market' is to be established for agri-environmental goods, what type of market would be best?

Rather than considering simply the *production* of agri-environmental goods, the alternative policy structures and their relative appropriateness to provide different types of agri-environmental goods can be considered from a transactional economics perspective, in terms of the degree of information asymmetry between farmers and the State, and the level of and farmer opportunism. As heterogeneity rises, in terms of both the producers opportunity costs and the attributes of the output, search and information costs rise. The challenge is to identify the transactional system that will allow production costs (or compensation costs, from the perspective of the public agency) and organisational costs to be minimised. So, for example, standard payments might be used where farms are homogenous in terms of their agricultural opportunity costs and their potential environmental outputs, but auctions of entitlements to agri-environmental payments might be more appropriate where homogenous agri-environmental contracts are being offered to heterogeneous farmers (see, for example, Latacz-Lohman & Van der Hamsvoort 1998). Targeted payments might be more appropriate where heterogeneous farmers are supplying heterogeneous goods. Table 1 summarises the existing agri-environmental schemes in England. However, note that homogeneity is a matter of degree.

However, before taking the theoretical analysis further, we need more information on the actual incidence and magnitudes of administrative costs in the agri-environmental policy sphere. The rest of this paper therefore contributes some empirical analysis for the ESA scheme to the debate.

Table 1: Instrument-Appropriateness And Producer/Production Type

	Farmer variability (in terms of agricultural opportunity costs) homogenous ⟷ heterogeneous	
Agri-environmental good variability homogenous ↕ heterogeneous	**standard contracts and payments for specified goods and services** e.g., ESA payments, differentiated according to area, where large groups of farmers in the same region have relatively similar agricultural opportunity costs	**auctions** e.g., Countryside Stewardship Scheme payments e.g., National Forest Tender Scheme
	site-specific management agreements and payments e.g., SSSI management agreements and individually-negotiated payment levels	

3. EMPIRICAL TRANSACTIONS COST ANALYSIS FOR AGRI-ENVIRONMENTAL SCHEMES

The question, how much does agri-environmental governance cost, is an empirical one. There has been considerable attention, in economic policy analysis, to the opportunity costs of agri-environmental policy at farm-level, in terms of lost production. However, virtually no analytical attention has been given, so far, to the organisational element of policy-related costs through empirical research. Scheme-related transactions costs have resource use implications in both the public and the private sectors, i.e., on both sides of an exchange, through constraining the type, and number of exchanges each can make, for example, given a wealth constraint of the buyer and a profit-maximising constraint of the seller. The main effect is thus to reduce participation in a scheme by private agents (as the privately-incurred transactions costs of participation shift the supply curve upwards) and to suppress the expressed demand (as manifest in the payments made available by the administration, on behalf of society more broadly, to farmers and landowners to supply environmental goods and services). As a result, for example, less land is entered into the scheme than would be the case if transactions costs were lower.

Like production costs, transactions costs cover a heterogeneous assortment of inputs, so a starting point is the examination of what transactions occur, and which are needed for 'effective' policy operation. The research focus here was placed on the public sector, given the large numbers and diffuseness of scheme participants. Interest lay in the marginal costs (to governments) of a policy change (for example, of

extending ESA coverage by an extra hectare), given an existing, well-functioning broader policy framework. There is a whole spectrum of institutional costs to identify and assess, but to keep the research within manageable bounds, the scope of enquiry was narrowed to the direct set-up and operating costs of schemes.

Voluntary, compensated, multi-annual management agreements with private landowners, as in the ESA scheme, form currently the most-favoured mechanism in agri-environmental policy frameworks in the EU. Their numbers have expanded considerably following the implementation of Regulation 2078/92. The mechanism used in such schemes is particularly interesting in the transactions-economics context as, in effect, it amounts to a 'quasi-market' in agri-environmental goods, requiring substantial levels of farmer/agency transacting. Table 2 summarises the principal components of administrative costs for such schemes, at the levels of both the public agency and farmer participants.

Table 2: Categories of Transactional Costs Incurred in the Implementation of Voluntary Schemes Based on Compensated Management Agreements and Cost Incidence

Main Category	Sub-Category	State agency costs		Participant costs	
		Fixed	Variable with no. of participants	Fixed	Variable, e.g., with hectares entered
Information	- surveying of the designated area	√			
	- designation of area and designing management prescriptions	√			
	- re-notification / re-design of prescriptions	√			
Contracting	- promotion of scheme to farmers	√	√	√	
	- negotiation between organisation and farmer		√	√	√
	- administration of contract (making payments)		√	√	√
Policing	- environmental monitoring and scheme evaluation	√			
	- enforcement of farmer compliance		√	√	√

Given the inevitability of policy set-up costs and other on-going evaluation and development needs, agri-environmental schemes often incur substantial fixed administrative costs at the level of any given scheme (such as the core personnel needed to direct and evaluate it), and also variable costs at the level of participation within the scheme. For example, each land-owner must be sent an initial information pack on the objectives and terms of the scheme, before negotiations over entry can start. Variable costs such as compliance monitoring through farm visits also relate to the number of participants, with each one adding to the level of overall administrative costs. Costs will be incurred through

several different activities, such as record-keeping; farm mapping; conservation plan development; processing scheme application forms; processing annual payment claims where compensation is available; and farm-visits for compliance monitoring. A problem, consequently, for the efficient administrative management for voluntary schemes lies in the difficulties of predicting changes in participation levels (particularly through new recruitment each year), which are important drivers of costs, despite the existence of substantial fixed components to the running costs of schemes.

The relative importance of the main, direct transactional cost components borne by the public sector for the schemes currently operating in England under Regulation 2078/92 is displayed in Table 3. All of these schemes are at different stages of implementation and show wide diversity in their direct demands for administrative resources. The variation is, of course, partly related to the nature of individual schemes, but reflects mainly the life cycle of scheme development. As time passes following scheme introduction, payments to farmers as a percentage of total scheme costs tend to rise, and the proportion related to monitoring and running costs falls. New schemes typically require fixed-cost development-type administrative activities in their first year, as the details of implementation are finalised and the scheme is set up, rather than the transactional activities relating to land-owner participation. Transactional activities rise in relative importance once participation increases. After the set-up period, payments to participants begin to flow, and although monitoring and running costs become quite significant in absolute terms, the relative importance of administrative costs dwindles rapidly. However, if the scheme does not attract many farmers,

administrative costs may remain relatively important (for example, as demonstrated by the Moorlands Scheme and the Conservation, Habitats and Access Schemes). The ESA is the major agri-environmental scheme in England, in terms of its coverage and expenditure, and is examined in more detail below.

Table 3: Percentage of Total Policy Expenditure Accounted for by Components for Six Regulation 2078/92 Schemes in England, 1995/6

	Percentage of Overall Policy Expenditure, 1995/6						
	All	ESAs	NSAs	Habitat scheme	Organic Aid scheme	Country-side Access	Moor-land Scheme
Payments to farmers	71.2	82.6	67.2	55.1	57.4	16.8	0
Running costs	19.9	12.4	20.5	33.0	27.7	74.8	100.0
Environmental monitoring costs	9.0	5.1	12.3	11.9	14.9	8.4	0

Source: House of Commons (1997). NB no data were reported for the Countryside Stewardship Scheme.

3.1. The English ESA Scheme

The ESA scheme is targeted on those areas of the country which are of national environmental importance, and is designed to achieve high levels of take-up and widespread environmental gains in such areas. It is complemented by the Countryside Stewardship Scheme (CSS), which is available on all types of land outside ESAs, subject to the environmental priorities determined each year (in each region) and available funding. Since 1996, MAFF has had responsibility for both schemes [4], and hence the flexibility to ensure that resources are allocated to each scheme most cost-effectively.

The aim, in general, of the ESA scheme, is to maintain and re-create environmental or landscape features. Prescriptions relate to management for stone-walls, hedgerows and unimproved grassland, limiting or avoiding the use of fertilisers and pesticides, and allowing winter flooding to occur. Management agreements relating to the basic tiers require farmers to maintain the land in its present state through conversion to traditional farming systems; further intensification is strongly discouraged. Management agreements in the enhancement tiers require farmers to revert to more traditional and less intensive methods of managing the land, in return for higher payments. The tier structure, management prescriptions and payments are unique to each area. In twelve of the twenty two areas in England, farmers are obliged to enter all their land into the scheme, if they wish to participate in it. In ten areas, farmers are obliged to enter only their grassland, or can choose

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[4] The Countryside Stewardship Scheme was administered by the Countryside Commission in its pilot phase.

which parts of their farms to enter, in order to participate. The scheme is focused on agricultural land; other land uses are not eligible for grant payments. Farmers are also obliged to have regard for environmentally-significant features such as marshes, ponds and woods, though they are not generally required to maintain them in a particular way. They may apply for grants towards the cost of such capital works. However, beyond this, there is little provision in the scheme for encouraging environmentally-friendly arable farming, in particular: for example, there are no tiers to encourage the reduced use of fertilisers and pesticides on arable crops [5].

