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Supporting the Conservation of Farm Landscapes Via the Tourism Sector

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Abstract: Agri-environmental subsidy payments have, in part, been designed to compensate farmers for employing environmentally friendly farming techniques that provide multiple ecosystem services to the public. These public good benefits have also been well recognised in the context of a growing rural tourism sector. However, the high costs associated with the subsidy schemes, in conjunction with the ongoing economic recession, mean that it is necessary to explore alternative sources of funding in order to sustain the farming community. Through a case study in western Ireland, we explore the potential of a "beneficiary pays" approach to generate revenues for funding the maintenance of farm landscapes, which are a fundamental attractor of tourists to the region. Our results suggest that both tourists visiting the region and accommodation providers in the locality are willing to contribute towards the costs of preserving farm landscapes and that such a scheme may generate substantial contributions, albeit not sufficient to replace existing government funding.

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I INTRODUCTION

Over many generations traditional farming practices shape countryside landscapes, forming attractive terrains which in turn can be responsible for attracting visitors to these regions. The environmentally friendly farming methods have been found to promote a diverse ecosystem, leading to many additional positive externalities.[1] The role that farmers play in providing these benefits is well recognised by the public and as such the exchequer costs related to agri-environmental subsidies to farmers are deemed to be justified (Pruckner, 1995; Hanley *et al*., 1998a, 2007; Campbell, 2007; Hynes and Hanley, 2009; Hynes *et al*., 2011).

In recent years however, restrictions placed upon government budgets due to the economic downturn have significantly reduced the availability of funds to finance agri-environmental schemes. As a consequence of reduced financial incentives and a lack of profitability, an increase in the use of alternative, more intensive methods of farming and/or abandonment of farmlands are likely to result. Such an eventuality will have negative effects on the conservation of biodiversity and the maintenance of the countryside landscape; in turn impacting upon the number of visitors to the region. If visitor satisfaction is reduced, businesses dependent on visitors, for example local accommodation providers, may also be seriously impacted. Moreover, reduced funding for environmental schemes can have long lasting impacts due to the irreversibility of resultant changes with certain habitats and landscapes being altered by the adoption of alternative farming techniques.

In light of the range of beneficiaries that may be affected by such a change, in this study we explore whether a subset of these beneficiaries would be willing to contribute directly towards financing the maintenance of the agricultural landscape. While a number of studies have assessed the willingness to pay of local communities and the general public for sustained provision of environmental goods, our approach differs from these studies in that we target the tourism sector (both tourists and tourism businesses) as one of the key beneficiaries of the positive externalities provided by the farming community. We focus on the west of Ireland in this case study and explore the willingness of international tourists and local Bed & Breakfast (B&B) owners to contribute towards a fund that compensates farmers for maintaining the farming landscape and its ecosystem services. The profits earned by B&Bs in some sense represent economic rents since B&Bs do not (directly) contribute towards the cost of providing the environmental goods that play an important

[1] See Swinton *et al*. (2007) for more details on non-tangible benefits from farmlands.

role in attracting their visitors. With 33 per cent of holidaymakers coming predominantly for the countryside (Fáilte Ireland, 2009), B&Bs have a considerable exposure to deterioration of the surrounding environment; though there may be a delay before any negative effects are realised.

This study is based upon two separate surveys, the first of which was conducted with B&B owners in seven counties that make up the western seaboard of Ireland, and the second with international tourists visiting that region. We estimate the value placed on the environmental externality by these two groups of beneficiaries, which is followed by a welfare analysis to explore the financial contribution such payments can make towards the cost of providing the environmental good as devised by the agri-environmental scheme budgets.

II BACKGROUND

Farm subsidy payments related to the first pillar of the Common Agricultural Policy (CAP) and were originally implemented in an attempt to achieve higher levels of production in order to ensure food security in the EU. Whilst these production-based goals were achieved, environmental degradation associated with heightened farm activity was also experienced. In Ireland, the Rural Environmental Protection Scheme (REPS) was first introduced in 1994 as the primary agri-environmental scheme where member farmers were obligated to farm in an environmentally friendly way; which meant that they faced higher costs of production. In return for their efforts in reducing pollution levels, conserving biodiversity and maintaining the countryside landscape, the farmers were rewarded financially.

REPS progressed through substantial modifications (REPS 1 to REPS 4) over the course of almost two decades where the successive schemes attempted to improve environmental standards while attracting additional farmers into the scheme via more attractive payment rates. Most of the farmers in Ireland that have adopted the REPS have been found to farm less productive lands that are more suited for extensive, small-scale dry stock systems (Hynes and Garvey, 2009). This type of farming system is characteristic of hill farms in the west of Ireland. Farmers in this enterprise category have below average family farm incomes compared to tillage and dairy farms (Connolly *et al*., 2007; Moloney, 2011) and hence are heavily dependent upon subsidy payments. Subsidy payments accounted for 143 per cent of farm income in 2009 compared to 103 per cent and 86 per cent in 2008 and 2004 respectively. Essentially, the value of gross output from many farms is not sufficient to even cover the costs of production (Moloney, 2011).

Although subsidy schemes such as REPS may have slowed down the deterioration of traditional small-scale hill farming, they have not prevented it. Between 1991 and 2002 a total of 42,400 farm holdings ceased operation (CSO, 2007) and this trend is expected to continue due in part to a lack of interest in farming from the younger generation (Hennessy and Rehman, 2007). Consequently, the size of farms increased from an average of 26 hectares in 1991 to 32.7 hectares in 2010 (CSO, 2010).

