Walking in the Irish countryside – Landowner preferences and attitudes to improved public access provision.

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Abstract

This paper explores the attitudes of landowners across Ireland to the wider provision of public access for recreational walking using a multinomial logit model. The study also investigates the level of compensation required to improve the supply of this public good. Results indicate that 51% of landowners are not willing to provide access (non providers), 21% are willing to provide access free of charge (free providers) and 28% seek compensation (willing providers). Our findings indicate that participation by landowners in a proposed public access scheme is influenced by landowners' experience with walkers, farm type, farm insurance costs, household demographics, regional variations, opportunity cost of land and participation in other agri-environment schemes. Mean willingness to accept for landowners willing to facilitate improved public access for walking was found to be €0.27 per metre of walkway.

Keywords: Public access, recreation, walking, landowners, willingness to accept.

1.0 Introduction

Increased prosperity and mobility have brought about new demands with respect to recreational activity in Ireland and elsewhere. This has led to a greater emphasis on the non-market benefits of land based recreational amenities (Willis and Garrod, 1993; Christie, 1999; Bennett et al., 2003; Hynes et al., 2007; Mill et al., 2007). However, virtually all countryside access research in the public domain looks at this issue from the demand side and tends to ignore issues relating to the supply side (Mulder et al, 2006). Whilst public preferences and willingness-to-pay for public access has been the subject of

extensive enquiry, research of an economic nature focusing on landowner preferences for recreational access provision to private farm land is rare. This has restricted our understanding of the issues that affect the behaviour and attitudes of landowners with respect to public access provision. These issues include landowner preferences, the costs of provision, opportunity costs of land, public liability concerns, the price of the commodity, private benefits associated with land ownership and landowner experience of recreation users.

Previous research has examined public good provision by landowners to forests (Bateman et al., 1996; Alavalapati et al., 2004; Sullivan et al., 2005; Shaikh et al., 2007) and for environmental services (Garrod and Willis, 1996; Kline et al., 2000; Vanslembrouck et al., 2002; Cooper, 2003; Thomas and Blakemore, 2007). Crabtree and Chalmers (1994), investigated the costs of public access provision on private farm land in Scotland, although this study was not concerned with measuring willingness to accept (WTA) payments to provide access. Crabtree (1997) examined the value for money of a number of agri-environmental schemes in the UK that had access provision as an option. We aim to add to this body of work by exploring the determinants of WTA payments for public access provision based on empirical evidence from the Republic of Ireland.

In this context the aims of this paper are to:

1) Consider the conditions necessary for landowners to provide public access for recreational walking on their land;

2) Explore the characteristics and profile of landowners who are willing to provide public access for recreational walking;
3) Investigate the level of compensation, if any, which is required to ensure landowners provide public access for recreational use.

2.0 Background

Across Europe and other developed countries public access provision for walking in the countryside is frequently enshrined in legislation or custom or both (Scott 1991; 1998). Where neither legislation nor custom prevail, provision is often achieved through specifically designated areas (recreation areas and national parks) or by voluntary access arrangements. Neither custom nor legislation applies in the case of Ireland. There are very few designated public rights of way and areas developed specifically for providing recreational access are very limited (Flegg, 2004). All land in the Republic of Ireland is owned either by private individuals or state bodies and recreational users do not have a de-facto legal right of entry (Pearce and Mee, 2000). Any individual accessing farmland challenges the right to exclusive use, and may be expected by the landowner to leave. Some landowners have displayed signs prohibiting trespassing on their land.

Policymakers in the Republic of Ireland recognise that there is an undersupply of public access to the Irish countryside (O'Cuiv, 2004). In 2004, the responsible Ministry (Community, Rural and Gaeltacht Affairs) set up a countryside recreational council "Comhairle Na Tuaithe". The role of this council was to examine the issue of access to

the Irish countryside, develop a countryside code and develop a countryside recreation strategy. Significant progress has been made on the latter two objectives (Comhairle na Tuaithe, 2006) but the problematic issue of access and the policy instrument used in its delivery remains (O'Reilly, 2006).

Various proposals have been discussed including legislation that would enable (1) a freedom to roam across the countryside (Keep Ireland Open[1], 2005), (2) freedom to roam on land 150 metres above sea level (Quinn, 2007) and (3) a compensation payment to landowners for recreational access (Irish Farmers Association, 2005). The farming community in the Republic of Ireland have made it clear that they are not opposed in principle to access but they have asked for compensation. The compensation policy is preferred by the farming community who have argued (through the Irish Farmers Association) that an alternative policy based on compensation should be explored. The Irish Farmers Association (IFA) proposed creating 2,000km of linear and looped walks throughout the country. This would involve 5,000 landowners and would initially cost the exchequer €6 million per annum based on an annual payment price of €1,000 per landowner and €5 / metre of walkway. The scheme, as proposed, would operate on the basis of a 5 year contract with investment support for capital costs (Irish Farmers Association, 2005).