The 1996 review of the first five ESAs concluded that the scheme had generally been successful in maintaining the traditional character of the landscape and arresting environmental decline, and in particular the ploughing up of grasslands had been halted (NAO 1997). However, it is still too soon to see statistically significant evidence of ecological restoration and enhancement. The ESAs also varied considerably in the extent to which they had suffered environmental damage before designation. For example, the landscape and ecology of the Pennine Dales was considered to be relatively undamaged, containing some of the best examples of hay meadows in the country and a largely intact characteristic pattern of stone walls (*ibid*.). The situation of this area contrasts with other areas, especially in the South and East of England, which had been more seriously affected by intensification over the last fifty years. For example, in Breckland, most of the traditional habitat

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[5] Some areas include tiers to encourage farmers to avoid spraying the margins of fields containing cereal crops, but these tiers are costly and bureaucratic to administer as the position and length of such margins varies from year to year as crops are rotated (NAO 1997).

had already been destroyed, and the few surviving areas of lowland heath represented only 9% of the total area.

The ESA scheme is the largest agri-environmental scheme administered by MAFF in terms of total expenditure. Table 4 shows the absolute levels of public expenditure on the ESA scheme over time. While compensation costs have risen each year, with participation increases and payment rises, administrative costs have fluctuated around £12m each year, rather than rising in line with participation. A complication is that different ESAs have experienced different participation changes at different times, given the different years in which they were designated, as well as varying levels of popularity of the scheme in the different areas. The ESA scheme was the earliest one based on voluntary, compensated management agreements, and since its introduction it has been extended substantially, especially in 1992/3 after the implementation of Regulation 2078/92 by the UK government and a major scheme review by MAFF. Its recently-recorded administrative costs therefore include a full mixture of all administrative activities from setting-up costs through to detailed monitoring. Still, relative to the main agricultural schemes that MAFF administers, total expenditure on the ESA scheme is relatively small, at only a few per cent of overall expenditure in the agricultural sphere in England [6].

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[6] For example, in 1995/6, in England, arable area payments amounted to around £1,400m, sheep annual premium to £200m, beef special premium to £150m and suckler cow to £120m (MAFF/IBAP 1996).

Table 4: The Absolute Levels of the Public Costs of ESAs in England, 1992/3-1996/7, £m

	1992/3	1993/4	1994/5	1995/6	1996/7 (estimated)
Payments to farmers	10.9	16.5	20.1	29.1	32.5
Administration	11.1	13.9	12.2	13.3	10.1
Gross Costs	22.0	30.4	32.3	42.4	42.6
Recovered from EU	*2.0*	*12.7*	*9.6*	*13.3*	*14.2*

Source: NAO (1997).

Between 1987-1991, around 24% of the total reported costs of the first round of ESAs in England related to administration (NAO 1997). In 1995/6, by which time twenty-two ESAs had been implemented (twelve within the past two years), the total administrative costs of ESAs (summarised in Table 5), at £13.3m, amounted to 46% of the grants paid to farmers. Costs relate to activities in three main organisations: MAFF headquarters (overseeing, evaluating and developing the operation of the scheme), the Agricultural Development and Advisory Service (ADAS, now the Farm and Rural Conservation Agency (FRCA)) in providing assistance for farmer applicants, and carrying out environmental, and in the regional offices of MAFF (the Regional Service Centres, RSCs) in relation to the administration of applications.

Table 5: Administrative Costs for the English ESAs, 1995/6

	£m
ADAS / FRCA management	5.9
ADAS / FRCA environmental monitoring	3.3
MAFF RSCs	1.6
MAFF head-quarters costs	2.5

Source: NAO (1997).

A substantial proportion of the overall scheme organisational costs relate to the use of ADAS/FRCA project officers, which has been argued to be

a key element of scheme success. Project Officers liaise with private landowners and set-up management agreements to achieve changes in farm management: they visit farms after an application has been received by the RSC, advising farmers on which tiers to enter and how to comply. Such activities are very important in terms of raising farmer awareness of the scheme: project officers produce newsletters and hold one or two meetings a year (House of Commons 1997:46). There may well be an important role of project officer involvement in reducing private information costs (for example, relating to the choice of conservation management actions), and thus removing some barriers to scheme participation.

RSC management costs relate to scheme administration, processing claims, applications, issuing agreement letters, compliance monitoring, and dealing with disputes. Applications require significantly greater staff resources to process than payment claims (NAO 1997), and as the number of each varies significantly between different ESAs, there will be different degrees of economies of scale. The NAO (1997) noted that local variations in processing times between RSCs did not appear to be explained by differences in the complexity of ESAs and the length of time they had been established, suggesting that more idiosyncratic factors should be examined, at the level of each RSC.

Provision is also made by MAFF for visits to a fairly high proportion of participating farmers each year in ESAs, although in the past the visit rate has varied significantly across RSCs. This requires substantial field officer involvement. Each of the nine RSCs has, until recently, been required to check 20% of management agreements annually for

compliance; a 5% checking level is required under EU Regulation 746/96) and rates are now falling to come into line with this. The NAO found that the actual rate of compliance checking varied widely, from 14-42% of participants in any year, with eight out of nine RSCs over-checking relative to the target of 20% of participants (overall 25.8% were monitored in 1995/6). Furthermore, the NAO (1997) suggested that compliance-monitoring tasks could be linked more closely to key priorities and environmental risks. The proportion of agreements monitored where non-compliance was suspected has recently increased (from 16.7% in 1995 to 18.95% in 1996). The identification of risky management agreements (for example, according to whether the claimant is new to the scheme, the size of the claim, the amount of this relating to enhancement tiers, any changes in the agreement and the number of years since the last check) could lead to potential savings of £100,000 per year without reducing the effectiveness of compliance (*ibid*.).

ADAS devised the environmental monitoring programme for ESAs in 1987, and has since been responsible for implementing it. For each ESA, land cover, landscape, plant and bird life, and historical and archaeological features are covered. Given that few large-scale monitoring projects of this kind had been attempted before, there were few comparables for ADAS to draw upon, so it had to pioneer new monitoring and analytical techniques (NAO 1997). The botanical monitoring approach in particular requires considerable resources, as selected sites are assessed in great detail. The Countryside Commission and English Nature, in contrast, favour more extensive surveys, which are much cheaper and enable larger areas to be covered relatively quickly (*ibid*.).

3.2. A Conceptual Administrative Cost Model for the ESA Scheme

A conceptual model of factors affecting the magnitude of administrative costs for the English ESA scheme is developed below, followed by some testing through the econometric estimation of administrative cost functions (Section 4). Some of the factors likely to affect the organisational costs of agri-environmental policies such as ESAs are summarised in Table 6. It is useful to draw the distinction between fixed and variable transactions costs, particularly in terms of set-up, contracting and monitoring. The early years of any scheme would be expected to have relatively high costs relating to set-up, as discussed earlier in relation to Table 2[7]. After introduction, other fixed costs relating to scheme evaluation and development will remain. Given the existence of substantial fixed (set-up) costs, economies of scale may also be important; some transactions costs may be independent of the area entered into the scheme, or of the amount transferred. At the aggregate-level, staffing input was expected to decline after the first two ESA designation rounds to reflect the switch from start-up activities to the more routine administration of schemes.

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[7] Another potentially-important factor relates to re-designation. The first two rounds of ESA designations were reviewed in 1992/3 and consequently some were revised and extended (for example, the Pennine Dales ESA increased from 15,960 hectares in 1987 to 46,000 hectares in 1992) (Whitby 1996).

