

Local compensation payments for agri-environmental externalities: a panel data analysis of bargaining outcomes

Franz Hackl, Martin Halla and Gerald J. Pruckner

Johannes Kepler University of Linz, Austria

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Summary

We analyse local compensation payments made to farmers for providing landscape amenities in Alpine tourist communities. These payments result from political bargaining at the municipal level. Panel data estimation shows that the probability of introducing compensation payments depends positively on the benefits of landscape amenities. Although no impact of service provision cost is found, transaction costs at different levels of the bargaining process reduce the probability of payments. Compensation payments mainly occur in communities where the provision of agricultural landscape services is perceived as relatively low and the diversity of the countryside seems to be endangered. We argue that municipal compensation payments are an important supplement to national and European Union policy measures in support of less-favoured areas.

Keywords: public externalities, multifunctionality of agriculture, landscape-enhancing agricultural services, local compensation payments, municipal bargaining.

JEL classification: Q1, Q26, D62

1. Introduction

Apart from the production of food, feed and other raw materials destined for sale in private markets, agriculture is held responsible for different types of externality. Among these externalities, economists emphasise the negative environmental consequences of agricultural industrialisation such as contamination of groundwater generated by increased use of pesticides and fertilisers and by intensified livestock production in the absence of sufficient pastureland, problems relating to soil movements (erosion) and loss of biodiversity. On the other hand, however, the literature also mentions a smaller number of examples of positive agricultural externalities. Increased productivity of an orchard due to the activities of a nearby beekeeper is one prominent example (Cheung, 1973). We discuss another type of external benefit from the agricultural sector that has substantial economic relevance. Agricultural activities in mountain regions of European countries like Austria, Switzerland, (northern) Italy and (southern) Germany

contribute to the welfare of residents and of tourists who spend their vacation in these areas. Farmers in some Austrian tourist communities receive voluntary local compensation payments for providing agricultural landscape services.

The decision as to whether farmers receive a local payment, and its amount, is based on a political bargaining process at the municipal council level. This paper addresses the underlying political negotiation process in the local communities both before and after Austria's entry into the European Union (EU). In particular, we study whether the parties involved achieve a cooperative solution. We use data on Austrian tourist resorts that either compensate their farmers for the provision of landscape services or do not grant such payments.

By mowing the Alpine grassland, taking care of the rural trail and road network, preserving the vegetation along the waterways and cultivating Alpine pastures, extensive small-scale agriculture increases the utility of those who spend their leisure time in these regions and offers a pleasant landscape for recreational purposes. The beauty of the countryside is of major importance for the tourist industry. In fact, sustainable agricultural production in mountain areas is one of the most important attractions for summer vacations in various Alpine communities. Moreover, the diversified arrangement of groups of trees, hedgerows and brushwood contributes to the conservation of species. Protective measures provided by agriculture, and in particular by forestry, against avalanches, landslides, erosion and rockslides in Alpine regions also benefit local residents. The services under discussion illustrate well the properties of agriculture's multifunctionality: jointness of production,¹ externalities and market failure. In general, farmers do not receive direct monetary compensation in return for these non-commodity outputs (NCOs), and therefore their availability cannot be guaranteed, as their provision is based on altruistic or ethical motives.²

Restricted mechanisation due to topographical disadvantages has led to lower productivity growth for mountain farms compared to producers in lowland areas. It follows that decreasing commodity prices have reduced market income of farmers more in less-favoured mountain regions. Market pressures have been exacerbated by market policy reforms and the opening of international agricultural markets (for example, due to EU enlargement). Many 'marginal' producers in these areas have already gone out of business and moved. As a consequence, continued provision of agricultural landscape services in mountain regions is under threat.

Since the number of full-time farms in mountain areas is continuing to decline rapidly, several tourist-intensive communities in Austria have opted to offer an

1 The provision of landscape services does not necessarily require agricultural production. Even in the absence of jointness in production, however, the public good characteristics of these services remain.

2 This type of externality is covered in the theoretical and empirical literature. For a general discussion of multifunctionality in agriculture, see OECD (2001, 2003); for more recent specific contributions, see Lee *et al.* (2005), Brundstad *et al.* (2005) or Havlik *et al.* (2005). Pruckner (2005) presented a case study on a political bargaining process for an agricultural landscape conservation programme in the tourist resort of Weissensee in Carinthia.

incentive for the provision of landscape services in the form of direct compensation to local farmers. These compensation payments are voluntary public expenditure by local governments, and the amount has to be agreed by local community councils. These payments therefore reflect the outcome of a bargaining process among council members representing the tourism sector, local residents and farmers.

We explore the factors that determine the outcome of this bargaining process within municipalities as well as the size of local payments to farmers. The payments are a good indicator of whether current national and EU agricultural policy measures are sufficient to guarantee optimal provision of local public goods in the form of agricultural landscape services. The existence of local compensation payments provides evidence of the increasing public awareness of problems associated with structural change in agriculture. Since our study observes these payments both before and after the introduction of nationwide subsidy programmes for environmentally motivated agricultural landscape cultivation initiated by the EU in support of rural and/or less-favoured areas,³ we gain an insight into the effectiveness of Austria's nationwide programme for stimulating landscape-related external benefits of agriculture.

Our study deals with processes and procedures in (agri-)environmental (agricultural) decision-making and is therefore related to the new institutional approach to environmental governance (see Paavola, 2007; Paavola and Adger, 2005; Dahlmann, 1980; Ostrom *et al.*, 1999). This approach emphasises the importance of institutions in resolving environmental conflicts from a comprehensive perspective. Our empirical analysis fits into this picture, since it acknowledges the decisive role of transaction costs and studies their effect on local bargaining outcomes. Moreover, the neoclassical concept of efficiency is extended by a broader concept of interdependence, as we try to identify the mutual influences of different groups of agents on each other. In so doing, we contribute to the literature on payments for ecosystem services and we highlight an innovative compensation mechanism for the provision of local public goods (Boyd and Banzhaf, 2005; Salzman, 2005; de Groot *et al.*, 2002).

The paper is organised as follows: Section 2 sets out the conceptual framework underlying the bargaining process. Section 3 derives hypotheses regarding a successful negotiation outcome and the size of local compensation payments. Section 4 presents the data, estimation strategy and the empirical results. Section 5 provides a short summary and concluding remarks.