The countryside recreational council has resisted these demands by the farming community. Policy makers have in principle refused to pay exclusively for access (O'Cuiv, 2007). Also, no economic analysis has been conducted on the true price

landowners are willing to accept to provide improved public access for walking. Economic theory would suggest that payment of a flat fee as suggested by the IFA may not be appropriate. Individual landowners are likely to face very different costs with respect to public access provision due to factors such as the opportunity cost to agriculture, implementation cost of walkway across prevailing landscapes and values placed on privacy. Farmers that are located in very productive agricultural areas, on land that has a wide range of agronomic uses, may be reluctant to provide access. Alternatively some farmers may be ideally placed to benefit from public access being located in landscapes of outstanding scenic yet marginal agricultural value. Land productivity and the uses to which the land can be put is likely to influence an individuals decision about access. One might anticipate therefore that farmers would have very different expectations in terms of the level of compensation payments they would require in order to allow the general public to walk on their land. This is a question that we aim to answer in this paper.

Public policy criteria demand that any scheme be delivered efficiently on a cost minimisation basis. In the literature it is taken as a given that decisions over access provision should be guided by allocative efficiency criteria and that the economic benefits (and costs) should be clearly identified and valued (Hanley and Spash, 1993). Clearly there is a need to measure individual landowner preferences in any venture that would provide improved public access on the ground of economic efficiency and cost minimisation criteria. In the absence of compulsion through legislation, the supply of public access provision is dependent on the costs of provision, the price of the

commodity, agri-environment schemes and tastes and preferences of landowners (Millward, 1996; Gratton and Taylor, 2000; Mulder et al., 2006). A review of these is beyond the scope of the current paper but the interested reader should see Buckley et al., (2008a) for further discussion.

There is however an important policy question here concerning the mechanism used to facilitate public access. Should such an instrument be based on legislation or should it be linked to compensation payments. Some of the best landscapes for walking in the Republic of Ireland are not covered by an access agreement. This represents an unsatisfactory situation and serves as no basis for an economically sustainable tourist industry based on recreational walking. By examining landowners' preferences toward public access this paper aims to fill this gap in the literature.

3.0 Data and Survey Design

The main data source employed in this analysis is a National Farm Survey (NFS) conducted by Teagasc[2] in 2006. The NFS is collected annually as part of the Farm Accountancy Data Network requirements of the European Union (Farm Accountancy Data Network (FADN), 2005). The purpose of FADN and the NFS is to collect and analyse information relating to farm activities, financial returns to agriculture and demographic characteristics. A farm accounts book is recorded on a random representative sample of farms throughout the Republic of Ireland. The sample is weighted to be representative of farming nationally across Ireland[3]. In the 2006 NFS survey 1,159 farmers were surveyed representing 113,068 farmers nationally.

In addition to the main survey, additional special supplementary surveys on specific topics are conducted annually. A questionnaire eliciting landowner attitudes on the provision of public access for walking was conducted in conjunction with the regular NFS data collection schedule in autumn 2007. Interviews were undertaken on site by a team of trained NFS recorders. Not all the respondents from the main survey participated in supplementary survey in 2007. Hence it was necessary to re-weight the sample to produce a matched balanced dataset. The final dataset used in this analysis consisted of 975 farmers which represents 93,746 farmers when weighted and is still nationally representative based on random sampling.

To ensure questionnaire validity a pilot study was conducted before the main data collection phase. A total of 84 landowners were interviewed in the pilot phase and a number of constraints on the provision of improved public access for walking were identified such as interference with farm activities, public liability concerns and privacy and nuisance issues. These were in line with evidence from the literature. It was attempted to address landowners concerns on these issues in the framing of the questions in the questionnaire.

In carrying out the survey each interviewee was asked to indicate their level of participation in a 5 year walking scheme under certain conditions. The scheme conditions described include a specific route, walkers would be expected to follow a countryside code, no permanent right of way would be established, full public liability insurance indemnification is provided and maintenance costs for the walkway would be

covered / or landowners would be reimbursed for such costs. Landowners were then given 3 choices indicating that they would either; not participate in such a scheme, participate on a free-of-charge basis or participate only if given financial compensation. Those respondents who indicated that their participation was dependant on financial compensation were then presented with a contingent valuation WTA scenario to establish the minimum amount a landowner would be prepared to accept (€ / per annum) per metre of walkway crossing their land to ensure participation.