Table 6: Factors Affecting the Level of Administrative Costs For ESAs and Other Schemes Based on Voluntary Management Agreements

Independent variable	Scheme set-up	Contracting	Compliance monitoring and enforcement
Number of participants, both cumulative numbers and new entrants in any year		↑	↑
Level of promotional efforts	↑	↓?	↓?
Geographical characteristics such as remoteness of farmers, ecological variability, location within an LFA	↑	↑	↑
The area of common land contained within the ESA		↑	↑
Area entered into the scheme(total and per farm)		↑	↑
Positive farmer attitudes towards conservation		↓	↓
Levels of entry into the scheme and stringency of requirements	↑	↑	↑
Entry requirements such as whole farm entry		↑/↓	↑/↓
Participation of farmers in other schemes		↑/↓	↑/↓
Number of years since scheme's introduction		↓	↓

Interest lies primarily in the characteristics of individual ESAs, such as the size of their eligible areas and the number of eligible farms contained within them. A greater number of land-owners potentially eligible to enter the scheme would be expected to entail more administrative work. Costs relate both to those landowners who actually participate, and those who do not, as costs may still be incurred in relation to the latter through answering inquiries and promotional activities by the implementing agency. Trade-offs may exist between different types of scheme-

organisational expenditures. For example, greater expenditure on scheme promotion and farmer information may allow savings to be made on agreement negotiation or enforcement, given improved understanding of requirements and objectives, and perhaps improve the level of conservation benefits achieved as a result of scheme participation (particularly in the longer-term). Socio-economic studies conducted by MAFF in 1996 of farmers participating in ESAs found that continuing promotion of the scheme (in addition to the availability of financial incentives) was a significant factor influencing farmers not to revert to more intensive farming (NAO 1997).

Locational factors should be considered. For example, the overlap of the ESA with a Less Favoured Area (LFA) could increase administrative burdens given greater geographical remoteness. However, at the same time, scheme participation may be considered by farmers to be relatively favourable, compared to assessment for other areas, given the agricultural income situation, with the consequent easier negotiation of management agreements and reduced administrative demands. The inclusion of a substantial area of common land in the ESA may increase administrative costs through increasing the complexity of negotiating management agreements (a consensus of all land-owners holding rights over the commons is required for such land to be entered into the scheme).

A more complicated scheme, with more management options, is likely to raise the costs of negotiating and enforcing agreements. More stringent requirements (higher costs to land-owners in terms of foregone production) mean that for any given probability of detection, cheating is

more rational, raising enforcement costs. Farmers with more positive attitudes towards the scheme and its conservation objectives might be expected to be more co-operative, reducing the transactional costs of establishing management agreements and the costs of monitoring and enforcement. The broad co-operation of entrants with the agency would mean that environmental agencies could rely far more on self-enforcement, thus reducing enforcement-related transactions costs, although this would depend on the visibility of non-compliance and the extent of peer pressure. Farmers with more positive attitudes towards conservation schemes (profit-satisfying rather than profit-maximising) should be less likely to cheat. Attitudes may be linked to income levels or production type.

Requirements such as whole-farm entry may complicate or simplify the negotiation of management agreements. For example, the whole farm area must be entered into the contract in the Lake District ESA; for others, such as the Broads, plots of the farm may be entered. Given that some of the costs of entering land into the scheme are fixed (for example, relating to making initial enquiries), the basis for entry might be expected to affect scheme transactions costs on a per-agreement or per-hectare basis. There may be some positive spillover effects from the implementation of other, related policies. Total transactions costs might not increase in a linear way with the number of additional schemes as the costs of some activities (such as the initial surveys, ecological monitoring through farm visits and so on) can be shared. Alternatively, however, administration costs may be increased through the need to co-ordinate schemes and prevent overlap, double payments, etc.. Costs might be expected to fall with experience for both farmers and the

administrating body, and as the types of administrative activities change. Idiosyncratic factors such as staff turnover levels or competence levels will affect administrative efficiency.

Some general factors expected to affect administrative cost levels might be summarised:

- scheme transparency and the ease with which environmental management requirements are understood by farmers, without needing recourse to expert, professional advice
- the observability of compliance with the environmental management requirements (linked to the nature of the agri-environmental goods to be provided)
- scheme objectives and the degree to which these are pursued (i.e., the difference between simply giving farmers compensatory payments, which is very easy, and making sure that they actually change their management practices to generate environmental benefits).
- the degree of targeting and site-specific negotiations (given the likely trade-offs between compensation and organisational costs)
- the regularity of agency - participant interactions, for example, compliance monitoring targets
- the potential for economies of scale, given substantial fixed costs of scheme set-up
- the time since scheme implementation, linked both to the activities required for scheme administration and the likelihood of fine-tuning and efficiency improvements from the experience gained by the implementing agency in the earlier stages

- the technology available for monitoring and administration (e.g. geographic information systems linked to databases to avoid any duplication of payments under different but related schemes)
- farmer attitudes and understanding (affecting the level of monitoring and enforcement activities needed)

3.3. Empirical Models of the Administrative Costs of ESAs

The aim of the econometric work was to estimate administrative cost functions for the English ESAs based on the empirical data available, to test some of the hypothesised relationships between costs and scheme structure and participation in Table 5. However, no data were available on some important variables such as staff competencies, the number of enquiries that failed to result in a signed management agreement and the geographical diffusion of participating or interested farmers and their attitudes to conservation. In addition, it was impossible to include data on the levels of entry into different tiers of the scheme (and particularly, the relative popularity of basic versus enhancement tiers)[8]. The costs of negotiating and enforcing agreements, on a per-agreement or per-hectare basis, would be expected to be higher where more land is entered into higher tiers (although the ratios of administrative costs to compensatory payments may not change much as compensation would rise too) [9].

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[8] However, information for each ESA on the number of hectares entered into each Tier for two of the five years, 1994/5 and 1995/6, indicated the dominance of basic-level participation in the scheme.

[9] It is important to remember, though, that entry into higher tiers is constrained by the area eligible for such entry, which may be a fairly small proportion of the area eligible for basic-tier entry.

A hurdle for empirical analysis was that the administrative costs incurred in direct relation to the ESA scheme, for tasks such as policy set-up, monitoring and enforcement are generally not precisely costed[10]. Ideally, the direct costs for any scheme need to be assessed along with the indirect costs (such as a proportion of the central government overhead costs). There are a number of challenges in measuring organisational costs, for example, the separability of administrative functions at the level of any particular agency is often limited; government agencies carry out many different activities, with a consequent difficulty in apportioning costs to any specific one of these. Consequently, most reported administrative costs are at very high levels of aggregation. In addition, the incidence of scheme administrative costs begins before farmers sign contracts, and continues beyond the end of their participation.

There are at least two parties to every scheme-related transaction, i.e., the land-holder and the state agency; most attention is focused on the latter in this paper, although farm- and farmer-specific factors are expected to be very important and as such are identified as a key area for future work. Access to individual files on participating farms was not possible, nor was obtaining information directly from farms through a survey, given resource constraints. Instead, aggregate administrative cost data was obtained from MAFF officials, disaggregated across the twenty-two English ESAs, for the years 1992/3 to 1996/7. Costs were given as three main components: management costs (ADAS / FRCA and RSCs), monitoring costs (ADAS/FRCA environmental and socio-economic surveys), and other over-head costs relating to the MAFF Conservation

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[10] In addition, policy advisory bodies (such as the National Farmers' Union) incur costs too, especially in the policy set-up phase.

Management Division and the Economics Unit (including, for example, the costs of carrying out socio-economic surveys as part of the evaluation strategy).

The headquarters data were of two types: overhead (fixed) staff costs which were allocated equally over all the ESAs, and costs relating to policy development in the economics unit which were allocated on the basis of the specific tasks undertaken in each ESA.

The functions of the RSCs and ADAS/FRCA are closely linked and both are involved in interactions with farmers. The cost estimations were slightly problematic as both bodies are involved in non-ESA work, requiring some apportionment to be carried out based on estimates of the time spent on ESA-related work. ADAS/FRCA management costs were based on actual recorded time, from 1992/3, specified for different activities relating to each ESA. RSC management costs were allocated from 1993/4 on the basis of actual time-recording for each activity type. Formal time recording procedures were not in place in 1992/3, and since some RSCs managed more than one ESA, time breakdowns across ESAs were based on data relating to the breakdown of work in ADAS/FRCA. Staff hours per ESA in each year were then multiplied by a notional staff cost, based on the overall MAFF payment for ESA management to each RSC and ADAS branch, divided by the total staff in each branch. This staff cost varied with time, according to chances in the budget allocated to each unit. Staff costs included travel and subsistence, but no allowance was made for accommodation and other overheads (de Bolla, MAFF, pers.comm. 1999).

The ESA-level administrative-cost data provided by MAFF were disaggregated from data recorded at the level of regional offices; hence, analysis at the RSC level may throw more light on the issue of scheme administrative cost levels and their variability compared to analysis at the ESA-level. Nine RSCs administer the twenty-two ESAs, as shown in Table 7. The NAO (1997) analysed the time taken by RSCs to process applications and claims, and found this to be very variable, with little, if any, correlation between the time taken by ADAS/FRCA regional offices and the RSCs. The differences did not appear to be explained by differences in ESA complexity and the length of time of establishment. There has been little formal comparative analysis, to date, of the relative efficiency of the MAFF RSCs or ADAS/FRCA regional offices in administering ESAs. Annual management reports give budgets and staff resources, but without relating them to workloads; performance indicators are needed. However, different RSCs may deal with ESAs of different complexity; differences between ESA requirements, such as whether parts of the farm, rather than the whole farm, can be entered should be considered too.