2. Framework of the bargaining process

Landscape services provided by farmers reflect external benefits of agriculture. They are public externalities characterised by non-excludability and non-rivalry in consumption.⁴

3 The subsidy programme for Austria is called OEPUL (Austrian Agri-Environmental Programme).

4 The environmental commodity 'landscape' may become a rival good if the number of tourists enjoying the countryside increases beyond a certain congestion threshold. Likewise, excludability is possible for certain landscape components, e.g. fencing off young-growth forests. For a comprehensive discussion on the provision of public goods, see Demsetz (1970) and Coase (1974).

The decrease in farm product prices over several decades has endangered the provision of landscape services. Whereas in the past, high product prices guaranteed the provision of adequate landscape-enhancing services as a by-product, this has come to an end, with the result that the provision of environmental NCOs by agriculture in Alpine areas has rapidly decreased. As a consequence, many tourist and residential communities may face a shortage of agricultural landscape services.

The search for an appropriate solution to this problem starts with the Coase Theorem (Coase, 1960). Suppose that farmers on one side, and tourists and residents (the beneficiaries of services) on the other, engage in private bargaining over the provision of agricultural landscape amenities. In the absence of transaction costs, the Coase Theorem predicts that the outcome of this bargaining process will be an optimal allocation of landscape-enhancing services that benefits both parties. It is obvious that the farmers have the initial endowment—they decide whether and to what extent they offer landscape services—and neither the residents nor the tourists can enforce these services. Since the farmers hold the property rights, the beneficiaries of the farmers' landscape services face a coordination problem: they need to act collectively and try to overcome free-riding incentives. However, the number of beneficiaries is high, and the group of residents and tourists is very heterogeneous, so the transaction costs of coordination seem to be too high to achieve a privately negotiated solution. This is supported by empirical evidence that private compensation payments of beneficiaries to farmers do not exist in Austria.⁵

However, we do observe public compensation payments at the local government level. It seems that local governments are needed to overcome the high transaction costs of private solutions, and the (political) bargaining process is shifted to the municipal councils. Whereas farmers and residents are directly represented in municipal councils, hotel- and inn-keepers deputise for the interests of tourists. The available seats on the councils are assigned as follows: political parties compete for votes at municipal level, and each party offers a list of people on their tickets. When nominating candidates, the parties take account of the structure of the local population, e.g. socio-economic characteristics, occupational categories or business sectors. Although all relevant parties (farmers, residents, people with jobs in tourism) are typically represented in the local councils, their relative strength and political power within this body varies among the communities depending on the municipal elections.

There are various explanations of how the preferences of farmers, residents and tourists become manifest in the councils. Farmers on the one hand, and tourists and residents on the other, represent interest groups like those analysed by Olson (1965). Based on the Downsian perspective (Downs, 1957), political

5 For the role of transaction costs in connection with externalities, and their consequences for institutional arrangements, see Dahlman (1979). For the non-neutrality of property rights in the presence of transaction costs, see Crocker (1971) or Arcuri (2005). For a more general discussion of property rights, transaction costs and their influence on human relationships, see Schmid (1987).

parties compete for votes and are therefore forced to align their political programme towards the preferences of voters. Coughlin *et al.* (1990) extended the Downsian model to allow for the impact of interest groups on the political bargaining process. In this sense, the objectives of interest groups become manifest in the political agenda of parties. The more widely prevailing the concerns of interest groups are, the more likely it is that these interests will become accepted within the council.

The existence of local compensation programmes indicates that political representatives of interest groups in municipal councils are aware of the under-supply of agricultural service provision and therefore hope that compensation payments to farmers will increase welfare. Hence, farmers are offered monetary compensation in return for providing specific landscape-enhancing services. Observable local public solutions requiring agreement among the deputies never represent individual arrangements with single farmers, but rather reflect collective programmes that are binding for all participating farmers. Given the uniform compensation scheme, individual farmers choose whether to accept the programme (and participate) or not.

Clearly, both the probability of a successful bargaining outcome and the size of any compensation payments are likely to depend on the (marginal) costs and benefits of landscape service provision.⁶ Moreover, transaction costs, both within the interest groups and within the municipal body, are likely to determine the bargaining outcome. And finally, structural differences among the communities, fiscal limitations and other national and international agricultural subsidies obviously influence the bargaining process. These groups of potential determinants will be discussed in detail next.

3. Determinants of the political bargaining process

The bargaining procedure in municipal councils described above can be observed in a number of Austrian tourist communities. This enables us to analyse the whole process empirically and to identify the most important determinants of the bargaining outcome before and after Austria joined the EU. A number of hypotheses can be derived.

3.1. Benefits of agricultural landscape amenities

Hypothesis 1: The probability of a successful bargaining outcome and the size of the compensation payment depend positively on the extent of the benefit from agricultural landscape amenities.

Although the beneficiaries of landscape services do not fully coincide with the group of negotiators, and councillors may pursue their own interests, we hypothesise that a higher consumer surplus for beneficiaries influences the

⁶ A successful outcome means that we observe compensation payments greater than zero. For compensation payments equal to zero, we cannot distinguish whether the bargaining process took place and failed or the bargaining process never started.

bargaining outcome positively: the stronger the preferences of tourists and residents for the provision of agricultural landscape amenities, the stronger the mandate of their political representatives in the bargaining process. Moreover, political parties need to align their programmes with the preferences of their electorate. Therefore, strong preferences for agricultural landscape services among the voting public can be expected to find support in political parties.

3.2. Costs of agricultural landscape amenities

Hypothesis 2: The probability of a successful bargaining outcome depends negatively on the cost of agricultural landscape service provision.

If transaction costs are given, an increase in the costs of landscape service provision will lead to a demand for higher compensation payments in the political bargaining process. Therefore, the probability that an agreement will be achieved is expected to decrease with increasing service costs. The influence of service costs on payment size is ambiguous. Depending on the price elasticity of demand for landscape services in the political bargaining process, the size of the payments may either increase or decrease.⁷

3.3. Transaction costs of the political bargaining process

Hypothesis 3: The probability of a successful bargaining outcome depends negatively on the transaction costs of bargaining. We do not expect transaction costs to influence the amount of payments.

We hypothesise that transaction costs affect the bargaining outcome. If transaction costs appear to be prohibitively high, we assume that the negotiation process would not start. However, if the parties involved have overcome their informational and contractual costs and have already decided to start negotiation, transaction costs are no longer expected to influence the size of payment agreed.⁸ Three components of transaction costs seem to determine the probability of compensation payments: (i) transaction costs among the beneficiaries, (ii) transaction costs among the farmers and (iii) transaction costs within the political bargaining process among council members.