The contingent valuation (CV) method is a survey based stated preference technique which asks respondents directly to express their maximum willingness to pay or willingness to accept for a hypothetical change to a non-market good (Mitchell and Carson, 1989; Portney, 1994). The CV method is subject to various criticisms regarding its reliability and validity. CVM has however emerged as a valid tool in estimating the benefits of non-market goods, particularly for direct use values (Mitchell and Carson, 1989; Arrow et al., 1993; Carson, 2000; Boyle, 2003). Determining whether willingness to pay (WTP) or WTA is the correct measure to use in CVM analysis depends on the property rights status of the good.

As highlighted previously, all land in Ireland is owned either by private individuals or state bodies and recreational users do not have a de-facto legal right of entry (Pearce and Mee, 2000). If an individual, such as a landowner, has exclusive entitlement or property rights over a good and is being asked to give up that entitlement, then the correct measure is WTA (Carson et al., 2001).

Following work by Boyle et al., (1998) and Langford et al. (1998) an open-ended bid design was used in the pilot. This was followed by a single bounded dichotomous choice design in the main survey. Alternatives to this approach have been debated in the literature. However, as long as the bids are selected with care, and the sample size is not too small, there is no conclusive evidence that the alternatives have any real advantage (Langford et al., 1998). The use of pilot data to choose bids in the main survey was informed by a number of studies (Kanninen, 1995; Boyle et al., 1998; Creel, 1998; Hanemann and Kanninen, 1998 and Langford et al., 1998).

Using data from the pilot survey and following the procedures adopted by Boyle et al., (1998) per metre (per annum) WTA bids of 10 cent, 25 cent, 50 cent, €1 and €3 were chosen, assigned equally and randomly among landowners seeking compensation. There was a concern that respondents maybe be influenced by values being proposed by their farm organisations as outlined in section 2. However, results from the pilot study indicated very little awareness of these proposals.

Contingent valuation was hence used to estimate the value of a marginal change in moving from the status quo scenario to a formalized improved public access scenario across their land. In order to minimize strategic biases (as recommended by Arrow et al., 1993), respondents were also asked to bear in mind that any potential scheme will ultimately have to be paid for by the general public and their answer should reflect the minimum amount that they would be prepared to accept. Respondents were reminded of

the fact that if the stated figure does not reflect the minimum amount they would be willing to accept, then this may result in a decision not to implement a scheme.

4.0 Specification of Models

Two different models were used in this analysis. A multinomial logit model was used to investigate the participation decision of a landowner. A logit model was then used to examine the level of compensation necessary to ensure participation among those seeking remuneration.

Participation Model: The landowner decision process for participation in a public access scheme for walking had three exclusive outcomes, indexed by $j \in \mathrm{J} = \{0, 1, 2)$: non participation[4] $(j = 0)$, participation free of charge[5] $(j = 1)$ and participation only with compensation[6] $(j = 2)$. Assume that the utility that landowner n derives from the chosen alternative j (denoted U_{nj}) can be written as (Long, 1997):

$$U_{nj} = X_n \beta_j^{'} + \varepsilon_{nj} \qquad (1)$$

Where the deterministic part $X_n \beta_j^{'}$ relates to characteristics of the landowner and ε_{nj} is an error term. The framework is based on random utility theory (McFadden, 1973 and Pudney, 1989). The probability that landowner n will select outcome j from outcome set J is then:

$$\mathrm{Pr}_{nj} = P\left(j \mid \mathrm{J}\right) = \mathrm{Pr}\left(X_n \beta_j^{'} + \varepsilon_{nj} > X_n \beta_k^{'} + \varepsilon_{nk}\right) \; \forall k \in \mathrm{J},\; j \neq k \qquad (2)$$

By using the logistic distribution the probability that landowner *n* will choose alternative *j* can be written as (McFadden, 1973):

$$\Pr(y_n = j) = \frac{\exp(\mathrm{x}_n \beta_j')}{1 + \Sigma_k^K \exp(\mathrm{x}_n \beta_k')} \quad (3)$$

The probabilities shown in equation (3) are those for the multinomial logit model. The multinomial logit model can be thought of as simultaneously estimating binary logits for all comparisons among the alternatives (Long and Freese, 2006). Interpretation of multinomial logit results requires that one potential outcome is selected as the "default", hence all coefficients for a characteristic group should be interpreted as relative to a default category.

The distinctive characteristic of the multinomial logit model is that it assumes the independence of irrelevant alternatives (IIA). The IIA implies that if only two choices existed then the addition of a third choice would not change the ratios of probabilities of the first two choices. McFadden (1973) suggested that IIA implies that the multinomial logit model should only be used in cases where the outcome categories can plausibly be assumed to be distinct and weighted independently in the eyes of the decision maker.