Table 7: ESA and RSC Links

RSCs	ESAs	Year of Designation	No. of ESAs	No. of ESAs in an LFA	Total designated hectares
Northallerton	Pennine Dales	1987	1	1	55,769
Reading	South Downs Test Valley North Kent Marshes Avon Valley Upper Thames Tributaries	1987 1988 1993 1994 1994	5	0	119,922
Bristol	Somerset Levels & Moors South Wessex Downs Exmoor	1987 1993 1993	3	1	154,752
Cambridge	Broads Breckland Suffolk River Valleys Essex Coast	1987 1988 1988 1994	4	2	219,585
Exeter	West Penwith Dartmoor Blackdown Hills	1987 1994 1994	3	3	149,078
Crewe	Clun South West Peak Shropshire Hills	1988 1993 1994	3	2	93,741
Nottingham	North Peak	1988	1	1	54,885
Carlisle	Lake District	1993	1	1	245,382
Worcester	Cotswold Hills	1994	1	0	85,739

Source: MAFF, unpublished data.

As an example, the NAO (1997) found that the average staff time required for each agreement actually concluded ranged, across all of the English ESAs, from eight hours in Somerset to 39 hours in the Essex Coast ESA. Some differences probably relate to questions of geography, particularly differences in travel time for officers who have to go out and examine farms (for example, the land eligible to enter the Essex Coast ESA is quite spread out geographically) (Packer, evidence to the Public

Accounts Committee, 1998). The newness of any specific scheme is also a factor, linked to farmer attitudes; scheme acceptability may well increase with time as farmers gain understanding and experience of it, with implications for the promotional activities needed over time. There may also be behavioural differences and differences in the strength of the available financial incentives related to the predominant type of agriculture in the designated area and its income levels. For example, in Somerset, there is a general consensus that the scheme is favourable, but there is much less consensus in Essex (*ibid*.).   Consensus or lack of it may impact on the costs of persuading farmers to participate and reaching agreement on contracts. Differences such as the requirement for agreement-holders in some ESAs to commit the whole farm to the scheme, or the extent of common land, are also likely to affect agreement processing time through increasing the complexity of negotiations. Finally, there may be intrinsic differences between RSCs, related to staffing levels and competencies. It is important to beware of 'noise', for example, at the RSC level, related to staff turnover, or sick leave and a sudden loss of expertise.

A number of *caveats* to the use of the administrative cost data must be borne in mind. MAFF adopted fairly rudimentary methods to attribute some overhead costs to each ESA, since this has not so far been necessary for financial management purposes. The reported costs do not include the costs of support services, accommodation and so on, and were spread equally across all ESAs. The relative crudeness of the data must be stressed; in particular, some of the ESA-level data were disaggregated from higher-level estimates and to that extent are of

spurious precision. Thus, caution with highly rigorous statistical analysis is needed, given the quality of the data [11].

Furthermore, links between explanatory variables should be considered and acknowledged where they exist, with the exercise of caution subsequently in interpreting results. For example, the numbers of hectares entered under the scheme and the number of agreements made would be expected to correlate reasonably well, if farmers of similar sizes tend to enter a similar proportion of their land into the scheme. The numbers of both new and existing agreements are likely to be a function of the number of years over which the ESA has been in existence, as well as factors such as the degree of promotional efforts by project officers, and the level of compensatory payments relative to foregone incomes. Generally, the number of new agreements falls as time elapses following designation, and the cumulative number of agreements of course rises. A limitation to the data is that only information on the net change in numbers of agreements and hectares is known, rather than the break-down of how many agreements ceased to exist and how many new agreements were established in any particular year. Monitoring and enforcement efforts may also be linked to promotional efforts where the latter impact on farmers' understanding of what is required of them to fulfil the agreement conditions [12].

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[11] For example, the usual battery of tests for heteroskedasticity, auto-correlation and multi-collinearity have not been performed, on the grounds that these would work at a level that cannot be justified given the quality of the data.

[12] Land Use Consultants (1995), in their evaluation of the Countryside Stewardship scheme, found that in some cases non-compliance was due to inadequate understanding and conservation skills development by farmers in the scheme.

Several different administrative cost models were investigated using the MAFF data-set, with total administrative costs, costs per hectare entered into the scheme, average costs per agreement under the scheme and the ration of administration cost: compensation as dependent variables. Administrative costs were normalised for some measure of their output using data on the payments made to farmers, to give some notion of what might be being achieved in terms of agri-environmental policy objectives. However, this approach is only valid to the extent that there is a link between foregone agricultural income and environmental benefits (or absence of dis-benefits). Taking the ratio of administrative costs to compensation paid to reflect a measure of scheme success (as characterised by the transfer of money to farmers) is a very crude simplification, but it might be considered useful given that there no other, general measures of scheme output are available at present for all 22 ESAs. There is no certainty that such a relationship exists, or if it does, that it is linear; furthermore, the lags in the appearance of conservation benefits give rise to problems when trying to link them to administrative activities.

Careful interpretation of the figures is essential. For example, scheme payments per hectare tend to be lower in LFAs, as the private opportunity costs of agricultural production are generally lower in these areas than in lowland regions. However, it may well be that the costs of setting up and servicing management agreements are to some degree fixed, regardless of which ESA is under analysis (similar procedures must be followed across all ESAs). Thus, a relatively high ratio of administration to compensatory costs would be expected, although this is not necessarily indicative of low efficiency. The analysis is tightly

constrained in this respect, in that we do not really know yet the value of the environmental improvements secured through management agreements, and how these vary across time and space [13].

It is also important to remember that agreements may be terminated after the first five years, although the intention of MAFF is for contracts to run for ten years. The Stage I and II ESAs ran only for five years initially, but agreements since 1992 have all been made for ten years. The majority of Stage I and II ESA participants applied to join the relaunched schemes. All the first and second round ESAs were evaluated at the end of their first five years, so a sudden increase in administration costs might be expected at this stage. At the five year review point, MAFF carried out a major policy review, and relaunched the schemes, often extended with new options (Harrison, MAFF, pers.comm.) [14]; the Stage III and IV ESAs may or may not experience a similar 'blip' in their administrative cost time-profiles.

Administrative costs were also investigated through econometric modelling at the level of the RSC. Costs for any RSC, in any one year, should be a function of those factors discussed above, in addition to factors such as the number of ESAs administered by the RSC and their

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[13] NB Published ESA monitoring reports are now starting to be available from MAFF; these report on the schemes' environmental achievements, at the level of each individual area.

[14] For example, in May 1993, options were introduced for providing access with enhanced payments for farmers with at least five years still to run, on arable land with no existing rights of way. However, it was not really possible to include such changes in the model. The introduction of a paid access option is not thought to have had a significant impact on running costs, but there are a substantial number of other changes that will have had some effect (Harrison, MAFF, pers.comm.).

complexity, and the number of ESAs introduced in any year (requiring extra set-up and promotional activity).

The econometric analysis presented below was based on the estimation of linear multiple regression functions. However, a linear form is not necessarily appropriate so other functional forms were explored. For example, administration costs may have a non-linear relation to the number of agreements made under the scheme. One question, for example, is whether there might exist administrative economies of scale, linked to the numbers of agreements made under the scheme for a particular ESA or RSC. Such economies would be expected given substantial fixed costs. Log-linear regression functions might be appropriate to capture relationships involving economies of scale, where these are present. Similarly, indicators such as the ratio of administrative costs to compensation payments may also have a non-linear relationship with time. Average administration costs per agreement may have a non-linear relationship with the amount of common land in an ESA; as the area of common land (as a proxy, implicitly, for the number of potential participants) increases, agreement negotiation may become more and more costly. However, average costs may not fall as the number of agreements made rises if there is an upwards-sloping supply curve of conservation goods. Compensation is based on estimated average foregone incomes; some low-cost participating farmers will thus acquire rents, while others will find that their costs (of lost agricultural production) are not fully covered (NAO 1997). Low-cost, straightforward agreements would be made first, with later agreements becoming steadily more complex or harder to negotiate. Thus there are

two countervailing forces at work. A range of different regressions were therefore fitted to the data and compared.