The future of small-scale hill farming has come under additional strain during the economic downturn, which has reduced government spending on subsidy payments. The REPS, which contributed an average of €6,318 to the income of participating farmers in 2008, was cancelled in 2009 and replaced with a significantly more modest scheme, the Agri-Environmental Option Scheme (AEOS), which pays a maximum amount of €4,000 per applicant (Farm Income Review, 2009). The annual financial commitment for AEOS 1 is €32 million per annum, while the budget for AEOS 2 will not exceed €25 million per annum leading to a current annual commitment of €57 million[2] compared to an annual expenditure of €337 million for REPS in 2009 (REPS Fact Sheet, 2009).

With fewer farmers allowed to join these schemes, changes within the farming community and to the countryside environment are, therefore, a real possibility. Given the trajectory of economic conditions in recent years, it seems unlikely that the government budget will rebound in the short term to facilitate the reintroduction of environmental schemes with more attractive payments. As such, alternative sources of funding to supplement existing environmental payment schemes must be explored and, where feasible, implemented before irreversible changes occur.

One such source of supplemental funding would be for the beneficiaries of the public good to directly compensate the providers in order to ensure continued supply of the externalities. Payment for Ecosystem Service (PES) schemes employ such an arrangement based upon the "user pays" principle whereby the beneficiary pays to ensure the continued provision of the public good. However, a commonly faced difficulty in pursuing this approach is that externalities resulting from biodiversity conservation, watershed protection and climate change mitigation are not easily quantifiable (See Kroeger and Casey (2007) and Engel *et al*. (2008) for an overview of the issues related to PES schemes).

[2] Both AEOS 1 and AEOS 2 which were commenced in 2010 and 2011 respectively, require five year commitments. No new membership into AEOS has been approved for 2012.
Source: AEOS Additional membership: Speech by Minister of State Shane McEntee at the Bank of Ireland Agri Seminar at the Abbey Court Hotel, Nenagh, Co. Tipperary on Thursday 26 January, 2012 accessed 1 May, 2012 at http://www.agriculture.gov.ie/press/ministersspeeches/speechesby ministerofstatemcentee/2012/

In this paper we focus on a particular subset of the farm related externalities – those that are associated with landscape aesthetics,[3] and on a subset of beneficiaries linked to the tourism industry. As such this study does not intend to capture the overall value related to the agricultural landscape; rather it seeks to quantify an essential segment that can potentially be tapped to generate revenues to compensate farmers for providing landscape externalities. Even with this narrow focus, we contend that significant willingness to pay exists and posit that such a scheme may represent a viable revenue stream.

Offering a wide spectrum of recreational activities ranging from enjoying the scenery from afar to recreational hill walking (which involves more direct access onto the farmer's land), the west of Ireland attracts a considerable volume of tourists.[4] This study includes international tourists visiting Ireland for recreational purposes as an important beneficiary.[5] Data from Fáilte Ireland (National Tourism Development Authority for Ireland) shows that tourists coming to Ireland consider aspects of the natural environment such as "beautiful scenery" and the "Natural, unspoilt environment" to be very important in influencing their decision to visit (Fáilte Ireland, 2010). Of the 6.93 million visitors that came to Ireland in 2009, over 43.7 per cent claimed to be on holiday[6] and a total of 693,000 of them engaged in outdoor activities related to hiking or cross country walking. Thus a significant proportion of tourists derive benefits from the landscape aesthetics.

The issue of access onto farmlands and furthermore the suitability of compensation payments in return for access provision has been a much debated topic in Ireland (Buckley *et al*. 2009). There exists considerable demand for the right of access onto these lands, which the public are willing to pay for. A contingent valuation study conducted by Madden (2009) reports that 55 per cent of respondents were willing to pay an average of €2.24 in return for guaranteed access to farmlands for walking purposes. Apart from the "active" users of the farmland for recreational hill walking purposes, there are other "passive" recreationalists such as individuals enjoying the scenery while taking a drive through the countryside. Such users are routinely ignored when considering valuations of farmland externalities.

[3] Here we interpret the benefits from landscape aesthetics as the "pleasure people gain from seeing, visiting, or even knowing the existence of certain landscape features" (FAO, 2007)

[4] According to surveys conducted by Fáilte Ireland (2009), the rural countryside environment and activities associated with it are a key reason behind visitations to Ireland.

[5] Although to some extent tourists pay for their enjoyment of the externality through higher prices, it is unlikely that local business capture the entire surplus accruing to tourists.

[6] The number of tourists coming to Ireland has dropped by almost 25 per cent since its peak of 7.74 million in 2007.

The lack of compensation for the provision of public goods is, in many cases, a result of the absence of a payment mechanism rather than a reluctance to pay. With increasing levels of awareness regarding environmental affairs, consumers and tourists alike are concerned with the environmental consequences of their actions and are thus willing to pay extra in return for eco-friendly options (Wandel and Bugge, 1997; Kelly *et al*., 2007; Chaminuka *et al*., 2012). Kelly *et al.* (2007) find that tourists are willing to pay an additional fee in return for services that could help mitigate their negative environmental impact. Miller (2003) cited a MORI (1997) poll of UK tourists where consumers stated that they would be willing to pay £7.10 to ensure that their tour operator was committed to environmental protection and £7.50 for the same commitment from accommodation providers.

