Improving Public Access to the Irish Countryside for Walking – Investigation of Supply and Demand Side Factors.

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Declaration

I declare that this thesis, submitted to National University of Ireland, Galway for the degree of Doctor in Philosophy (Ph.D.) has not been submitted as an exercise for a degree at this or any other University. All research herein is entirely my own.

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Thesis Abstract

Increased interest and demand for land based recreational amenities has seen the rise of conflict between landowners and recreationalists (particularly walkers) in the Republic of Ireland. A right of access to the countryside for recreation prevalent across other developed nations does not apply. Stakeholders have tabled various proposals to address this situation ranging from a right to roam across the countryside to a compensation payment to landowners for recreational access. Whilst policy makers are aware of the economic opportunities associated with open-air outdoor recreation activities, rational public decision making requires that economic benefits and costs should be clearly identified and valued to justify any policy intervention. To-date no such evaluation has been undertaken.

This thesis explores supply and demand side factors that influence public access provision to the Irish countryside for recreational walking. Firstly, contingent valuation was used to measure the willingness to pay of consumers for improved public access and trail improvements on commonage farmland based on two case study sites in the Connemara region. Secondly, a national representative survey was used to explore the attitudes of landowners across the Republic of Ireland to the wider provision of public access for recreational walking on farmland, including the potential opportunity costs to agriculture as well as the level of compensation demanded by landowners. This thesis argues that based on derived welfare estimates there is significant scope for policy interventions to improve public access to the countryside in the Republic of Ireland.

Description of Thesis

The primary objective of the thesis is to study factors that influence the demand and supply of public access to the Irish countryside for walking. This is the first time, to my knowledge, that the contingent valuation method has been applied to investigate the demand for recreational walking across farmland in the Republic of Ireland. It is also the first time this approach has been used to estimate the willingness of landowners to supply improved public access to their land for walking in the Republic of Ireland or elsewhere.

The first part of the thesis, *Chapter 1*, provides an introduction and rationale for the thesis. *Chapter 2* provides an introduction to the public access situation in the Republic of Ireland and contrasts this with a selection of other developed countries. It also includes a review of the laws of public liability as they pertain to recreational users of farmland. Following this, *Chapter 3* provides an introduction to commonage including a rationale why the resource was chosen as a case study. The review also includes a legal and institutional description of the resource as well as a synopsis of the size, evolution and location of the resource in the Republic of Ireland.

Chapter 4 discusses how a market mechanism does not exist for some public goods, such as public access for walking and presents the case for an alternative methodology (non-market valuation) to establish supply and demand schedules for this public good. *Chapter 5* is a literature review which examines the different methodologies (and their applications) that are

being used in the field of non-market valuation. This chapter also outlines why contingent valuation was adopted in this instance.

Chapter 6 is empirically based and measures consumer preferences and willingness to pay for public access and trail improvements on commonage farmland for recreational walking. This research is based on the results of a survey from an upland and lowland case study sites in the Connemara region in the West of Ireland using the contingent valuation method. Following this *Chapter 7* examines the potential opportunity costs associated with recreation on commonage, namely the commercial value of sheep and cattle grazing. This chapter is empirically based and analyses the agricultural returns from livestock rearing enterprises on commonage land for a sample of farmers in the west of Ireland.

Chapter 8 investigates the attitudes of landowners across the Republic of Ireland to the wider provision of public access for recreational walking using a multinomial logit model. This chapter also employs CVM to analyse the level of compensation, if any, required to improve the supply of this public good using willingness to accept methodology. Finally *Chapter 9* summarises and highlights the main findings in this thesis and issues some recommendations.

Acknowledgements

There are very many people whose help, advice and support I would like to acknowledge. Firstly, I would like to express my deepest gratitude to my supervisors Dr. Tom van Rensburg, Dr. Stephen Hynes and Mr. Brendan O'Riordan without whose support and helpful advice this thesis would never have been completed.

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Finally, I would like to thank my family, especially my parents, for their unflinching and ubiquitous support throughout this process – *"ab ove maiori discit arare minor"*.