7 If we assume linear increasing marginal cost and decreasing marginal benefit curves of agricultural landscape services, the compensation payments can be depicted as the product of equilibrium price and quantity in a graphical representation. As a consequence, we observe low compensation payments in the case of very low and very high marginal cost curves, and high compensation payments for marginal costs between these two extremes for a given marginal benefit curve.

8 Before a party would start bargaining it seems necessary (i) to discover who it is that one wishes to deal with, (ii) to inform people that someone wishes to deal and on what terms, (iii) to conduct (informal) negotiations leading to a bargain, (iv) to draw up the contract and (v) to guarantee the inspection needed for a valid monitoring process (Coase, 1960: 15). It is obvious that these important cost components determine the decision whether or not to start bargaining but will not influence the size of payments.

3.3.1. Transaction costs of beneficiaries

The bigger and more heterogeneous the group of beneficiaries, the harder it is to find a uniform opinion to be represented by stakeholders in political parties. Homogeneity may depend on the relative importance of tourism for the local economy compared to other sectors. The more a region depends economically on tourism that is boosted by agricultural landscape amenities, the more the local tourism industry is compelled to find agreement within their own group and to enforce its interests at municipal level.

3.3.2. Transaction costs of farmers

Although transaction costs among farmers are also relevant, there are two reasons why they are much less important than those of beneficiaries. First, the number of farmers in local communities is relatively low in comparison to hotel-keepers and residents, so that coordination efforts are less onerous. Second, farmers have the initial endowment. There is, therefore, no direct incentive for the suppliers of agricultural landscape services to act collectively. Instead, they expect a monetary offer from the beneficiaries.

Nevertheless, as already mentioned, the agreed compensation payments represent a political solution that has the character of a programme. This necessitates coordination on the supply side as well. Heterogeneous opinions among the farmers reduce the probability of local compensation schemes.

3.3.3. Transaction costs in the municipal council

Finally, transaction costs arising during the bargaining process in municipal councils play an important role. If the body consists of members with very different ideologies and very heterogeneous opinions, the harder it will be to reach consensus. The size of the municipal council may also have some influence.

Competing political parties seek to implement ideological principles under the constraint that they find the approval of the median voter. One instance of ideological principles is the differing viewpoints on alternative types of agricultural subsidies. Rural regions in Austria are dominated by the People's Party (Österreichische Volkspartei, OeVP), a classical conservative movement that generally aims to support farmers and hotel-keepers as their traditional voters. Whereas the OeVP has always supported indirect production-based subsidies, the Social Democrats (Sozialdemokratische Partei Österreichs, SPÖ) advocate direct financial support at the individual farm level. According to this mid-left Party's political manifesto, direct production-decoupled payments would enhance the social balance in agriculture and enable income redistribution to small farms.

3.4. Structural differences

Various socio-demographic and structural differences between communities, such as the gender ratio, age, education level, urban character of community

and social capital endowment, also help to determine the outcome of the political bargaining process.

3.4.1. Gender

Hypothesis 4: The probability of a successful bargaining outcome and the size of the payment depend negatively on the share of females in the community.

The sociological literature frequently argues that females appear more concerned about environmental issues due to their socialisation in traditional home-maker and care-giver roles. The different socialisation of males as breadwinners, on the other hand, encourages them to behave more rationally and selfishly (see, for example, Beutel and Marini, 1995). Although the empirical evidence is mixed, the general view that females are more concerned about the environment compared to males is supported in the literature (Hines *et al.*, 1986; Zelezn *et al.*, 2000). However, a detailed differentiation of environmental behaviour reveals a more heterogeneous picture: compared to males, females are more likely to engage in private pro-environment behaviour such as recycling or buying organic products, whereas they do not exhibit a higher tendency towards public pro-environment behaviour like volunteering or attending public meetings (Davidson and Freudenburg, 1996; Blocker and Eckberg, 1997; Tindall *et al.*, 2003; Hunter *et al.*, 2004). Given the public nature of the provided agricultural services, we expect a higher percentage of females in the population to exert a negative effect on local compensation payments.⁹

3.4.2. Age

Hypothesis 5: The probability of a successful bargaining outcome and the size of payment depend negatively on the average age of residents in a community.

There is statistical evidence that younger people have stronger preferences for environmental issues than older ones (e.g. McMillan *et al.*, 1997; Jones and Dunlap, 1992; Barkan, 2004), perhaps due to the different remaining life-spans of various age cohorts. A second age-related argument may also be relevant. The attitude of farmers towards landscape enhancement presumably depends on their environmental awareness. Assuming that environmental sensitivity is predominant among younger farmers, we expect that the average age of *farmers* in the municipality will negatively influence negotiation outcomes.

9 In the more general setting of public good experiments, females tend to cooperate/contribute more than males (e.g. Nowell and Tinkler, 1994). In sharp contrast, other studies report higher contributions for males than for females (e.g. Brown-Kruse and Hummels, 1993), whereas a third group of experiments fails to identify any significant gender difference (Solow and Kirkwood, 2002). More elaborate studies (Cadsby and Maynes, 1998) show that females initially contribute significantly more in public good games than males and that this difference vanishes as the experiment evolves. However, these public good experiments do not address environmental issues, and it must remain open whether the results can be applied to explain compensation payments for agricultural landscape services.

3.4.3. Education

Hypothesis 6: The probability of a successful bargaining outcome and the size of compensation payments depend positively on the education level in a community.

Various authors (McMillan *et al.*, 1997; Jones and Dunlap, 1992) have argued that well-educated people tend to be more far-sighted. To the extent that care for the environment is an aspect of care for the future generally, education will have a positive effect on the probability of agreeing local payments.¹⁰

3.4.4. Urban character of community

Hypothesis 7: The probability of a successful bargaining outcome and the size of the payment depend positively on the size of the community.

Larger communities can be assumed to prefer urban over rural issues. In rural areas, the countryside has a much stronger influence on the living environment as compared to urban centres. Local residents in small rural communities seem to be more directly affected by agricultural landscape cultivation than city residents. The choice of the place of residence itself is an expression of different landscape preferences. We therefore expect lower or even no payments for more urban communities or cities compared to small rural hamlets.

3.4.5. Social capital

Hypothesis 8: The probability of a successful bargaining outcome and the size of the payment depend positively on the degree of social integration in the local community.