WTA Model: Landowners who indicated that compensation would be required (willing providers) for their participation in a public access scheme were presented with a WTA question. These landowners indicated that an additional amount of income would be required to return them to their original utility after the provision of improved public

access for walking across their land. This is the equivalent variation welfare measure, and can be described by the following framework (Flores, 2003):

$$v(P^0,\ Q^0,\ y^0 + E\ ) = v(P^1,\ Q^1,\ y^1) \qquad (4)$$

where v is an indirect utility function, P relates to price of good, Q to quantity and y to income. E is the amount of additional income that an individual would need with the initial conditions to obtain the same utility after the change. The equivalent variation welfare measure implies that property rights are well defined. In the context of this study, property rights are very clear and rest exclusively with the landowner. During the survey it was made clear to respondents that the proposed public access scheme was for a 5 year term and that no permanent rights of way would be established. The evaluation essentially relates to a change in land use. Hence, there would be no diminution of landowner property rights. This was emphasised in the questionnaire.

Given the dichotomous choice format of the data a logistic regression where the dependent variable is the log-odds ratio of WTA is used. The dependent variable is given as $\mathrm{In}\left(P_i\ /1-P_i\right)$, where *Pi* is the probability of a 'yes' response to the willingness to accept question by the *i*th respondent. This is equivalent to modelling the probability of WTA as a logistic curve with function $P_i = \dfrac{1}{1+\exp\left(-\mathrm{x}_i\beta^{'}\right)}$ where $\mathrm{x}_i\beta^{'}$ is a linear combination of explanatory variables.

5.0 Results

First we convey some summary statistics on the extent to which farmers may be willing to participate in a possible scheme. We then report on the results of the models. Table 1 shows three groups: non providers; free providers and willing providers. The Table shows that 500 respondents (51%) indicated that they would not be willing to participate in the scheme as hypothetically proposed. Of this cohort of non providers nearly 73% indicated nuisance impacts (i.e. interference with agricultural activities) as the main reason why they would not take part. Some 8% of respondents cited insurance claims as a reason why they would not join (despite the fact that the scenario proposed indemnification against insurance claims). The remaining 19% suggested other reasons mainly relating to privacy concerns and safety issues related to interaction with livestock. Thus the single biggest reason by far for not participating in a possible scheme by the group of non providers is due to interference with the day-to-day business of farming.

Table 1: Descriptive statistics for variables in multinomial logit model

Variable	Variable description	Non providers (% in category)	Free providers (% in category)	Willing providers (% in category)
Participation in Scheme	1=Would not participate 2=Participate free of charge 3= Participate only with compensation.	51%	21%	28%
Experience with walkers:				
Often	1=Never,	2%	5%	9%
Occasionally	2=Occasionally	13%	30%	18%
Never	3=Often	85%	65%	73%
West and South-west regions	1= In West or South-west regions. 0= Not in West or South-west regions	33.6%	29.4%	45.3%
Midlands	1 = In midlands region. 0 = Not midlands regions	60%	15%	25%
Sheep farms on marginal soils	1= Sheep farming on marginal soils 0= Not sheep farming on marginal soils	22%	22%	56%
Variable	**Variable description**	**Non providers (Mean)**	**Free providers (Mean)**	**Willing providers (Mean)**
Insurance	Insurance coverage costs per thousand euros	€1,064	€801	€824
No. household members under 5 years	Numbers of household members under 5 years of age	0.18	0.10	0.20
No. household members 65 years and over	Numbers of household members > 65 years of age	0.56	0.46	0.46
REPS payments	REPS payments received per thousand euros	€2,977	€2,905	€4,065
Forestry Premia	Forestry premia received per thousand in euros	€167	€99	€328

Single farm payment	Family farm income received per thousand euros	€16,188	€15,120	€17,948
Income / hectare	Family farm income / utilised agricultural area	€424	€458	€534

In all 475 (49%) landowners in the sample indicated a willingness to participate in the proposed scenario (Table 1). A total of 201 (21%) of these were willing to do so on a free of charge basis (free providers) while 274 (28% of the sample) indicated that financial compensation (willing providers) would be required to ensure their participation (Table 1).

About 35% of the free providers had frequent or occasional contact with walkers, 27% of the willing providers had similar contact, but this figure declined to 15% for the group of non providers. A total of 60% of landowners located in the midlands were not willing to participate while 45% of landowners in the Southwest or west regions indicated compensation would be required as shown by Table 1. Approximately 56% of sheep farmers operating on marginal soils indicated that compensation would be a necessary condition of scheme participation compared to 22% for the remaining categories. Landowners not willing to participate had an average insurance cost of €1,064 compared to just over €800 for the other two participation categories (Table 1). Descriptive statistics in Table 1 also indicate that landowners willing to engage for free had fewer young children (less than 5 years of age) at 0.10 compared to nearly 0.20 for the two other categories. The non-participation category was associated with higher average number of household members 65 years or over at 0.56 compared to 0.46 for the remaining categories. As highlighted in Table 1 average revenue drawn down under the

Rural Environment Protection Scheme[7] (REPS) for the group of willing providers was €4,065 compared to just over €2,900 for the non providers and the free providers. Forestry premia for those seeking compensation averaged €328 and was considerably higher than for those not willing to participate and those willing to engage for free. Table 1 also indicates that respondents seeking compensation are associated with drawing down higher payments under the decoupled single farm payment[8] at €17,948 compared to those not willing to participate (€16,188) and those willing to engage for free (€15,120). Finally, those seeking compensation had, on average, higher income per hectare (opportunity cost to agriculture) at €534 compared to less than €460 for the other two groups.