Table of Contents

List of Tables

List of Figures

List of Abbreviations and Acronyms

CAP	Common Agricultural Policy
CBA	Cost Benefit Analysis
CDB	Congested Districts Board
CE	Choice Experiment
CFP	Commonage Framework Plan
CNT	Comhairle Na Tuaithe
CV	Compensating Variation
CVM	Contingent Valuation Methodology
DACAS	Disadvantaged Area Compensatory Allowance Scheme
DBDC	Double Bounded Dichotomous Choice
ESB	Electricity Supply Board
EV	Equivalent Variation
GIS	Geographic Information Systems
IFA	Irish Farmers Association
IIA	Independence of Irrelevant Alternatives
IPBM	Irish Public Bodies Mutual Insurances Limited
LFA	Less Favoured Areas Scheme
MCI	Mountaineering Council of Ireland
MWTP	Mean Willingness to Pay
NFS	National Farm Survey
NOAA	National Oceanic and Atmospheric Administration
NWWAC	National Way-marked Ways Advisory Committee
PPF	Production Possibility Frontier
REPS	Rural Environment Protection Scheme
SBDC	Single Bound Dichotomous Choice
SMILE	Spatial Micro simulation model for the Irish Local Economy
TCM	Travel Cost Method
WTP	Willingness to Pay
WTA	Willingness to Accept

1 INTRODUCTION

The primary focus of the thesis is to study factors that influence the demand and supply of public access to the Irish countryside for walking. A right to roam or an everyman right of access prevalent across other developed nations does not apply and access to the Irish countryside for walking is a contentious issue. It is clear that access to the Irish countryside for walking is not as readily available as in other countries and there is an under supply of this good in the Republic of Ireland. This is potentially a serious constraint on the development of recreation and nature based tourism in the Republic of Ireland as our main competitors generally have no such constraints. Special interest activity tourism is recognised and targeted as a key development area. Promotion of this activity has the potential to add considerable dynamics and value to the rural economy. This research applies the contingent valuation methodology to estimate consumer and producer preferences for the demand and supply of improved public access provision to farmland for walking, with a particular emphasis on commonage land. This thesis investigates whether a policy intervention is justified in the provision of this good based on consumer and producer welfare estimates. At present there is little information to inform policymakers about these issues.

1.1 Goals and objectives

Ultimately if policymakers are going to contemplate an intervention which would promote improved public access scenarios with associated infrastructure there must be an evaluation to establish if benefits from enhanced public access scenarios outweigh costs. Hence, there are 3 main goals of this thesis. These can be framed in a policy context as:

A. *To evaluate public preferences for walking* - Do consumers want improved access to the Irish countryside for walking and do they place an economic value on the provision of this good?

B. *To evaluate landowner preferences for enhanced access provision* – In principle are landowners willing to engage with initiatives that promote improved public access for walking and do they want to be paid for such provision?

C. *To evaluate the economic value of traditional farm enterprises on marginal land of high recreational demand* – There is a suggestion that interference with agricultural activity is a significant constraint to improving public access, yet there is little or any information on the potential costs to traditional farm activities of enhancing public access.

To achieve these goals the following research objectives were formulated for the thesis:

1. Review formal and informal legislation and rules governing the access situation in the Republic of Ireland and contrast this with other European and developed countries.

2. Review the current laws on public liability and the current opportunities for public access to the Irish countryside.
3. Provide an introduction and definition of the commonage resource in the Republic of Ireland.
4. Discuss the case for adopting non-market methodology to estimate the supply and demand schedules for improved public access to farmland for walking.
5. Discuss appropriate non-market valuation techniques for investigating recreational supply and demand for walking.
6. Determine which trail attributes and facilities are important to respondents and establish whether respondents are willing-to-pay for an access agreement and trail facilities.
7. Establish if respondents have a preference for lowland or upland commonage walks.
8. Explore the potential opportunity costs associated with recreation on commonage – namely the commercial value of sheep and cattle grazing.
9. Evaluate the importance of subsidy payments to the profitability of livestock grazing enterprises on commonage.
10. Consider the conditions necessary for landowners to provide public access for recreational walking on their land and explore the characteristics and profile of landowners who are willing to provide public access for recreational walking.
11. Investigate the level of compensation, if any, that is required to ensure landowners provide public access for recreational use.

12. Explore the options available to policymakers in the Republic of Ireland should they decide to improve public access provision to the Irish countryside.
13. Examine the directions for future work.

1.2 Structure of the thesis

In order to achieve the above research objectives, the thesis is organised as shown in Table 1-1, which relates each chapter to the research goals and objectives.