In addition to the benefits accruing to tourists, there are multiple other benefits that are realised by the local community hosting the tourists. A study by Vanslembrouck *et al*. (2005) shows that amenities from agriculture have a positive influence on rental prices in tourist areas while negative externalities have a negative influence. Vaughan *et al*. (2000) argue that the economic impact of tourism has a multiplier effect that comprises of four parts; the initial spending by the tourist, the direct impact on jobs and income in the destination, the indirect impacts, and the induced income resulting from people spending incomes earned as a result of visitor spending. In Ireland over 80 per cent of tourist expenditure accounted for by the "bed and board", "shopping" and "food and drink" categories (Fáilte Ireland, 2009). If tourism numbers were to fall, then many of the businesses associated with these categories would experience some level of reduced income. These businesses, such as accommodation providers, restaurants, tour operators, etc. can thus be classified as secondary beneficiaries.

Hence, in addition to foreign tourists, we also survey local B&Bs to ascertain whether a subset of accommodation providers in the tourism industry that benefit from the farming community are willing to contribute to ensure continued provision of the landscape aesthetics. Although B&Bs represent a relatively small fraction of the overall accommodation rented by guests (8.29 per cent) in the west of Ireland (CSO, 2009), they were chosen as the target group for this survey for two reasons. First, unlike hotels which predominately exist in urban areas, B&Bs are scattered across rural areas and are an integral part of rural communities; and hence a greater proportion of their guests are likely to come for landscape associated activities. Second, since our focus is on the willingness to pay from the perspective of the business rather than individual beliefs, it was important that the respondent was either the owner or manager of the accommodation facility. Logistically it was not possible to gain access to owners/managers of hotels who in many cases operate on a national or international scale.

Asking local businesses to compensate farm operators for their profits from rural tourism related activities is not a new phenomenon. One example of a successful implementation of such a scheme can be found in Austria where several communities have opted to compensate farmers through their local tourism sectors for maintaining the agricultural landscapes (Hackl *et al.*, 2007). A study by Pruckner (1995) reported the estimated value of the agricultural landscape to tourists to be €0.67 per day; a value that was utilised by some local governments in a bargaining process where the benefits related to tourism were quantified in the form of additional tax to tourists and profits of accommodation providers (OECD, 2008). As a result of the bargaining process, participating farmers received on average €34 per hectare of agricultural land they owned. While these amounts are not large enough to replace existing national agri-environmental subsidies in Austria, they have proved to be an important supplement to existing funding, ensuring the continued viability of the farms. The average payment received by farmers through this scheme is used as a benchmark to compare the estimates of this study to assess the potential for implementing a similar scheme in the west of Ireland.

III DATA

In this study we focus on seven counties of western Ireland (Donegal, Sligo, Mayo, Galway, Clare, Kerry and Cork) that make up the western seaboard. We concentrate on these counties for the following reasons: (a) The geographical make up of this region with its mountainous terrain creates a landscape that is well suited for a variety of outdoor pursuits. As a result, photos of this landscape in particular are used as the brand image in much of the advertising material associated with tourism in Ireland (Fáilte Ireland, 2008). (b) The hilly terrain and poor soil quality makes this region better suited for extensive small-scale dry stock systems; which constitutes the farming group with the lowest average household income that is highly dependent upon environmental subsidy payments (Hynes and Garvey, 2009). (c) The continuation of environmentally friendly farming techniques in this region is of great importance since the region contains a high proportion of lands designated as Special Areas of Conservation (SAC), Special Protection Areas (SPA), and Natural Heritage Areas (NHA).

This study assesses the willingness to pay (WTP) values of both B&B owners and tourists using a standard contingent valuation (CV) method employing a payment card. The CV technique has been widely used to value environmental goods (Mitchell and Carson, 1989; Bjornstad and Kahn, 1996;

Hanley *et al*., 1998b; Bateman and Willis, 1999 inter alia), although a number of criticisms of the methodology can be made (see for example, Hausman, 1993; Cummings and Harrison, 1994). Notwithstanding these criticisms, Hackl and Pruckner (1997) demonstrate that the CV technique can be validly applied to measure environmental benefits of agricultural non-market services by comparing hypothetical CV estimates with the compensations that are paid to farmers by municipalities and local tourist associations. Furthermore, since we are interested in the holistic value placed upon the landscape by tourists and by B&Bs, and as the number of attributes required to adequately describe the rural landscape are vast, we opt to use the CVM instead of Choice Experiments; in line with the recommendations of Hynes *et al*. (2011).

3.1 *B&B Survey*

The B&B survey involved two stages of data collection. In the first stage, face-to face interviews were conducted with 100 B&B owners between March and April 2011 in three counties (Galway, Mayo and Cork). B&Bs were randomly selected from the *2011 B&B Ireland Brochure* (http://www.bandbireland.com/) which includes a comprehensive collection of B&B establishments around the country. The interviews were conducted face-to-face at the B&B itself. Approximately 10 per cent of the contacted B&Bs had ceased operation and hence were not surveyed. Pilot testing of the survey instrument was conducted prior to the main survey which continued until 100 surveys were obtained.

The survey was then extended across a larger geographical range to include all seven western counties (Cork, Kerry, Clare, Galway, Mayo, Sligo and Donegal) employing a mail survey.[7] Following an email reminder after two weeks of the mailings, a 20 per cent response rate was achieved with a total of 104 returned surveys. However, 11 of these surveys were returned without being completed as they claimed to have shut down their businesses leaving us with a total of 93 usable surveys from the second phase of surveying. Thus, our total sample of B&Bs was 193.

The surveys included general questions about the B&B business and their attitudes towards the environment and the local farming community. This was followed by a short description detailing the contribution of farms upon the landscape and the uncertainty related to their future.[8] The respondents were

[7] It should be noted that county Leitrim also shares a coastline in the west of Ireland. However, it was omitted from our sample due to the extremely low number of B&Bs included in the 2011 B&B Ireland brochure for this county.