Behavioural economics and the social capital literature emphasise the importance of social norms, fairness and altruism in explaining the voluntary provision of public goods. Hence, we expect that the better integrated people are into a community and the higher their commitment to local social norms, the higher the probability of a successful bargaining outcome *ceteris paribus*.

3.5. Fiscal limitations and other agricultural subsidies

Finally, fiscal limitations and existing alternative agricultural support measures (subsidies) might influence the outcome of the political bargaining.

3.5.1. Fiscal limitations

Hypothesis 9: The probability of a successful bargaining outcome and the size of the payment depend negatively on the extent to which municipal budget constraints are binding.

10 Empirical evidence on the effects of age and education on cooperative behaviour in public goods experiments is sparse: List (2004), however, reported that older subjects contribute larger amounts of their endowment to the public good in field experiments. A statistically significant impact of education on cooperative behaviour is not established. Whether these experimental results apply to the provision of landscape-enhancing agricultural activities is still open to debate.

Wealthy municipalities can more easily afford to make compensation payments compared to those that have less adequate fiscal leeway.

3.5.2. Other agricultural subsidies

Hypothesis 10: The probability of a successful bargaining outcome and the size of the payment depend negatively on the size of alternative agricultural subsidy payments at the national and international level.

Financial support received by Austrian farmers from the EU's Common Agricultural Policy (CAP) and from the national government is expected to reduce the probability of local payments. In particular, the current Austrian agri-environmental programme (OEPUL), introduced in 1995, includes subsidies for the provision of agricultural landscape-enhancing services, which can be seen as a substitute for local compensation payments.

4. Data and estimation

We collected information on voluntary compensation payments made to farmers by municipalities in Austrian tourist communities for preserving a typical agricultural landscape. Our sampling frame consisted of all communities in the provinces of Tyrol, Salzburg and Vorarlberg with more than 20 summer overnight stays per resident in 1993, amounting to 268 communities, of which 170 are located in Tyrol, 66 in Salzburg and 32 in Vorarlberg. We first contacted the communities by mail in 1993, and 266 of them provided us with useful information. In 2006, we re-contacted the municipalities by e-mail, and 153 returned the duly completed questionnaire.¹¹ We therefore have an unbalanced panel data set comprising 268 communities i at time $t = 1, 2$ with 419 observations available. The average area of each community is about 6,000 hectares, and the mean population is 1,700 inhabitants for the whole sample. In 1993 (2000), the average community comprised 150 (143) hotel-keepers offering 14 (15) beds each. The average number of tourist beds per capita was 1.5 (1.3). The average number of farms remained stable between 1993 (75) and 2000 (71), but the share of full-time farmers declined substantially, from 31 to 22 per cent. Out of the 266 communities, 40 (15) per cent reported the existence of voluntary compensation payments for landscape-enhancing agricultural activities for the year 1993. In those communities, farmers received €34,831 per year and community, which is equivalent to €422 per farm or €56 per hectare of agricultural land. In 2000, 49 per cent of the communities reported the existence of voluntary compensation payments. Compared to the year 1993, however, the amount has declined: in

11 We chose the year 2000 as the point in time after Austria entered the EU since the latest agricultural census was carried out in that year. We identified overwork as the main cause of non-response in 2006. Subsequent telephone contact with municipal employees showed that their overall workload has substantially increased since 1993, and in particular that the number of incoming mail questionnaires (from private firms and public institutions) has risen in recent years. In order to check for sample selection bias, we compared the responding and non-responding communities on the basis of several characteristics. The two groups differ only marginally.

aggregate, farmers received €22,195 per year and community, which is equivalent to €241 per farm or €34 per hectare of agricultural land. Compensation payments averaged 0.77 and 0.50 per cent of municipal revenues in 1993 and 2000, respectively.¹²

Local compensation programmes across the communities are similar in the sense that they are linked to the provision of specific landscape-enhancing services. The programmes are open to all farmers, who can opt into the programme or choose to stay out. However, the local compensation programmes differ substantially across the communities with respect to the specific services the communities pay for. Typical programme measures are €50 annually per hectare for cultivating an area, €100 annually per livestock unit kept on mountain pastures during summer, €70 annually per hectare for mowing steep Alpine meadows and €40 annually per stallion.

Different estimation samples were used for the empirical analysis. The sample of main interest comprises panel data for the years 1993 and 2000. Since a richer set of covariates is available for the year 1993, we tested further (aspects of) hypotheses using data from 1993 only. Our analysis explored the determinants of two variables. First, we identified the determinants of a successful bargaining solution (*solution* = 1 if a local payment scheme is adopted, and *solution* = 0 otherwise), using a random effects probit model (Baltagi, 2006: 209). Second, if the so-called threshold is crossed and the council has decided to compensate farmers, a truncated regression was used to analyse the size of the payment per hectare of agricultural land (*payment*).¹³ This procedure, known as the hurdle, or two-tiered, model was suggested by Cragg (1971). For an overview of the explanatory variables used in each model, see the descriptive statistics in Table 1.¹⁴

4.1. Determinants of the probability of a bargaining solution

The estimation results of the probit models with the binary dependent variable *solution* are reported in Table 2. For each model, we report the coefficients, their standard errors and the marginal effects (calculated at sample means), i.e. the change in the average probability of payments caused by a unit change in each independent continuous variable, or the change in the probability when a binary variable changes from zero to one. The qualitative results from the panel probit model and the conventional probit model with 1993 data only are very similar. In the following section, we discuss the variables used to represent the different hypotheses and focus on the quantitative interpretation of the results based on the panel estimation.

Hypothesis 1 (Benefits of agricultural landscape amenities): The variables used to capture the benefits of agricultural landscape amenities are the number

12 All monetary variables are adjusted to Euros of 2000 to take account of inflation.

13 In order to account for the panel structure of the data and to get robust variance estimates, we have adjusted for within-community correlation (Wooldridge, 2002: 405).