Participation results - A number of independent variables *a priori* could be expected to affect the probability that a landowner is willing to participate in a public access scheme for walking. These include a landowners experience with walkers, farm insurance costs, regional effects, farm type, participation in other schemes which promote the provision of public goods (REPS and forestry schemes), CAP subsidies, opportunity cost and household demographics. These variables are included in the multinomial logit model and descriptive statistics and a definition for these variables are given in Table 1.

The multinomial logit model requires that one potential outcome be selected as the default or base category and outcomes for all other categories are interpreted as relative to this. The base category for column (1) and (2) in Table 2 are those landowners who were not willing to participate, hence all coefficients should be interpreted as relative to

this base category of non providers[9]. A Wald test was performed to test whether the parameters of the model are all equal to zero. The Wald χ^2 statistic shows that, taken jointly, the coefficients for this model specification are significant at the 1% level. A Wald test was also conducted to test whether any of the participation categories should be combined, this hypothesis was rejected at the 1% level.

Table 2: Results of multinomial logit model examining landowner participation in a scheme for improved public access for walking

Variable	**Free providers (Base =non providers)**	**Willing providers (Base=non providers)**
	(1)	**(2)**
Experience with walkers	1.233	0.779
	(0.217)***	(0.205)***
Insurance	-0.481	-0.562
	(0.193)**	(0.160)***
No. household < 5 years	-0.872	0.103
	(0.253)***	(0.187)
No. household 65 years +	-0.403	-0.311
	(0.145)***	(0.146)**
Sheep farms on marginal soils	0.147	1.186
	(0.657)	(0.536)**
West & south-west regions	-0.732	0.155
	(0.244)***	(0.212)
Midland Region	-0.754	-0.628
	(0.376)*	(0.321)*
REPS Payments	-0.024	0.033
	(0.298)	(0.253)
Forestry Premium	-0.065	0.118
	(0.816)	(0.515)**

Single farm payment	-0.001 (0.116)	0.025 (0.009)***
Income / hectare	0.0031 (0.0003)	0.0004 (0.0003)
Constant	-1.560 (0.333)***	-1.737 (0.369)***
Log pseudo-likelihood	(-907.638)	
Wald chi2	(95.46)	

(N=975) Standard errors are given in parenthesis under co-efficients. Individual co-efficients are statistically significant at the *10% level; **5% level; * 1% level.**

What the multinomial logit model reveals is that experience of walkers (by landowners) is positively and significantly correlated with participation in the scheme on a free of charge and compensation basis (at the 1% level) compared to non-participation. It should also be noted that those willing to engage for free had significantly (5% level) greater experience of walkers than those seeking compensation. This suggests exposure to walkers has a positive effect on the probability of landowners allowing access to their land for walking and is a significant finding. Negative perceptions surrounding walking activity by landowners with low exposure to walkers may be a factor influencing non participation rates.

Landowners not willing to participate had higher insurance premiums and were significantly less likely to engage on this basis compared to free providers (5% level) and willing providers (1% level). Public liability insurance is a serious concern and a major constraint for landowners in this sample. This is not unique to landowners in the Republic of Ireland.

Household demographics were seen to influence participation rates. Landowners willing to engage for free and for compensation had significantly (5% level) less household members 65 years and over. Landowners of elderly years are traditionally associated with a more conservative approach on issues relating to land and property rights issues, particularly in the Republic of Ireland. It should also be noted that landowners willing to participate for free tended not to have young children (less than 5 years of age) compared to the other two participation categories.

Farmers operating mainly sheep enterprises on marginal soils indicated a strong preference for participation with compensation. These farms are traditionally associated with uplands regions and lower farm incomes. Location also appeared to be an important variable influencing participation. Landowners who are not willing to participate were significantly more likely to be located in the midlands[10] region compared to those willing to participate for free and on a compensation basis (both at 5% level). The midlands region is primarily a lowland flat area and is not historically associated with walking activity compared to other more undulating regions along the western and eastern seaboards. Free providers were less likely to be located in the west[11] and south-west[12] regions compared to non providers (1% level) and willing providers (1% level). Outside of Dublin the west and south-west regions are the highest tourism generating regions in the Republic of Ireland (Failte Ireland, 2007). Landowners in these regions are part of communities which have built their livelihoods around tourism. They also manage land

of a marginal nature which has a limited range of uses and consequently they may feel a legitimate right to compensation payments that are allied to recreation and tourism.