[8] See Appendix A for more details on the description provided.

provided with a payment card showing bid amounts of 10¢, 25¢, 50¢, 75¢, €1.00, €1.50, €2.00, €3.00, €5.00, €7.00, €10.00, and "greater than €10.00", and then asked for their maximum willingness to pay via additional taxes for each guest night in the B&B to compensate the farmers responsible for delivering the public good.[9]

B&B owners may respond to the WTP question with an altered budget constraint that considers the possibility of transferring the extra cost onto their guests.[10] If the B&B owners are able to influence prices, then their stated WTP values may be overstated. However, we assume that the B&Bs are price takers and hence do not shift the costs to the guests which would ensure incentive compatibility. In addition, by informing the B&B owners that the extra fee would be collected via a fixed tax on all B&Bs, we reduce the possibility of any B&B having a comparative advantage over another.

3.2 *Tourist Survey*

A total of 311 international tourists visiting Ireland between the months of July and September 2011 were interviewed.[11] The surveys took place in Shannon Airport, the second largest international airport in Ireland (after Dublin Airport).[12] Five trained surveyors conducted the surveys at the departure gates of Shannon Airport with English speaking participants. Conducting tourist surveys at airport gates is a common practice (Kozak and Rimmington, 2000; Kasim, 2004; Cabada *et al*., 2009). Catching tourists in their "down time" as they wait to board their flights, may lead to more reliable responses because the opportunity cost of tourists' time during this period is much lower than during the rest of their vacation; hence they are able to invest adequate time and thought into their answers (Lopez *et al*., 2011).

After collecting some general information regarding their activities during their stay in Ireland, the respondents were provided with a description similar to the one provided to the B&B owners detailing the contribution of farms to the landscape and informed of the uncertainty related to the farms' future viability.[13] In addition, the respondents were also shown two sets of pictures depicting the farming landscape at the farm level and at a larger scale, the

[9] For a discussion on the advantages and disadvantages of the payment card method see Boyle *et al*. (1997), Blamey *et al*. (1999) and Fonta *et al*. (2010).

[10] We thank an anonymous reviewer for pointing this possibility out.

[11] The sample size was reduced to 294 after removing respondents that were visiting for more than three months as their travels were associated with purposes other than tourism activities.

[12] Regrettably, access was not granted to conduct interviews at Dublin Airport. However Shannon Airport is a significant gateway to the west of Ireland.

[13] See Appendix A for more details on the description provided.

"landscape level". Starting with baseline photographs at the farm and landscape levels, image manipulation software was used to create photo-montages of changes that could potentially occur at both levels with reduced environmentally friendly farming practices.

The respondents were provided with a payment card showing bid amounts of 25¢, 50¢, €1, €1.50, €2.00, €2.50, €3.00, €5.00, €7.00, €10.00, and €20.00 and asked their maximum willingness to pay via an additional room rental fee per night to compensate the farmers responsible for delivering the positive public good externality.

The discriminatory nature of employing an additional room charge as a payment vehicle is ideal for this purpose according to Fujii *et al*. (1985) and Bonham and Ganges (1996) so that the burden of compensating for the tourist's resource use does not fall upon local residents and also does not raise relative prices. Bonham and Ganges (1996) claim that a room tax is well justified as an "… equitable means of assessing visitors for their demands on local infrastructure and public services."

IV ECONOMETRIC APPROACH

There are a number of econometric models that can be applied to payment card data such as interval or tobit regression. The approach adopted here is an ordered probit model.[14] We assume that a latent variable, Y_i^*, determines the chosen WTP. The latent variable can be specified as: $Y_i^* = X'\beta + \varepsilon_i$ where μ_i is regarded as the deterministic component and ε_i is a normally distributed error term. A particular WTP response, j, from the payment card is given if the latent variable lies between two thresholds τ_{j-1} and τ_j. For a payment card with M payment levels the WTP is determined as follows:

$$WTP_i = \begin{matrix} 0 \\ V_i \\ \vdots \\ V_M \end{matrix} \left\} \begin{matrix} if -\infty < Y_i^* \leq \tau_0 \\ if\ \tau_0 < Y_i^* \leq \tau_1 \\ \vdots \\ if\ \tau_{M-1} < Y_i^* \leq \tau_M \end{matrix} \right. \quad (1)$$

The log likelihood for the ordered probit model is:

$$\ln L = \sum_{i=1}^{N} \sum_{j=1}^{N} \log \left(\Phi\left(\frac{\tau_j - X\beta}{\sigma}\right) - \Phi\left(\frac{\tau_{j-1} - X\beta}{\sigma}\right) \right)^{\mathrm{I}(\tau_0 < Y_i^* \leq \tau_1)} \quad (2)$$

[14] Likelihood ratio tests suggest that results from the ordered probit model are superior to those obtained using interval or tobit regressions.

where $\Phi(\ )$is the normal cumulative density function and I( ) is an indicator function equal to 1 if the argument is true. The model is estimated using Maximum Likelihood.

V RESULTS

Table 1 provides summary statistics of the explanatory variables in the model for B&B owners. To ensure that our sample is representative of all B&Bs in the west of Ireland, we weight the surveyed B&Bs based upon the number of B&Bs in each of the seven western counties.[15] In Table 2, the first column provides the results of the ordered probit without the sample weights and the second column with the weights. In total, 43 per cent of all B&B owners indicate a positive willingness to pay into the fund for compensating farmers. Based upon the weighted model, we find that WTP is not influenced by the type of survey (mail versus face-to-face interview) employed (see Table 2). Female B&B owners and those with higher rates of occupancy have higher WTP. Also, those that were having problems with their business as a result of a low volume of guests had a lower WTP. B&B owners who reported that a higher proportion of their guests came for "passive" pursuits, as reflected by the principal component PC_Passive, had lower WTP in the unweighted model however, this variable was insignificant after reweighting.[16] The average WTP for B&B owners was estimated to be 26.01 cents per guest night.