3.4. Limitations to the Analysis

An inherent limitation to this analysis is that administrative expenditures do not necessarily reflect the quantity and quality of administrative activity, either in terms of that administration actually carried out or in terms of that effort thought to be required for efficient running of the scheme. Expenditure will depend to a large degree on how well RSCs (and MAFF head-quarters) forecast farmer participation and administrative resource needs relative to the likely workload in each year. Prediction and budgeting are never perfect. For example, in 1995, expenditure forecasts had to be drastically revised (Hansard, 6th February 1996). Unfortunately, there is little available information on how satisfactory staffing levels and competencies are, despite the impact of these on the overall efficacy and efficiency of scheme organisation (see NAO 1997)[15]. Changes in staffing should be dynamic, reflecting the changes with time in administrative workloads following ESA implementation.

Thus, caution should be exercised when interpreting administrative cost data of the type presented here. Critically, the public budget setting process and constraints upon this means that administrative inputs are unlikely to be optimal at any given time. Inflexibility in administrative structures must be considered, such as the fact that commonly staffing

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[15] See for example, Land Use Consultants (1995) with regard to the Countryside Stewardship Scheme.

adjustments are only on a yearly basis. Furthermore, the varying calibres of staff inputs must be taken into account, when evaluating administrative performance; quality differences are not necessarily reflected in wage costs since these are influenced by wider economic forces.

Finally, the absence of information on the private transactions costs of agri-environmental schemes must be noted. However, a reasonable assumption is that such costs will be covered by compensatory payments, as they must be where farmers are not altruistic. Thus, the methodology used in this analysis results in a downwards bias (to a currently unknown extent) in per-hectare and per-agreement figures for administrative costs. The figures used here to represent transactions costs are incomplete as they represent only those costs recorded by the public agency. Administrative cost indicators based on the ratio of administrative costs to compensation costs are doubly biased, as the denominator is likely to include some element of the organisational costs incurred by farmers.

4. RESULTS

4.1. ESA-Level Analysis

The relationships between the dependent and the independent variables at the level of the individual ESA are summarised below, using simple multiple regression models with no interaction effects. Panel data for five years (1992/3-1996/7) were used (110 observations). Table 9 gives r-squared values (as an indication of the goodness of fit of any given model). All the functions estimated had statistically significant r-squared values ($\alpha = 0.05$). Table 10 shows the regression coefficients significant at the 95% and 90% confidence levels for the four functions.

Table 9: R-Squared Values for the ESA-Level Linear Regressions

Dependent Variables	r squared	f	df	n
total administration costs per ESA	0.596	30.68	104	110
administration costs per hectare	0.278	4.616	84	110
administrative costs per agreement	0.327	5.749	83	110
administrative costs as a ratio to compensatory costs	0.251	4.75	85	110

Table 10: Coefficients for Independent Variables Found to be Significant at the 95% and 90% Confidence Levels for the ESA-Level Administrative Cost Functions

£	Total existing agree-ments in any year	No. of new agree-ments in any year	Area of common land in the ESA	Total eligible area of the ESA	ESA located in a LFA	Years since design-ation	Whole farm entry
Annual admin. costs per ESA	495.7	2020.5		2.9	137,293	-	-
Average annual admin. costs per hectare entered into the scheme	-0.1[*]		0	-0.0			-48.1[*]
Average annual admin. costs per agreement made	-4.2				1,126.7[*]	-186.9[*]	
ESA admin. costs as a proportion of compensation paid in each year	-0.1	0.5[*]	-0.0				-

[*] significant at the 90% confidence level. - : not included as an explanatory variable in the model.

Each existing agreement under the scheme appears to increase total annual ESA-level administration costs by around £497; each net new agreement made appears to increase these costs by around £2,020. There are substantial differences between the costs of setting-up and of maintaining management agreements; far more intense project-officer input is required during the agreement set-up phase than during the implementation of the agreement, with important implications for the time profile of the administrative costs of ESAs. The total administrative

cost regression suggested that the marginal cost of extending the ESA scheme in terms of land coverage is around £2.9 per hectare. Location within an LFA also appears to be important, raising overall ESA administration costs by around £137,000. The particular RSC administering the ESA appears unimportant; none of the RSC dummy variables were found to be significant explanatory variables so the results of estimations including them are not presented here.

The area eligible for ESA entry had a significant but very slight negative effect on average annual per-hectare administrative costs, suggesting the possibility of economies of scale related to ESA coverage. The area of common land had a significant but very slight positive effect on costs, as might be expected if common-land requires more costly negotiation to bring it into the scheme. The requirement of whole-farm entry into the scheme was found to reduce average annual per-hectare costs by around £48/hectare; this may be linked to economies of scale (some costs of entry are fixed, regardless of the area of the farm entered). It also removes another issue from negotiation. Another potential explanation is if ESAs requiring whole-farm entry tend to be located in areas where participation in the scheme is generally favourable, given the relatively low opportunity costs of agricultural production; agreement negotiation may then be more straightforward and so less costly.

The number of agreements in existence in any one year appeared to have a negative effect on the average annual administrative costs per agreement under the scheme. This relationship may well be explained by the fact that agreements cost far less to maintain than they do to establish. The number of years since ESA designation had a negative

effect on average costs (although at a lower significance level), with average annual costs per agreement falling by around £190 per year. Again, this may reflect the switch in the administrative activities required from costly agreement set-up to less costly agreement maintenance. At a similar level of significance, there appeared to be a positive effect (of around an extra £1,100 per agreement) of location within an LFA on administrative costs.

Finally, with regard to the ratio of administration costs to compensation payments in any year (i.e. the costs of transferring £1 of compensation to farmers), the number of existing ESA agreements appeared to have a negative effect, while new agreements had a small positive effect (again, related to the lower costs of maintenance compared to set-up). There also appeared to be a significant but very slight negative effect of common-land. This observation is harder to explain and might relate not to the common-land *per se* but to the correlation of this variable with other factors such as the level of foregone agricultural income, the favourable nature of entry into the ESA and the consequently lower costs of negotiating such entry with farmers.

4.2. RSC-Level Analysis

The relationships between the dependent and the independent variables at the level of the individual RSC are summarised below, using simple linear multiple regression models with no interaction effects. Panel data for five years (1992/3-1996/7) were used (45 observations). Table 11 gives r-squared values. All the functions estimated had statistically significant r-squared values ($\alpha = 0.05$). Table 12 gives the regression

coefficients significant at the 95% and 90% confidence levels for the regression models estimated.

Table 11: R-Squared Values for RSC-Level Linear Regression Functions

	r squared	F	df	n
total administration costs	0.536	6.115	37	45
administration costs per hectare	0.404	2.799	33	45
administration costs per agreement	0.639	7.296	33	45
administration as a ratio of compensatory costs	0.407	2.830	33	45

Table 12: Coefficients for Independent Variables Found to be Significant at the 95% and 90% Confidence Levels for the RSC-Level Cost Functions (t values in parenthesis)

£	Total existing agree-ments in ESAs each year	New agree-ments each year	Average years the ESAs had been running	Total eligible ESA area	Area of common land	No. of ESAs in LFAs	No. of ESAs per RSC	No. of new ESAs in any year
Total annual admin. costs per RSC		1,496.9 (2.64)	-				112,941.1* (1.83)	
Average annual admin. costs per hectare			-9.3* (-1.72)					12.6 (2.07)
Average annual admin. costs per agreement	-5.2 (-5.27)	-5.1 (-2.48)		0.0 (2.29)	-0.1 (-2.35)			
Admin. costs as a % of payments made in each year			-1.0 (-3.04)			-1.2 (-2.02)	-0.7 (-1.81)	

* significant at the 90% confidence level. - : not included as an explanatory variable in the model.

The number of new agreements made for ESAs within each RSC's administration was a statistically significant explanatory variable, implying that each new agreement costs an extra £1,497 each year in administration. The number of ESAs administered by an RSC also appeared to be important in explaining total annual costs, with each extra ESA adding a further £112,941 to costs.

The number of new agreements had a statistically-significant but slight negative impact on the average annual administrative costs per hectare entered into the ESA scheme; this may indicate the existence of some economies of scale. The average number of years since designation for the ESAs administered appear to reduce average annual per-hectare costs by around £9 per hectare. This characteristic may be explained by the shift in administrative activities from agreement negotiation to more routine agreement maintenance; however, there may also be a 'pure' time-related cost-reduction factor, perhaps if the experience gained from running ESAs permits economies to be made in future years through fine-tuning administrative procedures. It is notable that the cumulative number of agreements was not a significant explanatory variable, and the number of new agreements made had only a very slight effect, adding weight to the experience-related (learning curve) hypothesis. The number of ESAs covered by the RSC had a positive effect on average annual per-hectare costs, with each additional ESA adding an extra £13 per hectare. An explanation may be the costs of co-ordinating different schemes, although it was initially expected that extra ESAs would have a small negative effect on total RSC costs as fixed administrative costs would be spread over a larger base. Other factors may therefore be at

work too, perhaps related to mix of types of ESAs (within and without LFAs).