Results from the multinomial logit model also suggest that landowners seeking compensation were likely to be drawing down more premia payments under schemes that target public good provision. Willing providers were significantly more likely to be drawing down greater revenues under a forestry scheme compared to the other two categories (5% level) and significantly more likely to be part of REPS compared to those willing to engage for free (10% level). This may suggest that this cohort have an expectation of payment for the provision of public goods through agriculture. However, it maybe also be reflective of wider expectation of CAP subsidies as those seeking compensation were significantly more likely to be receiving higher level of decoupled single farm payment compared to those willing to engage for free (5% level) and those not willing to participate (1% level). Finally, those seeking compensation indicated a higher opportunity cost to agriculture than the other two categories, this was only significant at the 20% level compared to the non-providers.

WTA results - A total of 201 landowners (21%) indicated that they were willing to engage with the proposed public access scheme scenario on a free of charge basis. Hence, only respondents who indicated that compensation would be necessary to ensure their participation in the proposed scheme, 274 landowners (28% of the sample), were presented with a WTA question. The per metre bids offered were 10 cent, 25 cent, 50 cent, €1 and €3. These were assigned randomly across respondents. A total of 155

respondents (57%) of this cohort answered in the affirmative at the offered bid price and 119 landowners (43%) rejected the offer. In all 110 (of the 119) rejected the offer on the basis of an unacceptably low bid price. It should be noted that 100% of respondents presented with the €3 bid answered in the affirmative as did 80% of those presented with the €1 metre bid. A total of 9 respondents (8%) were classed as protest bids and were excluded from the analysis.

Results of the WTA regression analysis are presented in Table 3. The variable west region is a dummy variable where 1 indicates from this region. The variable In-commonage is also a dummy variable where 1 indicated that the landowner has a commonage[13] shareholding. Finally, as before, the variable insurance indicates farm insurance costs per thousand euro.

Table 3 indicates that WTA is positively affected by price offered, having a commonage shareholding and being located in the west region. The higher the price offered the more likely a landowner is to respond positively to the WTA question. This is in line with economic theory and expectations *a priori*. Commonage is associated with large tracts of unenclosed land and lends itself more naturally to walking activity. As indicated previously farmers located in the west region had an expectation of compensation. This may show a positive attitude to the WTA question at the various offered bid prices. The west of Ireland is strongly associated with walking and tourism activity generally.

Higher insurance premia were negatively associated with the WTA question at the offered bid price. Landowners have serious concerns about the issue of public liability and maybe seeking higher payment to reflect perceived risks involved. Table 3 also reports marginal effects with all other variables held at their means. Bid price offered has by far the largest effect on the probability of a yes answer to the WTA question. A one unit change in the bid price increases the probability of a positive response to the WTA question by 0.38. A Wald test was performed to test whether the parameters of the model are all equal to zero. The Wald χ^2 statistic shows that, taken jointly, the coefficients for this model specification are significant at the 1% level.

Table 3: WTA logistic regression results

Variable	**Coefficient**	**Marginal effects**
Price	4.130 (0.706)***	0.38
West region	1.06 (0.524)**	0.08†
In-commonage	2.75 (1.249)**	0.12†
Insurance	-0.52 (0.266)**	-0.05
Constant	-1.87 (0.382)***	
Log pseudolikelihood	(-105.0)	
Wald chi2	(43.71)	

(N=265) Standard errors are given in parenthesis under co-efficients. Individual co-efficients are statistically significant at the *10% level; **5% level; * 1% level. † Discrete changes (from 0 to 1) are reported for these variables.**

It is conventional in contingent valuation applications to compute mean willingness to accept. The mean willingness to accept is a function of estimated regression co-efficients and independent variable means as outlined in Equation 5 (Loomis, 1998):

$$\text{Mean WTA} = \frac{\beta_o + (\beta_2 * \text{var}\,iable\,mean)....}{-\beta_1\ (\text{Pr}\,ice)} \quad (5)$$

Mean willingness to accept for the cohort of landowners seeking compensation was €0.46 per metre of walkway crossing their land based on the variables in Table 3. Landowners willing to provide access to their land on a free of charge basis have by definition a WTA of €0 per metre per annum. A framework as proposed by Mitchell and Carson (1989, pg 278) to address sample selection bias was adapted (as outline in equation 6) to account for these free providers in the generation of aggregate WTA estimates for all landowners willing to facilitate access.

$$\overline{WTA_{(a)}} = \frac{1}{r+m}\left[\sum_r WTA_i + \sum_m (a)\, WTA_i\right] \quad (6)$$

In equation (6) *r* respondents have answered the survey (274 seeking compensation) and m are free providers, *a* is the multiplier that expresses the free providers WTA in relation to the WTA of the respondents. If *a* is set at 0 then this group is specified as having a zero WTA. Including free providers in this framework provides a mean WTA of 0.27 cent per metre as outlined in Table 4.