Table 3 provides summary statistics for the variables included in the model for tourists. The sample was confined to those that spent at least one night in rented accommodation in the west of Ireland since tourists that stayed with family or friends may lack a point of reference for stating an additional WTP.[17] In addition, since the survey was conducted at the airport gates with respondents on completion of their trip to Ireland, a question may arise regarding the incentive compatibility of the survey mechanism. Even if the respondents were to truthfully state their WTP values, it is likely that use values may not be captured if they do not intend to return to Ireland and face

[15] The authors would like to thank an anonymous reviewer for suggesting that the sample be weighted to improve its representativeness.

[16] A series of Likert scales were used to assess the types of guests received by the B&Bs. Based upon these scales two categories of visitors (PC_Active and PC_Passive) were identified using the principal component analysis. The PC_Active variable is associated with B&Bs that believed their guests were mostly engaged in active pursuits such as hiking while the PC_Passive variable signifies guests predominantly involved in relatively passive activities such as attending historic sites (see Reymont and Joreskog (1993) for more details of this methodology).

[17] The authors would like to thank an anonymous reviewer for making this crucial distinction between the two groups of tourists.

Table 1: *Summary Statistics for B&B Regression Analysis*

Variable	*Variable Description*	*Obs.*	*Mean*	*Std. Dev.*
Amount WTP	Dependent Variable: The amount they are willing to pay in cents	193	0.23	0.50
Survey Type	Face to face Interview= 0; Mail Survey = 1	193	0.48	0.50
Gender	Female = 1	191	0.80	0.40
Age 50-65	Age between 50-65	193	0.55	0.50
Age 65 plus	Age Above 65	193	0.22	0.42
University degree	Those with a college or a university degree	191	0.19	0.40
Spouse in business	Whether Spouse was involved in the B&B business	188	0.68	0.50
Farming background	Whether anybody in the household had a farming background	190	0.70	0.46
Per cent occupancy	Occupancy Rate during the peak season	193	0.63	0.21
Average number of nights (Peak)	Average number of nights stayed by a guest during the peak season	190	1.78	0.89
Lack of customers is an obstacle to business	"Obstacle: Lack of Customer Demand" Likert Scale where variable = 1 if Likert Scale value>5 (Likert scale option offered responses that ranged between 1 and 7, where 1 indicated "Not a Problem at All" and 7 indicated "Very Serious Problem".)	193	0.56	0.50
Farmers are not keen to provide access	"Farmers in general are not keen on providing access onto their land for hill walking purposes" Likert Scale (Likert scale option offered responses that ranged between 1 and 7, where 1 indicated "Very Strongly Disagree" and 7 indicated "Very Strongly Agree".)	193	4.81	0.44
Active (Principal component)*	Principal Component Analysis indicating guests to the B&B that are involved in active activities	193	0.00	1.85
Passive (Principal component)*	Principal Component Analysis indicating guests to the B&B that are involved in passive activities	193	0.00	1.34

*These variables were generated via principle component analysis employing variables with Likert scale response options. The statements for these questions presented various activities that were responsible for tourist visitation to Ireland. The Likert scale response options ranged between 1 and 7 where 1 indicated "Almost none of the Visitors" were visiting for the given activity and 7 indicated "Almost all of the Visitors" were visiting for that particular activity.

Table 2: *B&B: Willingness to Pay Per Visitor Night Towards a Fund to Compensate Farmer*

Variable	*Ordered Probit* *Coefficients (std. error)*	*Ordered Probit (Weighted Sample)* *Coefficients (std. error)*
Survey Type	–0.15 (0.22)	–0.14 (0.25)
Gender	0.35 (0.24)	0.64 (0.29)**
Age 50-65	–0.36 (0.24)	–0.39 (0.25)
Age 65 plus	–0.49 (0.29)*	–0.3 (0.28)
University degree	0.10 (0.22)	0.17 (0.3)
Spouse in business	0.07 (0.19)	–0.09 (0.22)
Farming background	0.35 (0.21)*	0.36 (0.23)
Per cent occupancy	1.46 (0.53)***	1.53 (0.53)***
Average number of nights (Peak)	–0.30 (0.13)**	–0.12 (0.15)
Lack of customers is an obstacle to business	–0.42 (0.2)**	–0.48 (0.23)**
Farmers are not keen to provide access	0.22 (0.21)	0.22 (0.23)
Active (Principal component)	0.07 (0.06)	0.07 (0.06)
Passive (Principal component)	–0.17 (0.08)**	–0.11 (0.09)
Number of Observations	182	182

*Significant at the 10 per cent level; **Significant at the 5 per cent level; ***Significant at the 1 per cent level.

the potential increase in fees. Hence, we restrict the sample further by only selecting tourists that were likely to revisit Ireland. The respondents were presented with the statement "I intend to revisit Ireland within the next 10 years" and asked to respond using a Likert scale ranging from 1 to 7 where 1 indicated that they "Do not agree at all" and 7 indicated that they "Completely Agree". The average response on the Likert scale was 6.29 and a standard deviation of 0.80 indicating that most tourists believed they may return. We restricted the sample to only include those respondents that stated a value of 5 or higher for this question to account for those tourists that were most likely to revisit which preserved about 85 per cent of the sample.[18] Finally, to ensure that our sample is representative of all tourists visiting the west of Ireland, we weighted the surveyed tourists based on the proportion of tourists to the west of Ireland that come from the respondents' country of origin (the weights were based upon actual visitations reported in Fáilte Ireland, 2012).