14 Unless stated otherwise, these data have been obtained from the Austrian Statistical Office Database.

Table 1. Descriptive statistics for different samples^a

	Panel data		1993		2000	
	<i>N</i> = 419		<i>N</i> = 266		<i>N</i> = 153	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Solution	0.27	0.44	0.15	0.36	0.47	0.50
Payment	10.59	31.61	7.47	28.37	16.01	36.04
Hotel beds per capita	1.41	1.03	1.48	1.07	1.30	0.95
Share of semi-natural area	85.08	14.63	84.94	14.43	85.31	15.02
Average WTP	—	—	0.65	0.44	—	—
Average perceived landscape variety	—	—	5.03	1.34	—	—
Index of farming difficulty	1.91	0.75	1.96	0.81	1.81	0.60
Number of farms	75.05	54.41	74.98	53.61	75.16	55.95
Number of hotel-keepers	48.97	137.71	149.44	131.08	148.14	148.96
Share of full-time farmers	27.93	18.07	30.89	18.15	22.77	16.78
Share of female farmers	14.98	8.81	14.19	7.96	16.35	9.99
Share of young farmers	15.28	6.61	15.88	7.04	14.24	5.65
Share of votes for OEVP	45.93	14.58	47.31	14.65	43.54	14.19
Share of votes for SPOE	20.60	10.09	20.87	10.49	20.11	9.37
Share of votes for others	33.45	9.16	31.82	8.93	36.28	8.90
Share of mayor's party in council	—	—	65.97	23.96	—	—
Municipal revenues per capita (€1,000)	1.66	1.00	1.49	0.92	1.94	1.09
Share of holiday flats	—	—	17.50	13.12	—	—
Average age	34.72	2.17	33.89	1.89	36.16	1.85
Average education	1.90	0.22	1.83	0.21	2.03	0.20
Share of females	50.22	1.80	50.25	1.74	50.17	1.90
Inhabitants (1,000)	1.70	1.53	1.63	1.43	1.83	1.68
Village area (1,000 hectares)	5.94	5.66	5.92	5.77	5.98	5.48
Tyrol	0.62	0.49	0.64	0.48	0.58	0.50
Salzburg	0.26	0.44	0.25	0.43	0.27	0.45
Vorarlberg	0.13	0.33	0.11	0.32	0.15	0.36

^aS.D. denotes standard deviation.

of hotel beds per capita, the share of semi-natural area in a community,¹⁵ and (for 1993 only) two additional variables from a contingent valuation study (average WTP, average perceived landscape variety) (see Pruckner, 1995; Hackl and Pruckner, 1997). For that study, information on the perceived landscape variety and the willingness to pay for landscape-enhancing agricultural services was collected: in 1991, 4,585 summer tourists were asked questions about their assessment of the rural countryside and its connection to agriculture and tourism in Austria. In particular, respondents were asked to value the quality of landscape diversity and landscape cultivation in their vacation resort on a 10-point scale, with 1 indicating a very low quality and 10

15 Semi-natural area comprises areas categorised according to the land register as agricultural land, garden, vineyard, mountain area, forest and areas under water.

Table 2. Probit models for the bargaining solution^a

	Panel data			1993		
	Coefficient	<i>P</i> -value	mf _x ^b	Coefficient	<i>P</i> -value	mf _x ^b
Benefits of agric. landscape amenities						
Hotel beds per capita	0.381***	0.008	0.088	0.693***	0.003	0.009
Share of semi-natural area	-0.022**	0.027	-0.005	-0.030*	0.095	-0.0004
Average WTP				-0.817*	0.099	-0.011
Average perceived landscape variety				-0.308**	0.035	-0.004
Costs of agric. landscape amenities						
Index of farming difficulty	0.079	0.622	0.018	-0.264	0.332	-0.004
Transaction costs of beneficiaries						
Number of hotel-keepers	0.003**	0.039	0.001	0.008***	<0.001	0.0001
Transaction costs of farmers						
Number of farmers	0.003	0.292	0.001	-0.004	0.441	-0.0001
Share of full-time farmers	-0.011*	0.087	-0.002	-0.025*	0.071	-0.0004
Share of female farmers	-0.038***	0.005	-0.009	-0.023	0.355	-0.0003
Share of young farmers	-0.004	0.787	-0.001	0.049*	0.063	0.001
Transaction costs in the council						
Share of votes for SPOE	0.040**	0.011	0.009	0.067**	0.026	0.001
Share of votes for others	0.005	0.733	0.001	-0.010	0.743	-0.0001
Share of mayor's party in council				-0.006	0.623	-0.0001
Fiscal limitations						
Municipal revenues per capita	0.096	0.442	0.022	0.556***	0.006	0.008
Social capital						
Share of holiday flats				-0.054***	0.005	-0.001

(continued on next page)

Table 2. (continued)

	Panel data			1993		
	Coefficient	<i>P</i> -value	mfxb	Coefficient	<i>P</i> -value	mfxb
Structural variables						
Average age	-0.022	0.724	-0.005	0.149	0.262	0.002
Average education	1.048*	0.099	0.242	-0.063	0.966	-0.001
Share of females	-0.058	0.349	-0.013	-0.195	0.169	-0.003
Inhabitants	0.163	0.153	0.038	0.170	0.450	0.002
Year 2000 dummy	1.384***	<0.001	0.373			
Control variables						
Village area	-0.036	0.194	-0.008	-0.068	0.121	-0.001
Salzburg	0.610**	0.029	0.162	2.010***	<0.001	0.137
Vorarlberg	0.283	0.410	0.073	0.916	0.169	0.034
Constant	0.194	0.955		4.711	0.515	
Number of observations	419			266		
Log Likelihood intercept only/full	-243.25/-156.61			-112.61/-45.33		
Wald(LR) χ^2/P -value	38.50/0.005			(134.58)/ <0.001		
Mc Fadden's R^2	0.356			0.598		
Sensitivity/specificity ^c	57.14/91.21			70.00/96.02		

^aThe number of communities is 268 in the panel estimation. *, ** and *** indicate statistical significance at the 10-per cent level, 5-per cent level, and 1-per cent level. Base group for the political dummies is the 'share of OEVP in parliament election'. Base group for the regional dummies is Tyrol.

^bThe marginal effect is given by $\partial E[\text{prob}(\text{solution}|\bar{X})]/\partial x_j$.

^cSensitivity (specificity) is the percentage share of observed positive (negative) outcomes that are correctly classified.

indicating very high quality, without further specification of landscape components. In addition, the tourists' WTP for the provision of landscape-enhancing services by farmers was elicited. The respondents received a verbal description of these agricultural services, and their familiarity with the good in question was checked. Based on an open-ended question format, mean and median WTP were €0.67 and €0.25 per tourist per day, respectively.

According to the panel probit results (Table 2, columns 1–3), the number of hotel beds has a significant positive effect on the probability of an agreement. An increase of one in the number of hotel beds per capita raises the average probability by about 9 percentage points. The negative effect of the share of a community's semi-natural area on the probability of payments seems counterintuitive at first glance. However, one has to bear in mind possible interdependencies of supply and demand characteristics for landscape-enhancing activities over time. This result suggests that communities with few semi-natural areas recognise that efforts must be made to improve the countryside and attract tourists.