The number of existing management agreements had a negative effect on the average annual administrative costs per agreement under the ESA scheme, reducing costs by £5 per agreement. As noted above, this negative marginal effect may be due to the difference between the administrative costs of establishing and maintaining agreements, and the fixed-cost element of administration to be covered. The area eligible for ESA entry had a very small but positive coefficient, surprisingly. This variable may be a proxy for aspects of ESAs such as dispersal: the more diffuse farms are, the further project officers must travel and the higher will be the administrative burden. The area of common-land had a small but negative effect, again, opposite to the direction of effect anticipated. The negative coefficient may be linked to ESA location within an area of low agricultural incomes, and thus relative favourability of ESA participation; hence participants may be more enthusiastic, driving down negotiation and other administrative costs.

Finally, with regard to the ratio of administrative costs to compensation payments in any year across the ESAs administered by each RSC, the average number of years the ESAs of each RSC had been running was found to have a negative impact. This effect quite possibly relates to the changing administrative workload and the gain in experience allowing economies to be made. The importance of the latter, unquantifiable, factor seems particularly plausible given that neither the cumulative number of agreements nor the number of new agreements were statistically-significant explanatory variables. A 'learning factor' may

well be at work, although more investigation of this is needed, for example, in the context of information on changes in staffing levels and quality over the years of ESA administration in the light of previous years' experience. The number of ESAs located within LFAs had a negative coefficient, i.e., fewer administrative resources are needed to transfer each pound of compensation than outside LFAs: it may be that it is easier to negotiate agreements within LFAs, where generally ESA payments compare well with foregone agricultural incomes. In addition, there is a long tradition of direct payments in ESAs; the familiarity of the mechanism may help to keep some costs down. It may also be the case that more agreements are signed within than without LFAs, giving rise to some economies of scale. The number of ESAs administered by each RSC was found to have a negative coefficient; this source of cost-reduction per ESA may be related to economies of scale (spreading fixed costs over a broader base).

4.3. Non-Linear ESA-Level Analysis: Examining Scattergrams

Visual examination of scattergrams of administrative-cost and participation-related variables can give some guidance with regard to the choice of functional form in the econometric analysis. Table 13 summarises the observations from these scattergrams and their implications for choice of functional form. These observations suggest that the econometric analysis could be improved through fitting non-linear functional forms, such as log-linear functions, to the data. This is an area for further work.

Table 13: Summary of Observations from Scattergrams for ESA-Level Data

Dependent variable	Explanatory Variable	Notes on functional form
1. administration as a proportion of compensation payments	years since designation	non-linear fall in the ratio with time (reciprocal function) with a small rise after five years (review stage, when, for example, some agreements are terminated) before continuing to fall
2. participation (cumulative number of agreements)	years since designation	approximately linear increase with time (slightly sigmoidal)
3. net change in participation (net change in agreements each year for each ESA)	years since designation	non-linear fall with time (approximately reciprocal), with a sudden small decrease after five years
4. average annual administrative costs per hectare	eligible area of ESA	non-linear (reciprocal) fall in costs with area (suggesting economies of scale)
5. average annual administrative costs per hectare	area of common land in the ESA	non-linear (reciprocal) fall in costs with area
6. total annual administrative costs per ESA	participation (cumulative number of agreements)	non-linear (reciprocal function) rise in total costs with participation, suggesting economies of scale
7. total annual administrative costs per ESA	changes in participation in each year (net change in the number of agreements)	non-linear rise in costs(slightly sigmoidal, implying a polynomial function)
8. average annual administrative costs per agreement	ESA participation (cumulative number of agreements)	non-linear fall in costs with participation, suggesting economies of scale

4.4. Disaggregating the Administrative Costs of ESAs

The available data were disaggregated into four main categories: ADAS management, RSC management, ADAS monitoring (environmental appraisals) and overheads (head-quarters costs of policy development and so on). The relationships of the magnitudes of expenditures in each of these categories to total expenditure were investigated, to give more insights into the changes in administrative functions over time. The relative importance of categories was observed to be highly variable across ESAs, even when related to the number of years since ESA designation. Both ADAS and RSC management expenditures rose initially relative to total administrative expenditures, before starting to fall after the five-year mark. The relative importance of overheads fell slightly, as would be expected following growth in the participation rate with time. A closer look at ADAS and RSC management costs showed a non-linear relationship between their relative importance to overall administrative costs and participation, again suggesting that there may be some participation-related economies of scale in the administrative costs related to land-holder entry into the scheme.

A methodological problem lies in trying to untangle, empirically, fixed and variable costs and their time incidences. The overall average annual costs are presented here. However, as time passes, the fixed-cost component will generally fall, leaving the variable costs (such as farm visits to assess scheme compliance) to dominate. A methodological improvement might involve the calculation of annuitised fixed costs per annum to smooth out the fluctuations due to differing time incidence of

activities such as scheme monitoring and evaluation, or simply to exclude the capital element and explain only variable costs.

5. DISCUSSION

5.1. Factors Affecting Administrative Cost Levels

What are the implications for agri-environmental policy development of this analysis of administrative resource use across ESAs and RSCs? The implementation of agri-environmental schemes demands substantial resources, so it is important to understand the related costs, and the variation in costs across different areas, times and implementing agencies. A number of explanatory factors for the observed variations in the administration of the English ESAs have been identified here.

One particular observation is that it appears to be far more expensive to establish agreements than to maintain them. The set-up costs should be considered as an investment, and the life-span of the 'asset' (the natural capital protected and maintained or enhanced, and perhaps information relating to conservation activities) should be considered in relation to these costs. For example, although the intention under the ESA scheme is for management agreements to run for ten years, it is possible to terminate them after the first five years. MAFF reported that a small number of agreements have indeed been terminated at the end of the contract period in the older ESAs (causing net changes in participation to be negative in some years) (House of Commons 1997). Agreements should be maintained for a period long enough to gain real benefits from the costs of setting them up.

The econometric analysis suggested that the incremental and cumulative numbers of agreements are important determinants of costs, as was

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expected given the link of some components of costs to participation levels and changes in these, and the fact that management agreements require two-way interactions between landholders and the administering agency. The results imply some scope for economies of scale related to scheme participation; as the numbers of agreements made under the scheme in any ESA rise, average costs fall, allowing fixed costs to be spread over a broader base. However, the data was inadequate to allow any determination of the true existence of such economies as distinct from a fall in average costs per agreement resulting from increasing dominance of existing (lower-cost) agreements over new (higher-cost) agreements.

Over time, fewer agreements are generally made (total entry levels are of course finite). It is very likely that negotiations become increasingly complex, as the more 'straightforward' agreements (i.e., ones with lower agricultural opportunity costs or ones with lower transactions costs) would be expected to have been made much earlier. Thus, we might expect the marginal administrative costs of new scheme participants to rise over time, opposing the cost-reducing impact of any economies of scale. Furthermore, there should be a switch in activities from promoting the scheme, encouraging applications, negotiating entry and establishing contracts to more routine administrative activities related to processing payments each year, checking a sample of agreement holders for compliance, and carrying out environmental evaluation[16]. The importance of a shift in activity from establishing agreements to maintaining existing agreements (processing payments each year and

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[16] The costs of this overhead activity are borne primarily at the national level rather than at the regional or ESA level.

monitoring a proportion for compliance with management prescriptions) has already been noted.

Time is important to the size of ESA administrative costs, in both absolute and relative terms. Generally, administrative costs decline relative to the overall costs of the scheme; there are two main reasons for this. One reason is that generally the rate of change in participation becomes negative over time, and costs fall as fewer new agreements need to be established. Set-up activities are replaced by lower-cost agreement maintenance activities (at least up to the year of agreement termination or re-negotiation and renewal). Secondly, compensatory payments rise with cumulative participation, dwarfing administration.

There may also be a third, 'experience' factor, related to the administrative learning curve and economies made over time from fine-tuning procedures. However, it is impossible at present, with only the data-set used here, to untangle the contribution made by both fine-tuning from reflections on past experience and changes in administrative functions as the scheme develops and participation rises. Furthermore, although there might be some scope for economies following from previous experience of negotiating management agreements, cost reductions may be small. The site-specificity of individual farms and the choice faced by farmers of different sets of prescriptions mean that blue-prints for the set-up and monitoring of agreements can only go so far [17]. Still, the experience of the older ESAs may provide lessons for the newer

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[17] NB: although agreements follow similar procedures, there will always be a degree of participant- and site-specificity.

ones, particularly as they come up to the five-year review and opt-out stage [18].