[18] The authors would like to thank an anonymous reviewer for suggesting the inclusion of tourists that were more likely to revisit Ireland in order to improve the validity of the estimates.

Table 3: *Summary Statistics for Tourists Regression Analysis*

Variable	*Variable Description*	*Obs.*	*Mean*	*Std. Dev.*
Amount WTP	Dependent Variable: Stated WTP Value in Euros	182	0.77	1.08
Age 20-29	Age between 20-29	180	0.15	0.36
Age 30-39	Age between 30-39	180	0.25	0.43
Age 40-49	Age between 40-49	180	0.33	0.47
Age 50-65	Age between 50-65	180	0.19	0.39
Gender	Female = 1	178	0.38	0.49
Third level education	If education is higher than a high school level	182	0.79	0.41
Income 40k-60k	Income Between 40k-60k	166	0.30	0.46
Income 60k-80k	Income Between 60k-80k	166	0.11	0.31
Income > 80k	Income greater than 80k	166	0.08	0.28
Rural visit	If they spent more than 65 per cent of their visit in rural areas	182	0.40	0.49
Walking	Whether they participated in any hill walking	182	0.54	0.50
Visit farms	Whether they visited any rural farms or rural villages	182	0.25	0.43
Price of accommodation is important	"How important is the price of accommodation when choosing your accommodation?" Likert Scale (Likert scale option offered responses that ranged between 1 and 7, where 1 indicated "Not Important at All" and 7 indicated "Extremely Important".)	180	4.71	1.53
Satisfied with landscape	"How satisfied are you with the Irish landscape?" Likert Scale (Likert scale option offered responses that ranged between 1 and 7, where 1 indicated "Not Satisfied at All" and 7 indicated "Extremely Satisfied".)	182	5.88	1.09
Landscape is important for visit	"How important is the Irish landscape and the natural important for your visit to Ireland?" Likert Scale (Likert scale option offered responses that ranged between 1 and 7, where 1 indicated "Not Important at All" and 7 indicated "Extremely Important".)	178	4.90	1.69
Important to compensate environmentally friendly farming	"It is important that farmers are compensated adequately in order to encourage environmentally friendly farming practices." Likert Scale (Likert scale option offered responses that ranged between 1 and 7, where 1 indicated "Very Strongly Disagree" and 7 indicated "Very Strongly Agree".)	179	5.34	1.24

Table 3: *Summary Statistics for Tourists Regression Analysis (contd.)*

Variable	*Variable Description*	*Obs.*	*Mean*	*Std. Dev.*
Landscape contributes to beauty	"The farming landscape contributes significantly to the overall beauty of the Irish Landscape" Likert Scale (Likert scale option offered responses that ranged between 1 and 7, where 1 indicated "Very Strongly Disagree" and 7 indicated "Very Strongly Agree".)	178	5.54	1.17
Access should be compensated	"If a visitor decides to use a farmer's land for hill walking/hiking purposes then the farmer should be compensated" Likert Scale (Likert scale option offered responses that ranged between 1 and 7, where 1 indicated "Very Strongly Disagree" and 7 indicated "Very Strongly Agree".)	176	4.70	1.55
Will revisit Ireland	"I intend to revisit Ireland within the next 10 years" Likert Scale (Likert scale option offered responses that ranged between 1 and 7, where 1 indicated "Do not Agree at All" and 7 indicated "Completely Agree".)	180	6.29	0.80
Days in Region 1	Number of Days spent in Region 1	182	0.29	1.66
Days in Region 2	Number of Days spent in Region 2	182	2.55	3.79
Days in Region 3	Number of Days spent in Region 3	182	2.80	5.67
Days in Region 4	Number of Days spent in Region 4	182	1.53	3.11

A total of 62 per cent of the tourists indicated that they were willing to pay a positive amount. The second column of Table 4 provides the results of the ordered probit without the sample weights and the third column incorporates the weights. Older tourists displayed higher WTP than did younger ones. As expected tourists that spent more of their time visiting rural farms and villages were willing to pay higher amounts. Higher levels of WTP values were also observed from tourists that believed that farmers practicing environmentally friendly farming or those providing access to their farms for the public should be compensated. The seven counties in the study were classified into four regions and tourists were asked how many nights they spent in each region. Results show that WTP values did not depend on how much time the respondent spent in each of the four regions.

Table 4: *Tourists: Willingness to Pay Per Night Towards a Fund to Compensate Farmers*

Variables	*Ordered Probit*	*Ordered Probit (Weighted Sample)*
	Coefficients (Std. Error)	*Coefficients (Std. Error)*
Age 20-29	1.18 (0.52)**	1.41 (0.64)**
Age 30-39	1.07 (0.49)**	1.41 (0.59)**
Age 40-49	1.2 (0.46)***	1.86 (0.57)***
Age 50-65	1.57 (0.46)***	2.09 (0.6)***
Gender	0.2 (0.19)	0.36 (0.24)
Third Level Education	–0.13 (0.24)	–0.26 (0.32)
Income 40k-60k	–0.1 (0.21)	–0.23 (0.28)
Income 60k-80k	0.31 (0.32)	0.07 (0.45)
Income > 80k	–0.08 (0.36)	–0.45 (0.5)
Rural visit	0.31 (0.2)	0.17 (0.28)
Walking	–0.25 (0.21)	–0.18 (0.23)
Visit farms	0.44 (0.23)*	1.16 (0.33)***
Satisfied with landscape	–0.12 (0.07)	–0.12 (0.08)
Price of accommodation is important	0.23 (0.1)**	0.14 (0.12)
Landscape is important for visit	0.1 (0.08)	0.04 (0.09)
Important to compensate environmentally friendly farming	0.2 (0.1)**	0.25 (0.14)*
Landscape contributes to beauty	–0.11 (0.1)	–0.13 (0.11)
Access should be compensated	0.07 (0.08)	0.18 (0.09)*
Days in Region 1	0.04 (0.06)	0.05 (0.07)
Days in Region 2	0 (0.03)	0.03 (0.03)
Days in Region 3	0 (0.02)	0.01 (0.01)
Days in Region 4	–0.01 (0.03)	–0.03 (0.03)
Number of Observations	158	158