Table 1-1: Chapter title and associated goals and objectives

Chapter	Objective	Goal
Chapter 2 – Public access to farmland for walking	1, 2	A
Chapter 3 – Introduction to commonage	3	A, C
Chapter 4 – Theoretical basis for non-market valuation	4	A, B
Chapter 5 – Non-market valuation methodology	5	A, B
Chapter 6 – Recreational demand for walking on commonage	6, 7	A
Chapter 7 – Agricultural returns to commonage	8, 9	C
Chapter 8 – Landowners attitudes to improved public access provision	10, 11	B
Chapter 9 – Conclusions and recommendations	12, 13	

Chapter 2 examines the legislation governing the public access in the Republic of Ireland as well as several other developed countries. A review of the literature indicates that a range of

countries rely on both formal as well as informal traditional rights of access, which are either codified or not codified in legislation. Where a right of access is not prevalent some countries have specifically designated areas (recreation areas and national parks) or have voluntary access arrangements. In the case of the Republic of Ireland there is no traditional right of access to private farm land and designated areas are scarce. Landowners have concerns about potential liability should walkers crossing their land suffer an injury. Chapter 2 also outlines the law as it stands on occupiers liability.

Chapter 3 introduces the reader to commonage in the Republic of Ireland. Commonage is associated with large tracts of unenclosed areas or marginal land predominantly located in scenic areas with significant demand for walking. Hence, it represents a unique case study opportunity in the Republic of Ireland to study consumer demand and returns to agriculture. This chapter includes a legal definition of the resource and distribution of property rights as they apply to commonage land. The evolution of commonage from the early 19th century rundale system to the present day situation is outlined. Finally the geographic location and overall importance of commonage as a percentage of area farmed is discussed.

Chapter 4 discusses how a market mechanism does not exist for a public good such as public access for walking, due to the inherent characteristics of non-rivalry and non-excludability. Consequently, this chapter sets out the case for applying non-market valuation to estimate the supply and demand schedules for improved public access and outlines the theoretical basis of adopting such an approach.

Chapter 5 reviews the principle techniques used in the non-market valuation of recreational supply and demand. This chapter provides a synopsis of the main revealed and stated preference techniques. The chapter outlines why contingent valuation was adopted in this analysis, including how to conduct a contingent valuation study and the various biases and challenges which need to be addressed when applying the technique.

Chapter 6 examines the recreational demand for walking on commonage. This chapter dispels the notion that the public will not pay for access to the countryside and identifies walking related attributes important to consumers. No research was available on these issues heretofore. This chapter outlines how the walking literature and an expert panel were used to select case study sites to investigate recreational demand for walking across commonage landscapes. A detailed description of the upland and lowland commonage case study sites was presented. The contingent valuation scenario as proposed and implemented across both sites is outlined in detail as well as the modelling framework used to estimate consumer demand for the two proposed scenarios. This chapter finally examines consumer willingness to pay for the improved access scenarios as well as respondents preferences for a number of trail related attributes.

Chapter 7 examines agricultural returns to traditional activities on commonage and by extension the potential opportunity costs of using commonage land for recreational activity. Landowners in the past have put forward the argument of interference with agricultural activity as an argument for prohibiting recreational access to farmland. If returns to agriculture from commonage are found to be low, then there is potentially no great

opportunity cost (in any event) to opening up commonage for recreation. It is hence important to establish returns to this resource from agriculture. Firstly, this chapter discusses the history of agriculture on commonage and outlines the relevant regulation and subsidies applicable to farming on commonage. Returns to commonage from agricultural activity were estimated using gross margin analysis on a sample of commonage farmers in the west of Ireland.

Chapter 8 examines landowners' attitudes to improved public access provision. This chapter reviews the literature on the supply of public access to farmland including the main constraints. Chapter 8 shows how the Teagasc National Farm Survey is used to canvass landowners attitudes to uptake of a scheme which proposes improved public access to their land for walking. A multinomial logit model is used to model the decision of landowners either not to engage with such a scheme or to engage on a free of charge or compensation basis. Finally, contingent valuation willingness to accept analysis is used to estimate the level of compensation demanded by those landowners seeking remuneration.

Finally, **Chapter 9** summarises the main results of the thesis and recommends some areas for further research.