Table 4: WTA estimates by landowners willing to supply improved public access for walking

	Willing providers	Willing & free providers
Mean WTA (metre per annum)	€0.46	€0.27

6.0 Conclusions and Discussion

Two of the main aims of this research were to consider the conditions necessary for landowners to provide public access and to explore the characteristics and profile of landowners who are willing to provide public access for recreational walking. Three clear groups emerged from this analysis: non providers, free providers and willing providers. Just over half of the farmers in this sample were non providers and would not engage with a proposed scheme to improve public access for walking even if significant issues of concern to them were addressed. The main reason cited was interference with agronomic activities. Clearly this group has little interest in access provision and would prefer instead to be left alone to continue the business of farming. Non providers were generally characterised as farmers with a low level of exposure to walkers, higher insurance premiums, higher average household numbers in the 65 years or over age bracket and were more likely to be located in the midlands region. Lack of exposure to recreationalists, risk aversion and negative perceptions surrounding walking may represent important factors that influence this group's attitude to access provision.

Free providers were generally associated with a higher level of exposure to walkers, lower average numbers in the under 5 years of age household bracket and were less likely to be located in the west or south west regions. This cohort is not easily defined and may be acting out of altruistic motives. Some landowners appear just to require recognition and seem happy to share the landscape as a matter of course provided this is not seen as a public right. They may also recognise that recreation activities could generate significant wider benefits for the local community and economy of which they are part. There is a tradition of permissive access to recreationalists by landowners in Ireland, especially on marginal lands such as commonage. Some landowners may be happy to continue this tradition provided there are no personal costs to them (public liability concerns being the most important) and if their property rights are acknowledged. Alternatively, they may have a personal stake in agri-tourism initiatives that would benefit from recreational walking. Some additional future research to clarify the precise motivations of the free providers would make a useful contribution to this debate. Whatever the motivation, results from this research indicates that a significant cohort of landowners are willing to facilitate improved public access for walking without financial remuneration provided certain conditions are satisfied as established during the pilot phase and set down in the hypothetical scenario presented.

Willing providers (requiring compensation) were found to have intermediate levels of experience with walkers and were more likely to be sheep farmers operating on marginal soils. This group were also more likely to be located in the west or south west regions and were drawing down higher agri-environment and other CAP based payments,

including the single farm payment, REPS and forestry schemes. Sheep farmers on marginal soils located in the west or south west regions are generally associated with lower farm incomes and are located in areas of high walking demand. Willing providers are associated with significantly higher CAP subsidy payments, these individuals may be more familiar with agri-environment schemes and the concept of providing environmental public goods in exchange for compensation payments. This group also have a higher opportunity cost to agricultural activity from the land.

A third goal of this research was to investigate the level of compensation required to ensure that landowners provide public access for recreational use in agricultural landscapes. Our findings suggest that it would probably not be cost effective for the countryside council to meet the IFA demands of a fixed compensation fee for all landowners. Instead policy intervention should aim to maximise social surplus. A fixed fee (as proposed by the IFA) would pay landowners €1,000 per holding plus €5 / metre of walkway at a cost to the exchequer of €6 million per annum for 2,000km of linear and looped walks throughout the Republic of Ireland. Our results indicate that this pricing structure is inappropriate. An identical public access scheme to that proposed by the IFA but using data from this present study would cost the public exchequer €540,000 (based on a mean WTA of €0.27 per metre). This estimate is clearly considerably below the amount being proposed by the IFA.

This is not to say that landowners should not be compensated. There is some preliminary evidence to indicate that schemes designed to enhance recreational access in the Republic

of Ireland would fulfil the requirements of a cost/benefit test. Aggregation of cost and benefits would depend on the circumstances of trail implementation and is beyond the specific scope of this paper. However, results from Buckley et al. (2008b) indicate a median willingness to pay of €12.22 per consumer for provision of a lowland walk of 11 kilometres on private farm landscapes in Connemara. Aggregation over the relevant population produces consumer surplus estimates of about €430,000 per annum. In the study conducted by Buckley et al. (2008b) farmers were not questioned about payments for access. However, if we were to assume that WTA estimates derived from this present research were applicable to the Connemara study then the price required by producers in order to provide the 11 kilometre trail would be approximately €2,970 per annum. This preliminary evidence suggests there is significant scope for policy interventions to improve public access to the countryside in the Republic of Ireland based on these welfare estimates.