*Significant at the 10 per cent level; **Significant at the 5 per cent level; ***Significant at the 1 per cent level.

According to our predicted estimates, on average, tourists were willing to contribute 77.23 cents per night stayed in rented accommodation. Combining the WTP estimates per night for the B&B owner and for the tourists yields a total contribution of €1.03 per guest night.

Establishing the alternative payment scheme is only worthwhile if the revenue generated is sufficient to offer meaningful compensation payments. To assess this, we use our estimated willingness to pay values of the two beneficiary groups to provide an estimate of the total revenue that can be generated through this approach.

VI WELFARE ESTIMATES

We begin by identifying the relevant population of accommodation providers and tourists for our analysis. B&Bs and guest houses, hotels, self-catering/holiday homes, camping/caravans and hostels make up 53.5 per cent of all overnight stays by tourists visiting Ireland (CSO, 2009).[19] The total number of bed-nights in rented accommodation, therefore, accounted for 28.04 million over-night stays by foreign tourists in 2009. Column 2 of Table 5 decomposes this figure into the various accommodation types (CSO, 2009).

For the purpose of this study we are only concerned with those bed-nights related to the seven counties along the western sea board. As county-level data indicating the number of tourists staying in the various categories of rented accommodation facilities is not available, we approximate these figures based upon available data. Data is available regarding the capacity for each accommodation type by county. However the distribution of nights stayed may not match the distribution of capacity; unfortunately data on actual nights stayed is not available. We are forced to assume that the distribution of actual nights stayed matched the distribution of capacity (Column 3, Table 5), and thus estimate that a total of 16.32 million bed-nights are associated with the relevant seven counties, with 2.58 million of these being at B&Bs (Column 4, Table 5). Furthermore, as we specifically intend to target individuals that benefit from the landscape amenities, we exclude tourists arriving for the purpose of visiting friends/family or for other business matters. While 43 per

Table 5: *Breakdown of Tourist Related Bed-Nights in Rental Accommodations in Western Ireland*

Accommodation	*Overnights*	*Per Cent of Accommodation Facilities in the West of Ireland*	*Total Bed-Nights*	*Per Cent of Tourists on Holiday/ Leisure/ Recreation*	*Total Bed-Nights from Tourists on Holiday*
Guest house/ B&B	4,344,000	0.59	2,575,558	0.56	1,442,312
Hotel	10,902,000	0.40	4,345,537	0.56	2,433,501
Holiday Homes	10,312,000	0.77	7,973,238	0.56	4,465,014
Caravan/ Camping	932,000	0.63	586,880	0.56	328,653
Hostel	1,549,000	0.54	834,137	0.56	467,116
Total Rented	28,039,000	0.58	16,315,350	0.56	9,136,596

[19] Of the remaining tourists, 35.3 per cent claim to have stayed with friends/relatives, while 11.20 per cent stayed in 'other' accommodation facilities.

cent of tourists claim to have visited Ireland as a holiday destination rather than for other purposes in 2009, this proportion is higher (56 per cent) for those visiting the western regions as they cater to additional themes related to holidays and vacations (Tourism Ireland, 2009). Accounting only for tourists on holidays staying in rented accommodation, we reduce our count of bed-nights to 9.14 million of which 1.44 million are at B&Bs (Column 6, Table 5).

Scenario 1: The rented accommodation category included in the survey is limited to B&Bs which only accounts for 8.29 per cent of over-night stays in Ireland by foreign tourists (CSO, 2009). We first estimate the overall revenues that can be generated from the tourism sector if B&Bs were the only category of accommodation providers to participate in this alternative subsidy scheme. According to our estimates, B&Bs account for approximately 1.44 million bed-nights annually in the counties included in our study area. Using our WTP estimates the potential revenue generated from this category of accommodation providers is €1,485,581 annually (Table 6).

Table 6: *Estimates of Total Revenue from Tourists and Accommodation Providers*

Scenarios	*Participating Accommodation Categories*	*Total Annual Bed-nights*	*Revenue* (€)
Scenario 1	Guest houses/B&Bs	1,442,312	1,485,581
Scenario 2	Plus: Hotels & Hostels	4,342,930	4,473,218
Scenario 3	Plus: Holiday Homes	8,807,943	9,072,181
Scenario 4	Plus: Caravan/Camping	9,136,596	9,410,694

We next explore how much revenue can be generated under the assumption that other accommodation providers are willing to participate, and moreover, contribute at a similar rate as the B&Bs. The recent economic conditions that have impacted all sectors of the accommodation industry negatively, appear to have impacted the B&B sector the most with over 75 per cent of B&B operators reporting a decrease in guest numbers (Tourism Barometer, 2010). Thus, other accommodation providers may be in a better position to contribute than the B&Bs.