1.3 Outputs from the thesis

A number of papers and presentations have arisen from the research presented in this thesis. Three papers have been accepted for publication in various journals. These include:

1. Buckley, C., van Rensburg, T.M. and Hynes, S., 2008. What are the financial returns to agriculture from a common property resource? A case study of Irish commonage. *Journal of Farm Management*, 13 (5), 311-324. This paper relates to work contained in Chapter 7.

2. Buckley, C., Hynes, S. and van Rensburg, T.M. Public access for walking in the Irish countryside – Can supply be improved? Accepted by *Tearmann - The Irish Journal of Agri-Environmental Research*, volume 6 (2008). This paper relates to work contained in Chapter 2.

3. Buckley, C., van Rensburg, T.M. and Hynes, S. Recreational demand for farm commonage in Ireland: A contingent valuation assessment. Accepted by *Land Use Policy*. This paper relates to work contained in Chapter 6.

A fourth paper by (based on Chapter 8): Buckley, C., Hynes, S., van Rensburg, T.M. and Doherty, E. "Walking in the Irish Countryside – Landowners preferences and attitudes to improved public access provision" is currently under review in the *Journal of Environmental Planning and Management*.

Related research not directly contained in this thesis has contributed to a paper titled "Recreational pursuits on marginal farm land: A discrete-choice model of Irish farm commonage recreation" which has been published in the *Economic and Social Review* (authors Hynes, S., Buckley, C. and van Rensburg, T.M.), volume 38, issue 1, pages 63-84.

Four working papers have been produced for the National University of Ireland, Galway's Department of Economics working paper series and Teagasc Rural Economy Research Centre working paper series. These are:

1. Buckley, C., van Rensburg, T.M. and Hynes, S. *A contingent valuation assessment of recreational demand on farm commonage in Ireland*. Department of Economics Working Paper No. 117, National University of Ireland, Galway. This paper relates to the results of Chapter 6.

2. Buckley, C., van Rensburg, T.M. and Hynes, S. *Commonage - What are the financial returns to agriculture from a common property resource?* Department of Economics Working Paper No. 130, National University of Ireland, Galway. This paper relates to the results of Chapter 7.

3. Buckley, C., Hynes, S. and van Rensburg, T.M. *Comparisons between Ireland and other developed nations on the provision of public access to the countryside for walking – Are there lessons to be learned?* Rural Economy Research Centre Working Paper No. 08wpre03, Teagasc, Athenry. This paper is based on the content of Chapter 2.

4. Buckley, C., Hynes, S. and van Rensburg, T.M. *Access to farmland for walking in the Republic of Ireland – The attitude of landowners.* Rural Economy Research Centre Working Paper No. 08wpre03, Teagasc, Athenry. This paper relates to the results of Chapter 8.

There have also been a number of presentations arising from the research in this thesis. Apart from presentations to the Department of Economics at the National University of Ireland, Galway and to colleagues in the Teagasc Rural Economy Research Centre, 3 other major presentations are worth noting. Firstly, a paper based on willingness to pay for public access and trail improvements on commonage farmland based on Chapter 6 was presented at the Irish Economic Association conference in Bunclody, County Wexford in April 2007. Secondly, a paper based on the results of Chapter 7, financial returns to commonage farming from agriculture was presented at the Agricultural Research Forum in Tullamore, County Offaly in March 2006. Finally a paper titled "The multifunctional role of grassland commonage in Ireland" based on Chapters 6 and 7 was presented at an international scientific conference titled Grassland Ecology VII in Banska Bystrica, Slovakia in November 2007. Although many of the aforementioned papers and presentations have joint authorship the work contained in them is solely my own.

1.4 Summary

This thesis aims to address 3 main issues: do consumers want improved access to the Irish countryside for walking and what economic value, if any, do they place on the provision of this good; are landowners willing to engage with initiatives that promote improved public access for walking and do they want to be paid for good provision and finally what are the

economic returns to traditional farm enterprises on marginal land of high recreational demand. Establishing consumer and producer demands for any improved public access provision is essential to guide resource allocation decisions.

2 PUBLIC ACCESS TO FARMLAND FOR WALKING

This chapter examines the public access situation in the Republic of Ireland and contrasts this with recreational access in a number of other developed countries. The public liability insurance situation is also reviewed as are current opportunities for public access to the countryside in the Republic of Ireland. Finally, recent policy initiatives are discussed and some conclusions are offered.