The negative impacts of average WTP and average perceived landscape variety (see Table 2, columns 4–6) are in line with the result for the share of semi-natural area.¹⁶ Again, the interdependencies of supply and demand characteristics for landscape-enhancing activities over time seem to be decisive. The negative signs indicate that communities with a low perceived landscape variety may recognise that some effort needs to be undertaken to improve the countryside and attract tourists (with a high WTP). The need to increase landscape variety to capture potential future profits in tourism by exploiting vacationers' WTP seem to foster local payment schemes. Conversely, if current landscape variety is high and tourists reveal a substantial WTP for countryside amenities, the immediate call for action may be lower.¹⁷

Hypothesis 2 (Costs of agricultural landscape amenities): We used a composite index of farming difficulty as an indicator for natural production disadvantages.¹⁸ However, our econometric analysis does not support a significant influence of costs of service provision on the outcome of negotiations. The insignificant coefficient may indicate that the variable used does not satisfactorily represent the costs of service provision.

Hypothesis 3 (Transaction costs among the beneficiaries): The proxy variable for transaction costs of beneficiaries is the number of hotel-keepers. Our panel results suggest that an increase in the number of hotel-keepers has, *ceteris paribus*, a significant positive impact on the probability of an agreement. Concretely, an increase in the number of hotel-keepers from half a standard deviation below the mean to half a standard deviation above the mean

16 An increase in average WTP per day by one Euro reduces the predicted probability of a bargaining solution by 1.1 percentage points.

17 In principle, the negative sign may indicate an increase in private solutions as a substitute for government payments. However, purely private markets for the provision of landscape amenities hardly exist (Salzman, 2005).

18 This index (1–4) captures the natural and economic difficulties in agricultural production. The main criteria for the classification are: hillside gradient situation, climatic conditions and access to the farm for heavy vehicles. The categorisation of farms is carried out by the Chamber of Agriculture on the basis of federal legislation.

raises the predicted probability by about 8 percentage points. It therefore seems that the number of hotel-keepers reflects the benefits of countryside amenities rather than transaction costs. Furthermore, the number of hotel-keepers may partly reflect the bargaining power of tourism, which would also explain the positive sign.¹⁹

Hypothesis 3 (Transaction costs among the farmers): The proxy variables for transaction costs among farmers are the number of farmers, the share of full-time farmers, the share of female farmers and the share of young farmers. The last three variables capture transaction costs caused by heterogeneity within the group of farmers. Given that the agricultural sector is dominated by older male part-time farmers (see the descriptive statistics in Table 1), an increase in each of these variables is equivalent to an increase in heterogeneity and could, *ceteris paribus*, increase the transaction costs of reaching an agreement.

The estimation results indicate that the share of full-time farmers and the share of female farmers have the expected negative effect, whereas the number of farmers does not influence the probability of an agreement. The negative effect of the share of full-time farmers may not only be due increased transaction costs, but may also reflect the part-time farmers' credible threat of abandoning agricultural activities altogether. Part-time farmers earn significant income in non-agricultural markets and therefore do not rely on agricultural earnings to the same extent as full-time farmers. A third explanation for the negative sign is full-time farmers' scepticism regarding their role as landscape gardeners. Full-time farmers often express their preference for receiving payments for producing agricultural output rather than receiving money for landscape services, which they interpret as a 'charitable' payment. The share of young farmers has no impact in the panel data model, whereas in the conventional probit model for 1993 it has a significant *positive* effect. An increase in the number of young farmers therefore does not appear to increase transaction costs. The positive coefficient may instead reflect more pronounced environmental sensitivity among young farmers.

Hypothesis 3 (Transaction costs in the municipal council): It is obvious that the political influence of parties is directly reflected by their representation in the municipal council. However, the outcomes of municipal elections, especially in rural areas, seem to be dominated by the degree of esteem for individual local representatives. Ideological party interests play a minor role in municipal elections. As a consequence, different name lists run for local elections in the provinces of Salzburg, Vorarlberg and Tyrol, and it is almost impossible to classify them ideologically into conservative (right-wing) or social democratic (left-wing). We therefore use the parties' share of votes in federal parliamentary elections as a more appropriate representation of ideological positions in rural communities. This approach is

19 Unfortunately, we have no information about the people who were involved in the negotiating process and the role they played there. Therefore, it is not possible to draw conclusions about the negotiation skills of councillors and their bargaining power.

supported by the fact that the political competencies of Austrian municipalities are explicitly restricted to the administration of local issues.

The panel estimation shows that a higher proportion of voters for the Social Democrats (relative to the share of the omitted base group, the People's Party) in the previous parliamentary election increases the probability that an agreement is reached. This result is surprising at the first glance, since both hotel-keepers and farmers are traditionally represented by the conservatives. However, based on the parties' ideological positions towards agricultural and social policy, this result seems plausible. The People's Party has always preferred price subsidies, whereas the Social Democrats have preferred direct subsidies at farm level over indirect support measures. A shift in the share of votes from the Conservatives to the remaining parties (share of votes for others) does not have a comparable statistically significant impact on the probability of an agreement.

While the votes for the different parties in the parliamentary election merely captured preferences, another politico-economic variable is available in our 1993 sample: the share of the mayor's party in the municipal council is expected to be directly connected to transaction costs within the municipal council. On average, the share of the mayor's party in the municipal council runs to 66 per cent. A further increase in this share therefore increases homogeneity, lowers transaction costs and might be expected to influence the success of negotiations positively.

The results show, however, that the probability of an agreement is not affected by the mayor's party having a higher share in the municipal council. Its positive effect on the size of payment will be explored below.

Hypothesis 4 (Gender): The hypothesis that males have a stronger preference for public pro-environment behaviour is not corroborated by our results. Gender shares in a community do not influence the probability of a consensus being reached.

Hypothesis 5 (Age): Likewise, there is no significant effect of age on the outcome of the negotiation process. The average age is not statistically significant in any estimated model. This result may reflect the conflicting age effects found both in environmental surveys and content-free public good experiments.

Hypothesis 6 (Education): The education level of each community was quantified by a continuous variable reflecting the mean of an ordinal variable for individuals living in the community on a scale ranging from 1 (compulsory school) to 6 (university degree). The effect of this variable, representing the average education level in the community, is positive and statistically significant.