In *Scenario 2*, we incorporate hotels and hostels, increasing the number of bed-nights to 4.3 million. This increases the overall expected revenue to €4,473,218. In *Scenario 3* we add holiday homes which further increases the number of bed-nights to 8.8 million and the expected revenue to €9,072,181. Finally, in *Scenario 4* we also include caravans and campers raising the number of visitor nights to 9.1 million. Including all rented accommodation

providers our overall mean expected revenue increases to almost nine and half million euros (€9,410,694).

VII CONCLUSIONS

In the context of European agricultural policy, tax-payer funded agri-environmental schemes have been crucial in encouraging environmentally friendly farming methods, and as a result, ensuring the provision of positive environmental and landscape externalities. As the recent economic downturn has jeopardised the continued supply of such funding at both a national and an EU level, this institutional arrangement may not be effective in promoting environmentally friendly farming practices in the long run; leading to possible degradation of the farming landscape. The exploration of alternative funding sources has thus become more pressing.

In this paper we explore a complementary payment scheme where the farmers are compensated for their contribution by those to whom the benefits accrue. We target the tourism industry; international tourists and local B&Bs in particular as a starting point, as they represent a key group that benefit from the commercialised recreational use of the farmlands. Through surveys we assess how much both B&B owners as well as tourists are willing to pay per night spent by a tourist in the west of Ireland towards a fund that would be used to compensate participating farmers.

Assuming that all categories of rented accommodation in our study area in western Ireland participate, annual revenues of up to €9,410,694 can potentially be generated from the combined contribution of foreign tourists and accommodation owners. Although this figure represents a relatively small fraction of the €180 million spent on REPS payment to the 28,443 participating farmers in the seven western counties in the year 2009 (REPS Fact Sheet, 2009) it represents a much larger proportion of the AEOS budget for this region in 2012.[20] Therefore, a "beneficiary pays" scheme may offer an effective way of offering top-up payments to increase the effectiveness of future agri-environmental schemes. If we are to include all farms in the seven counties that were REPS participants in 2009, the average per farm payment is estimated to be €331 per year. This amount is comparable to the level of payment made through schemes currently functioning in several Alpine tourist communities in Austria. According to the reported values by Hackl *et al*. (2007), the average payment made per farmer for the years 1993 and 2000 were €422 and €241 respectively after accounting for transaction costs.

[20] The annual budget of €57million is for the whole country.

While our estimate simply provides an indication of the average payment per farm that can potentially be secured through such a compensation scheme, it does not address how this scheme should be implemented, which is beyond the scope of this paper. Implementation would require the identification of regions and communities where a local compensation scheme can be effective and feasible at the same time. While further research is required in designing an effective payment scheme, this study suggests that there exists a clear willingness amongst stakeholders in the tourism industry to contribute towards the protection of the Irish landscape.

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APPENDIX A

B&B Survey

"Hill farmers in the west of Ireland are currently reliant on subsidies to make small scale farming systems viable. However, it is anticipated that in the coming years subsidies will cease or at least be significantly decreased. In such circumstances, it is likely that there will be an increase in unmaintained lands and/or intensive farm production methods which will alter the surrounding scenery.

Additionally, previous studies have shown hill farmers in the west of Ireland can be reluctant to provide access to tourists. This may in part be due to the fact that they incur all the costs associated with access while not directly receiving the benefits.

One way to overcome this problem would be to have tourists and local businesses contribute to a fund which would then make payments to participating farmers that maintain the landscape and provide access to visitors."

Given your income from the business and other associated expenses, we would like to know whether you would be willing to contribute a certain amount towards such a fund.

For EACH night the guest stays in your B&B, please indicate how much you would be willing to contribute towards such a fund through increased taxes.

Tourist Survey

In the west of Ireland, most small scale hill farmers are currently being supported through agri-environmental subsidy schemes. These participating farmers are financially compensated for maintaining the traditional landscape and promoting its environmental health by following farm management guidelines set by the Department of Agriculture. These measures include the implementation of traditional farming practices that help preserve the farming landscape, maintenance of farm boundaries such as stone walls and hedgerows and limits to the use of fertilisers and pesticides to reduce water pollution on lakes and rivers. In addition, farmers are required to take action to support biodiversity on the farms. (Pictures 1 and 2).

However, it is anticipated that in the coming years subsidies will cease or at least be significantly decreased. In such circumstances, it is likely that there will be an increase in unmaintained lands and/or intensive farm production methods which will alter the surrounding scenery. (Pictures 3 and 4).

Additionally, previous studies have shown that hill farmers in the west of Ireland can be reluctant to provide access to tourists on their lands for

recreational walking purposes. This may in part be due to the fact that they incur all the costs associated with access while not directly receiving the benefits.

One way to overcome this problem would be to have tourists and local (tourism related) businesses contribute to a fund which would then make payments to participating farmers. Participating farmers would be obliged to engage in activities that would preserve the traditional landscape and the environment as stated above. In addition, the farmers would also be required to provide access through their farms along field margins where it is safe to do so without interfering with any agricultural production. The fund would be used to purchase public liability insurance for farms where access is provided.

Bearing in mind the importance or unimportance to you personally of conserving the traditional landscape and the provision of access onto the farmlands; if you could be sure that your money would be used specifically for this purpose, would you be willing to pay an additional amount towards such a fund?

Suppose that the money for the fund would be collected through an additional charge which will increase your nightly accommodation cost in the west of Ireland. Please indicate your maximum willingness to pay per night into the fund.

The findings of this study will be used to inform policymakers and hence may actually result in higher room rental rates in the future to fund the programme. Bearing in mind your current income and the other expenses incurred by you during the trip, please indicate what you are actually willing to pay PER NIGHT STAY IN WESTERN IRELAND.