5.2. What Scope Exists to Reduce the Administrative Costs of Agri-Environmental Schemes?

The question is how agri-environmental policies can be designed to minimise public administration and private transactions costs, in relation to delivery of benefits, i.e., with regard to the optimal allocation of public resources to schemes and the division of expenditure between administrative costs and participant compensation payments. Given allocations of funds and transaction technology, is it possible to improve upon the *status quo*? Administrative resource use does not necessarily imply inefficiency, even when incurred at high levels (in absolute or in relative terms). The importance of (at least) some administrative activities to scheme success has been emphasised here: it is crucial to keep such costs in perspective, while assessing whether available funding is being utilised effectively, with the optimal mix of activities.

Improvements are being made to the present ESA scheme, especially following the NAO (1997) enquiry. In 1995/6, £13.3m was spent on ESA administration, i.e., 43% of the amounts paid to farmers as compensation. This figure stood at 35% in 1996/7, with 27% forecast for 1997/8 and 23% expected for 1998/9 (Public Accounts Committee 1998) The 1997/8 figures take account of new measures recommended by the NAO, resulting in reduced costs for environmental evaluation, reduced

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[18] It was observed from the data that some management agreements in Stage I and II ESAs were terminated after the initial five-year period, rather than maintained across

costs for compliance monitoring, greater efficiencies in RSCs and the additional new agreements made in the Stage III and IV ESAs, which were launched relatively recently (and thus would be expected to have proportionately higher administrative costs than the older ESAs). Cost reductions are now being made, but questions remain with regard to the consequent effects on the quality and competence of remaining administrative operations. A best practice review of the RSCs has been undertaken, and the head-quarters policy branch of MAFF involved in ESA development has been reduced in size. In addition, scheme development activities are to be combined for the ESA scheme and the Countryside Stewardship Scheme, saving some costs. Substantial savings are also being made through reduction of the environmental monitoring programme, for example, by concentrating on extensive monitoring rather than intensive botanical surveys. The five-year cycle of evaluating the four Stages of ESAs ends this year, with scope for subsequent rationalisation. Costs are predicted to fall from £3.3m in 1995/6, to £2.2m in 1996/7, £1.5m in 1997/8 and £0.7m in 1998/9.

Take-up rates in some ESAs have been lower than intended by MAFF, giving rise to higher average annual administrative costs per hectare and per agreement as the fixed scheme costs cannot be spread so broadly. Project officers now promote the scheme more proactively (Harrison, MAFF, pers.comm), for example, through targeting areas affected by environmental degradation, with project officers initiating visits to farmers rather than waiting for expressions of interest or applications for entry to be made. The NAO (1997) suggested that MAFF should identify priority areas within each ESA and focus field inspections and

the whole ten-years.

its environmental monitoring work on them, directing resources to where the benefits are likely to be greatest[19]. However, such pro-activity impacts on the running costs of the scheme. A much greater proportion of field inspections could be targeted on those agreement holders who represent the greatest risk; this should permit reductions in checking levels without reducing the effectiveness of compliance monitoring.

Stewart et al. (1997) also made several recommendations to improve the benefit-delivery of ESAs: increase advice and support facilities, which they considered to be lacking in many areas, and improve the co-ordination between farmers and environmental organisations and the government to increase take-up. In particular, promotional activities can play extremely important roles. The socio-economic survey results found that the reluctance to move to higher management tiers was explained by perceived difficulties in complying with the more demanding or restrictive prescriptions, or because of the impression that payment levels offered inadequate compensation. However, scheme participation had increased awareness of environmental issues.

The next step is to consider the re-design of agri-environmental policy mechanisms. For example, using a greater differentiation of payment rates to take account of the varying compliance costs of scheme participants, and to tie payments more closely to environmental performance, perhaps using some form of competitive bidding. The problem is that the introduction of more targeted schemes, with management prescriptions tailored more precisely to the conditions of

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[19] It was also suggested that areas with poor take-up could be removed from ESA designations and Countryside Stewardship used instead to protect and improve the

individual sites, will undoubtedly increase administrative costs (although with the aim of increasing environmental benefits too). It may be the case that public administrative costs and participant compensation payments are to some degree substitutes for each other, so an area for further research relates to their relationship, and how direct and how linear any trade-offs are. Hence the utility of knowledge of the costs of simpler mechanisms such as uniform payments as a starting point. There may or may not be a pay-off from increasing the targeting of payments under agri-environmental schemes.

Furthermore, given at least some joint production of, for example, stonewalls and landscape, co-ordinated action by all land-owners in the area is needed. How could this be achieved? So far little has been achieved in this area of policy-making. The development of farmer networks could be promoted, to attempt to achieve conservation improvements from peer-pressure and better information (through sharing knowledge) on conservation land management, before moving to collective management agreements (for example, with a premium to encourage participation) (see MacFarlane & Smith 1998). Collective management agreements, for example, under the existing ESA model, will in all likelihood entail greater administrative costs than individual management agreements, but hopefully at a lower cost than those for common land, as all participants' objectives are aligned (given the voluntary nature of the scheme). There was some evidence that in ESAs, extra administrative costs arose from the need to co-ordinate farmers' participation in relation to common land entry for ESAs.

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environment (NAO 1997).

Much more detail of individual schemes and administering units is needed for precise recommendations to be made for practical administrative efficiency improvements. However, to summarise, there are a number of general options that might perhaps allow administrative economies to be made, particularly given the likely increasing importance of administrative costs with greater reliance on the use of management-agreement approaches in the future:

- build on existing institutions when developing policy to reduce costs in absolute terms, given the largely fixed costs of developing scheme implementation frameworks
- reduce the frequency of participant monitoring through the introduction of penalties for non-compliance (see Russell 1990)
- increase scheme promotional activities, so participants have a better understanding of the management requirements; this may also mean a reduced need for compliance activities.
- increased understanding through greater information may improve attitudes, compliance and increase interest in scheme participation; also more likely to reap economies of scale
- shift some administrative activities such as farm mapping and reporting onto participants?
- contract out some routine administrative activities through competitive tendering to reduce costs
- consider the establishment of 'one-stop shops' for agri-environmental schemes, to allow economies to be made in relation to the private costs of participation. Movement has been made towards one-stop shops in Scotland.

- introduce the joint administration of agricultural support and agri-environmental schemes (particularly using the Integrated Administration and Control system)

The agri-environmental policy arena is a very dynamic environment, and recommendations need really to be specific, if they are to increase efficiency, given the heterogeneity of existing implementation structures for agri-environmental policies and the need to work within these. Given the link between the demand for some administrative activities and scheme participation levels (for example, for compliance monitoring), forecasting needs to be improved if budgeted allowances are to be appropriate. However, agri-environmental policies are only one component of a much larger economic system; it is only really possible to tinker on the edges, although small adjustments may be useful (for example, achieved through changes in specific property rights). Agri-environmental concerns must be kept in perspective.

5.3. Scheme Value for Money

The underlying issue relates to the identification of the best way to achieve agri-environmental objectives. Hence the real interest lies in the change that a given policy, through its attendant expenditure, can achieve: the environmental benefits flowing from a given amount of expenditure on compensation and scheme organisation. It is unrewarding to discuss transactions costs in the abstract: ultimately, analysis must be related to the policy objectives and the extent of their achievement if decisions are to be made to maximise economic efficiency in resource allocation. However, full cost-benefit assessment

is very complex. Even if we knew what changes were occurring in the countryside and the rural environment, there are problems in linking cause and effect, given the multitude of different policies and economic forces at work. It is almost impossible to untangle consequences with any great level of certainty. Moreover, given data limitations, most analysis of benefits and costs has to be conducted on the basis of averages rather than focusing on the margins.

A clear distinction between *financial* analysis and broader *economic* analysis is crucial in work such as this on administrative-costs. The view is often that administration is something that should be minimised rather than having a productive economic function. Administrative arrangements such as agri-environmental schemes can provide useful mechanisms through which to resolve resource use conflicts, for example, relating to public goods in the countryside. Thus, ideally, we would like to know how the amounts spent on agri-environmental schemes in terms of compensation and administration relate to improving environmental quality and social welfare, as compared to the 'policy-off' situation.   However, full cost-benefit assessment is prohibitively complex.   Even if we knew exactly what physical changes were occurring in the countryside and the rural environment, where, and when, there are problems in linking cause and effect, given the multitude of different policies, in some cases overlapping / conflicting, and other economic and natural forces at work.