Hypothesis 7 (Urban character of the community): We quantify the urban character of a community by the size of its population while also controlling for the area of the community. It turns out in our estimations that the population size of a community has no significant impact on the probability of an agreement. The same is true for the control variable 'village area'. The supposed preference for urban or rural issues is therefore not apparent. However,

this result is not surprising given that the sample does not include densely populated areas. All communities in the sample are located in agricultural areas and therefore share rural characteristics.

Hypothesis 8 (Social capital): In order to measure the extent to which people are integrated into their community, we include the share of holiday flats in all dwellings in the models. This variable reflects the proportion of non-permanent residents in a community. This group of people is assumed to be less integrated into the life of the community, and therefore not equally committed to local social norms and fairness considerations compared to local residents.²⁰ In accordance with expectations, the results show that the probability of achieving an agreement is negatively affected by the share of holiday flats.

Hypothesis 9 (Fiscal limitations): Surprisingly, our panel estimates provide no evidence that the financial situation in municipalities, captured by per capita municipal revenue, is a significant determinant of the probability of an agreement. In 1993, however, fiscal limitations do seem to be relevant. The probability of achieving an agreement is higher in communities with higher revenue: an increase of €1,000 in municipal revenue per capita raises the average probability of a successful outcome by about 1 percentage point. We also considered municipalities' debts in different specifications. However, we did not find any effect of debt on the predicted probability.

Hypothesis 10 (Other agricultural subsidies): A dummy variable for the year 2000 is included in the panel estimation. This variable captures all systematic changes between 1993 and 2000 apart from those reflected by the control variables.

The significant and quantitatively important effect (about 37 percentage points at sample means) probably captures not only the various structural changes caused by Austria's entry into the EU and by the modification of the CAP, but also increased awareness among the public regarding landscape services. One structural change associated with EU policies can be checked in more detail: for the year 2000, we can observe the total amount of OEPUL subsidies (Austria's agri-environmental programme) paid to farmers in the communities. In order to test whether these OEPUL subsidies have an effect on the probability of a bargaining solution, we estimated a probit model with the data for 2000 only and included the level of OEPUL subsidies per hectare of agricultural land. It turns out that the size of OEPUL payments does not have a significant effect.²¹ To sum up, we conclude that fiscal limitations and other subsidies do not play an important role.

Moreover, we also found significant regional differences: communities in Salzburg have a higher probability of adopting a local payment scheme, *ceteris paribus*, compared to communities in Tyrol (base group). Unobserved

20 Unfortunately, we can test this hypothesis only for 1993. Data on the number of holiday flats is no longer collected by the Austrian Statistical Office.

21 Results are available upon request.

heterogeneity across the regions is responsible for this result. Communities located in Vorarlberg do not differ from Tyrolean municipalities.²²

4.2. Determinants of the amount of compensation payments

This section reports findings on the determinants of payment size. While most of the hypotheses formulated apply equally to both the probability of a bargaining solution and to payment size, there are several differences. First, the effect of service provision cost on the agreed amount depends on the price elasticity of demand for landscape services in the political bargaining process and is therefore ambiguous. Second, once a scheme is adopted, we hypothesise that the agreed amount is not affected by transaction costs. We used a truncated regression with payments per hectare of agricultural land as the dependent variable. The estimated coefficients, their standard errors, and the marginal effects are shown in Table 3. A likelihood ratio test (Greene, 2003) rejected the tobit model (in which the coefficients in both the binary probit and continuous truncated regressions are the same) in favour of the two-tiered estimation procedure (in which coefficients may be different).²³

Columns 1–3 show the results for the panel data, and columns 4, 5 and 6 for the 1993 data. Together with the probit results given in Table 2, these results constitute the hurdle model. In the panel version, we obtain plausible differences in the determinants of a consensus and on the size of payment agreed. While transaction costs have an impact on the probability of a solution, we do not identify any influence on the agreed amount. The only significant variable associated with transaction costs is the share of full-time farmers. However, as discussed above, the share of full-time farmers does not only reflect transaction costs. Higher benefits are associated with higher payments: an increase of one in the number of hotel beds per capita increases the payment per hectare of agricultural land by approximately €48. Moreover, it turns out that larger communities tend to have higher payments: an additional thousand inhabitants (thousand hectares of village area) is associated with an increase in payments of €37 (€5), a result which is in contrast to prior expectations. Compared to Tyrolean tourist communities, local compensation payments are lower in Salzburg by €103 and higher in Vorarlberg by €108.

In order to explore the interrelation between the size of payment and the OEPUL subsidies, we ran an additional truncated regression with the data for the year 2000 equivalent to the model in Table 3. The results show that

22 In other specifications, we checked whether it matters if farmers provide holiday accommodation. For this purpose, we controlled either for the number of farms offering beds for tourists or for the number of beds in these farms. Both variables do not significantly influence the probability of a bargaining solution nor the size of payment.

23 The test statistic, $\chi^2_{df} = 2(\ln L_{Probit} + \ln L_{Trunc} - \ln L_{Tobit})$, is distributed as chi-square with df degrees of freedom, which is equal to the number of independent variables including the constant. The likelihood ratio test statistics of $\chi^2_{20} = 199.35$ and $\chi^2_{22} = 77.37$ for the panel data and the 1993 data, respectively, exceed the chi-square critical values and therefore reject the tobit model.

Table 3. Determinants of the size of payment^a

	Panel data			1993		
	Coefficient ^b	<i>P</i> -value	mfxc ^c	Coefficient ^b	<i>P</i> -value	mfxc ^c
Benefits of agric. landscape amenities						
Hotel beds per capita	47.789***	0.002	7.048	13.459	0.349	8.122
Share of semi-natural area	2.000	0.220	0.295	-0.455	0.662	-0.274
Average WTP				-105.202**	0.018	-63.485
Average perceived landscape variety				-2.136	0.788	-1.289
Costs of agric. landscape amenities						
Index of farming difficulty	-20.213	0.344	-2.981	-11.647	0.510	-7.028
Transaction costs of beneficiaries						
Number of hotel keepers	0.020	0.827	0.003	0.047	0.658	0.028
Transaction costs of farmers						
Number of farmers	-0.687	0.124	-0.101	0.001	0.998	0.001
Share of full-time farmers	-1.942**	0.036	-0.286	0.755	0.287	0.456
Share of female farmers	0.388	0.841	0.057	0.744	0.682	0.449
Share of young farmers	-0.127	0.965	-0.019	1.589	0.407	0.959
Transaction costs in the council						
Share of votes for SPOE	-0.882	0.779	-0.130	2.316	0.248	1.398
Share of votes for others	-2.786	0.147	-0.411	0.223	0.902	0.135
Share of mayor's party in council				1.548*	0.059	0.934