To be effective any possible scheme to enhance access should focus attention on addressing concerns held by the free providers and the willing providers. It is also clear that any scheme designed to improve access on private farm land would have to indemnify landowners against public liability concerns. A definitive change in the Occupiers Liability Act to "an enter at your own risk" or 'volenti non fit injura' situation may encourage landowners to look favourably on any potential scheme to enhance recreational access. Awareness programmes for farmers as well as the general public on the relative impacts of walking may also alleviate concerns.

Logistically it may be problematic to identify free providers and willing providers in a spatially contiguous pattern necessary for trail development. Schemes designed to enhance public access cover extensive areas, occasionally over several thousand hectares. The geographical nature and scale of a potential scheme to enhance access requires cooperation, or at the very least coordination, by multiple landowners. Agri-environment schemes such as REPS are not an effective way of delivering such benefits because the schemes are voluntary and focus on individual farms rather than a catchment. Instead what is needed is a degree of integrated management across large areas. Instrument design should avoid focusing on individual farms and use forums to extend the range of participants involved in scheme design and management. The establishment of local forums may provide a means of galvanizing farmer support for a possible future walking scheme. This could promote farmer involvement in the design and development of any future access schemes and empower farmers and make use of local knowledge in the management of future "access areas". As a starting point policymakers could target well known informal walks that exist at present. A number of these walks appear in guide books (Corcoran, 1997; Simms and Whilde, 1997; Lynam, 1998; Dillon, 2001) and on some websites and are regarded as the best trails in the Republic of Ireland. Although some walkers access these informally, there is no security of access and they cannot be promoted and developed by the relevant tourism agencies. Targeting these walks would in the first instance meet efficiency criteria as there is established consumer demand for these walks (Campbell et al., 2007; Buckley et al., 2008b) and the relevant landowners have experience of dealing with walkers.

Finally, CAP health check proposals favour the transfer of funds from the guaranteed budget of Pillar 1 to rural development measures in Pillar 2 through increased modulation as delivery of public goods through agriculture is now at the forefront of the policy agenda. Public exchequer support linked to the production of public goods is generally seen in a positive light by policymakers as well as the taxpayer when contrasted with payments for production. Arguably the provision of public access represents a multifunctional role that agriculture can play in the utilisation and development of managed agricultural landscapes in marginal rural areas in the Republic of Ireland.

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8.0 Explanatory notes

[1] Keep Ireland Open is a national voluntary organisation campaigning for the right of recreational users to access to the Irish countryside. They are seeking clearly marked legal rights of way, mainly in the lowlands and legal rights to allow freedom to roam in more remote and upland areas.

[2] Teagasc – the Agriculture and Food Development Authority – is a national semi state body providing integrated research, advisory and training services to the agriculture and food industry and rural communities. It was established in September 1988 under the Agriculture (Research, Training and Advice) Act, 1988.

[3] The weights used to make the NFS representative of the Irish farming population are based on the sample number of farms and the population number of farms (from the Census of Agriculture) in each farm system and farm size category. The sample number of observations by size/system is simply divided by the population number of observations by size/system to get the weights that make the sample representative of the actual farming population. The method of classifying farms into farming systems, used in the NFS is based on the EU FADN typology set out in the Commission Decision 78/463.

[4] Landowners who are not willing to participate in a public access walking scheme are hereafter defined as "non providers".

[5] Landowners who are willing to take up a public access scheme for free are defined as "free providers".

[6] Landowners who are willing to join a public access scheme provided they are compensated for it are defined as "willing providers".

[7] The Rural Environment Protection Scheme (REPS) was introduced in Ireland under EU Council Regulation 2078/92 in order to encourage farmers to carry out their activities in a more extensive and environmentally friendly manner.

[8] The single farm payment is a decoupled payment based on the number of livestock premium claims made in the historical 3 year reference period from 2000-2002.

[9] The difference between parameter estimates in columns (1) and (2) can provide inference on differences between free providers and willing providers.

[10]Midlands region includes the following counties: Laois, Longford, Offaly and Westmeath.

[11] West region includes the following counties: Galway, Mayo and Roscommon.

[12] South-west region includes the following counties: Cork and Kerry.

[13] Commonage refers to land on which two or more farmers have grazing rights (Lafferty et al, 1999). Under common law, land held in commonage is seen as a tenancy in common. Each tenant holds an undivided share in the property and has a distinct and separate interest in the property. The ownership is divided into notional shares, rather like shares in a company. Commonage is not physically divided so no one person owns any particular part of the property. In a sense it is communally owned and operated and third parties must treat the co-owners as a single unit for transactions in respect of the land (Pearce and Mee, 2000).

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