MAFF evaluates the environmental monitoring data for ESAs to inform its ESA review every five years. Quantitative indicators are used such as the percentage uptake by farmers, trends in wildlife populations and

numbers of key landscape features such as hedges, trees and historic buildings. So far it appears that the wildlife conservation interest of the [English] ESAs has in general been maintained, compared with the rapid deterioration prior to ESA designation (Stewart et al., 1997: 123). However, there have been some problems, such as the small increase in arable farming on non-agreement land in the Somerset Levels and Moors and the Pennine Dales, and small scattered losses since 1987 of some landscape features such as walls, trees and barns. A common criticism of the ESA scheme in England has been that it has merely, in most areas, maintained the *status quo* (which, after all, was largely what it was designed to do) rather than achieving much tangible environmental improvement. It is possible that increasing the stringency of management prescriptions could enhance cost-effectiveness, although the extra negotiation and enforcement costs of such changes must be considered too; the situation is one of 'no gain without pain'. In addition, participation would be expected to be lower.

In addition to the methodological problems associated with environmental monitoring, there are conceptual issues in relation to benefit measurement: for example, is the maintenance of the *status quo* really a benefit to society or not? The answer depends what would have happened in the absence of the policy, and depends on the perspective taken, using the notion of the 'reference point' (Bromley & Hodge 1990). Still, it is important to stress the potential benefits of administrative expenditure in the agri-environmental policy sphere: after all, the intention of government intervention is to increase social welfare. However, for this to occur, greater care is needed to ensure that the administrative activities undertaken are the most appropriate ones.

Given few market forces and little competition to supply services in the administrative sphere, there are relatively few checks and balances on inefficiencies; vigilance is needed.

Despite a number of environmental valuation studies (see Stewart et al. 1997), there are still few estimates of environmental benefits of countryside stewardship policies, and those estimates in the literature are not beyond controversy. There are a number of substantial challenges to applications of cost-benefit analysis: for example, related to the fact that benefits are usually expressed in studies as per household or per individual, when per-hectare measures of benefits would be more useful for policy development (for example, with regard to assessing the economics of areal extension of ESAs), especially at the margin. The production of environmental benefits following the conclusion of contracts between farmers and governments with regard to the promised changes in management is typically subject to both uncertainty and time lags (for example, the effect of reducing stocking rates on heather moorland recovery). The next step, linking the organisational costs to the achievement of the policy objectives is a subject for future work.

6. CONCLUDING COMMENTS

This study has highlighted the costs of scheme organisation, with some attempt to explain costs in relation to scheme structure and implementation, in terms, for example, of different ESA characteristics and participation levels. Of interest are the implications of this analysis for agri-environmental policy development. ESAs are costly to administer, but public scheme expenditure varies significantly over individual ESAs, RSCs and time. Several explanatory factors have been identified here.

The econometric analysis suggested that the incremental and cumulative numbers of agreements are important determinants of costs, as expected given that management agreements require two-way interactions between landholders and the administering agency. There also appears to be some scope for economies of scale related to scheme participation, perhaps implying that larger, more general schemes could be more efficient (or at least cheaper to implement) than a string of smaller schemes focused on particular agri-environmental aspects or localities. However, administrative costs were observed to vary greatly across the ESAs even when participation levels were taken into account, implying that there are a number of other factors to consider.

The time since the ESA was first designated was found to be an important explanatory variable for cost indicators. However, it is impossible at present to untangle 'experience' and fine-tuning effects from participation-related economies of scale effects. Given that it is far more expensive to establish agreements than to maintain them; the set-up

costs should be considered as an investment, and the life-span of the 'asset' (natural capital, and perhaps information relating to its maintenance) should be considered in relation to these costs. Agencies should try to keep successful agreements running for as long as possible, and also build on them, incrementally, perhaps under an umbrella agri-environmental scheme rather than starting negotiations afresh for individual schemes. Certainly participants should be discouraged from 'holidaying', i.e., terminating the agreement for a few years and reverting to previous (more intensive) farming practices, before re-entering the scheme. Such breaks would be very inefficient, both administratively and environmentally. There is also substantial investment in human capital as a result of the transacting process: loss of this should be avoided where possible; the continuity of the relationship between farmers and project officers is very valuable and a long-term perspective should be encouraged for both project officers and participants.

Some level of administrative transactions costs are both inevitable and necessary if externalities are to be reduced through policy implementation. However, although policy organisation can demand a substantial share of the total gross public cost of policies, the costs are often overlooked. They may be sufficiently important to constrain the resources available for implementing such policies, especially in times of public expenditure scrutiny and cut-back. Greater transparency with regard to administrative costs is required as a safeguard against inappropriate public policy spending and lower levels of overall social welfare than might otherwise be possible. Another issue is the fact that administrative costs are important as policy administration is the only element of the costs of agri-environmental schemes that *must* be borne

entirely at the member-state level, even when the policy is to fulfil EU requirements (the costs of compensating land-owners may be re-imbursed partly from the EU under Regulation 2078/92). Consequently, these financial arrangements may mean that some member-states are constrained in developing their agri-environmental frameworks, perhaps lending support to the argument that perhaps support should be available from Brussels for the administrative as well as the compensatory aspects of agri-environmental schemes. The financial arrangement may also have significant economic aspects through creating incentives for member-states to favour, to some degree, low-TC but high compensation-cost policies (as compensation costs may be reimbursed at either a 50% or 75% rate from the EU). Consequently, potentially inefficient policy in terms of overall value for money may result, as member states target policies to a much lower level.

Agri-environmental policies are still in their infancy and need rational development, i.e., with regard to their transactional costs as well as to their other costs. High transactional costs will check their progress; however, it is very difficult, at present, to assess ways of reducing costs, especially as the policy context is so dynamic. It must be stressed that it is still an early stage for scheme evaluation. Furthermore, it is essential not to lose sight of the underlying goals of policies, namely environmental improvements, whilst (perhaps) maintaining farm income.

There are questions relating not just to the levels of administrative expenditures on agri-environmental schemes, but also to the mix of activities funded by such expenditures. Trade-offs will in all likelihood be required: scope for economising in one area will be balanced by

increased requirements in another. Furthermore, different systems will be more or less appropriate to achieve different objectives, in terms of resource re-allocations. Organisational costs may well become of even greater importance in the future as policy objectives and the mechanisms used to achieve them evolve. Budgets should be set in the light of information on the full public costs of such policies, particularly in the context of proposed changes in the mix of schemes under Agenda 2000. There appeared to be an effect on administrative costs of the coincidence of ESA and Less Favoured Area designations: the increase in costs associated with this overlap may have important implications for the costs of any future 'green' LFA payments, as has been suggested by the countryside agencies in the UK in the context of Agenda 2000. In terms of more short-term agri-environmental policy developments, it appears from the econometric analysis that the extra per-hectare administrative costs of extending an ESA, in terms of the eligible area, are not very high. However, it is necessary to assess the likely participation changes resulting, and the associated budget implications of having to make extra compensation payments too.

Greater knowledge of a number of aspects touched on only lightly here would improve future analysis. For example, participant attitudes could have a very important link to public administrative costs; positive attitudes towards conservation could reduce the overall transactions costs (both public and private) of establishing management agreements as there would be less conflict between conservation and farmer objectives. Less promotion and persuasion would be needed too, and perhaps less enforcement effort, given lower levels of non-compliance. The dynamic setting of this analysis and agri-environmental schemes more generally

must be borne in mind. In particular, it is hypothesised that the mere existence of schemes may help to bring farming and conservation objectives more in line over time, hence scheme establishment and running should become easier as consensus as to its aims grows. Furthermore, some experience of management agreements now, on both sides to the negotiation, may provide knowledge useful for economising on the transactions costs of such agreements (in the same or in different contexts, in future).

The next question is whether or not there are any wider implications of this analysis. Scheme-related transactions costs would be expected to depend to a large degree on scheme type; one particular policy, based on voluntary management agreements in exchange for compensation, has been examined here. The analysis is not immediately applicable to other policies such as land nationalisation, for which there may be a high degree of intervention and public expenditure, while the transactions costs may or may not be large, depending on whether or not land to be nationalised is acquired through compulsory purchase rather than voluntary transfer. Generally, too, several types of policy instrument are combined in the overall agri-environmental framework: advice, education, financial incentives and mandatory management requirements (particularly in specified areas such as Nitrate Vulnerable Zones). Evaluation of individual schemes must be placed in the broader context and take account of its dynamics [20].

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[20] See Falconer & Whitby (1999) with regard to a trans-European evaluation of transactions costs for agri-environmental schemes.

Given that some level of administrative intervention is deemed necessary due to the failures of the free market to allocate resources optimally, have we chosen the optimal institutional mix? While ESAs have overcome a traditional division between landscape protection and nature conservation, catering also for archaeological concerns, the scheme still falls short of a fully-integrated approach to environmental management. Clearly we have not yet reached a fully-evolved agri-environmental policy framework. Further development is likely, and the message of this study is that the administrative cost implications should be considered as an integral part of public policy decision-making.

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