Fiscal limitations						
Municipal revenues per capita	1.524	0.866	0.225	-3.321	0.803	-2.004
Social capital						
Share of holiday flats				0.346	0.801	0.209
Structural variables						
Average age	4.974	0.648	0.734	-2.211	0.737	-1.334
Average education	113.865	0.358	16.794	311.403***	<0.001	187.917
Share of females	-17.406	0.143	-2.567	-2.589	0.697	-1.562
Inhabitants	36.868**	0.015	5.438	-3.537	0.686	-2.135
Year 2000 dummy	-16.201	0.715	-2.452			
Control variables						
Village area	4.687	0.101	0.691	2.276	0.153	1.373
Salzburg	-102.555***	0.004	-14.702	-75.104***	0.007	-49.373
Vorarlberg	107.737***	0.003	26.089	81.079**	0.012	68.719
Constant	312.365	0.568		-470.521*	0.098	
Number of observations	112			40		
Log Likelihood intercept only/full	-513.46/ -469.23			-177.44/ -157.59		
Wald χ^2/P -value	64.26/<0.001			115.84/<0.001		
Mc Fadden's R^2	0.086			0.112		
σ/P -value	52.974/<0.001			24.031/<0.001		

^a *, ** and *** indicate statistical significance at the 10-per cent level, 5-per cent level and 1-per cent level. Base group for the political dummies is the 'share of OEVP in parliament election'. Base group for the regional dummies is Tyrol.

^bThe coefficient is equal to the 'unconditional' marginal effect given by $\partial E(\text{payment}|\bar{X})/\partial x_j$.

^cThe 'conditional' marginal effect is given by $\partial E(\text{payment}|\text{payment} > 0, \bar{X})/\partial x_j$.

for every Euro of the OEPUL subsidies, the local compensation payment *increases* by €0.2. This complementary relationship may imply that the amount of current OEPUL subsidies is not sufficient to guarantee an optimal level of landscape-enhancing services, a fact which seems to be recognised by the community council. However, since the OEPUL subsidies are not statistically significant in the probit estimation, this result more probably reflects an anchoring effect: given that the municipality council has agreed to adopt a local compensation programme, they use the OEPUL programme as a benchmark in fixing a specific amount.

5. Conclusions

This paper discusses local compensation payments made to farmers for providing agricultural landscape-enhancing services as the outcome of municipal bargaining. It studies the determinants of these bargaining outcomes based on panel data from Austrian Alpine tourist communities. Accordingly, our work aims to contribute to the new institutional approach to environmental governance by focusing on transaction costs and interdependencies between the parties involved.

We find that the probability of agreeing a local payment scheme depends significantly on the benefits of agricultural amenities. Variables reflecting transaction costs yield ambiguous results: whereas both the share of full-time farmers and the share of female farmers show the expected negative sign, the number of hotel-keepers is unexpectedly negative. It seems that the number of hotel-keepers instead reflects benefits. The share of votes for SPOE in parliamentary elections, and the average education level in the community, have positive effects on the probability of a payment scheme. Structural changes between 1993 and 2000, which are at least in part associated with Austria's entry into the EU, also increase the probability of agreeing a payment scheme.

From a separate model using only 1993 data, we conclude that when landscape diversity is perceived to be lower, communities recognise the need to stimulate landscape improvements and attract tourists via local payment schemes. Our results also suggest that the degree of social integration in the community predisposes communities to agree on (higher) local compensation payments.

Landscape benefits have a positive effect on the size of payment, whereas transaction costs have no influence on payment size. We find a complementary relationship between local compensation payments and subsidies paid under Austria's national agri-environmental programme (OEPUL), such that an increase of €1 in OEPUL subsidies increases local compensation by €0.2.

From these results, we draw four main conclusions. First, local compensation schemes are potentially efficient as they internalise positive externalities. Community-based subsidy payments for landscape-enhancing agricultural services seem to be an important supplement to EU and national policy measures in support of rural and/or less-favoured areas. Our results indicate that the established agricultural subsidy schemes before and after Austria's EU entry have not guaranteed an optimal level of landscape-enhancing services in

Alpine regions. The OEPUL programme represents a step in the right direction, but the volume of financial support it offers has not been a sufficient incentive for farmers to provide the recreational and conservation services desired by local communities. A nationwide programme cannot be expected to take into account all community-specific needs. Giving everyone an equal share of green subsidy payments does not meet real local agri-environmental requirements, especially in mountain areas. From an efficiency perspective, it seems reasonable that local compensation schemes should develop to supplement national and EU subsidy programmes. This paper highlights an innovative compensation mechanism for the provision of ecosystem services and provides support for multi-level governance solutions. Whereas Europe-wide constituencies benefit from environment-based CAP measures, additional payment systems seem necessary for the provision of environmental services for spatially more confined beneficiaries.

Second, local compensation payments seem reasonable from a distributional perspective as well. Hoteliers are expected to benefit from landscape amenities through higher income, while the costs of service provision are borne by agriculture. A local compensation scheme addresses this inequitable misalignment of costs and benefits. Moreover, the inter-sectoral redistribution is accompanied by vertical redistribution, given that mountain farmers are in lower-income categories.

Third, it is important to note that we observe this type of bargaining-based local subsidy payment in tourist communities but not in residential areas where tourism is only marginally important, if at all. Successful bargaining outcomes appear to be tourism-motivated. We therefore hypothesise that the direct dependence of tourism profits on a well-kept landscape manifests itself in subsidy payments, whereas the potential WTP of residents for these services is not translated into real payments to farmers. It appears that a prerequisite for successful bargaining outcomes is that the benefits are monetised in the form of profit for hotel-keepers and tourist taxes. Intangible benefits for residents do not fall into this category, even though it would be economically sensible from a distributional as well as an efficiency viewpoint to internalise external benefits in non-tourist communities, too. Further research is needed to investigate whether transaction costs or political restrictions may also explain the lack of these compensation schemes in non-tourist communities.

Fourth, we find that compensation payments are predominantly made in communities where the provision of agricultural landscape-enhancing services has been perceived as relatively low, and the diversity of the countryside seems to be endangered. We therefore argue that politically negotiated local compensation payments can be used as a stimulus for (increasing) future provision of agricultural external benefits.

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