2.1 Introduction

In developed countries public access for recreational walking is normally achieved through either rights of access to the countryside or an extensive network of national or state parks. Neither is the case in the Republic of Ireland. Public access to the countryside in the Republic of Ireland is largely confined to a limited network of statutory rights of way and permissive access through public or private lands. A right to roam or walk on uncultivated lands which is applicable in other EU countries does not prevail. There are 6 national parks in the Republic of Ireland but this covers approximately just 1.5% of total land area in the Republic of Ireland. Hence, formal and informal access is generally undeveloped and opportunities for recreational walking are limited.

In this context this chapter seeks to address the following research questions:

(i) Review formal and informal legislation and rules governing the access situation in the Republic of Ireland and contrast this with other European and developed countries.

(ii) Review the current laws on public liability and the current opportunities for public access to the countryside in the Republic of Ireland.

2.2 Public access across Europe

A review of literature suggests that public access in European countries can generally be segregated into 3 main categories (Scott, 1991; 1998): countries which rely solely on traditional rights of access not codified in legislation; countries where traditional access rights are codified in legislation and finally countries with public rights of way (and a network of national parks) but few rights of access over private land. These are discussed below.

(i) Countries which rely solely on traditional rights of access not codified in legislation.

In Sweden access to private land by the public for non-destructive recreation exists through the concept of Allemannsretten ("Everyman's Right" or "The Right of Common Access"). This concept grew out of customary practices in the Middle Ages and is an unwritten law. It is a package of "ill-defined" rights, responsibilities and obligations. It allows free access across another's land, the right to stay overnight and the right to pick berries, flowers and mushrooms anywhere, provided that there is no damage done to the owner's property. It excludes access to private grounds, parks, croplands and gardens (the "Home Peace Zone"). The concept retains the support of landowners, although it faces challenges such as costs to landowners from increasing public use, a tendency for commercial businesses to capture the

benefits but not the obligations of Allemannsretten, and disturbance from recreational activities such as snowmobiles and camping. While the right of public access is guaranteed in Sweden's constitution, it is not enshrined in law and there is no statute that exactly defines its scope. It is hedged around by various laws that set limits to what is allowed. It is therefore not always possible to say exactly what you may or may not do in the countryside. While the courts have the power to interpret the right of public access, not many cases have actually come before a court (Swedish Environmental Protection Agency, 2007).

(ii) **Countries where traditional access rights have been codified in legislation**

In 2003 the Scottish Parliament, in one of the first acts of devolved government, overwhelmingly passed the Land Reform (Scotland) Act 2003. This fundamentally changed property rights in Scotland and enacted an everyman right or right to roam across the countryside. Rural Scotland is dominated by a small number of large estates (particularly in the highlands) farmed by tenants. The Scottish Executive (Government) was concerned about the adverse effects of absentee landowners, land owned by trusts and companies, and large estates being used exclusively as hunting and fishing estates (Alvarez, 2003).

One objective of the Land Reform (Scotland) Act 2003 is to promote "responsible access" to land. The Scottish "model" for access comprised three elements: changes to legislation, an outdoor access code and new responsibilities for local authorities. The legislation (Office of Public Sector Information, 2007) provides for a statutory right of "responsible access" to all land (including enclosed agricultural land, as well as open and hill ground) regardless of

ownership. The legislation allows restrictions on access to buildings in the interests of privacy, health and safety, and/or the national or public interest.

In Norway, the Allemannsretten is also part of the country's cultural heritage, and has traditionally enabled the public to travel over, enjoy short stays, or collect natural products for personal consumption on land and waters owned by others. The 1957 Outdoor Recreation Act adapted traditional rights to modern circumstances and codified them in detail. Walking is allowed on all public roads, uncultivated land, forests, and cultivated land when frozen or snow-covered (except from 30th April to 14th October). In Denmark the 1968 Conservation of Nature Act permits walking in state forests and other public lands, on beaches; rural roads and paths; roads and consolidated paths in forests and on uncultivated and unfenced land.

In Germany the traditional right of public access (Betretungsrecht) has been given a modern statutory basis. The basic principle is that of a public right of access to forests, unenclosed land and foreshores, and along footpaths and roads. The right does not give access to enclosed farmland, except on farm roads and tracks. This right applies to about one third of the former West Germany. Comparable information is not available for the former East Germany. In Switzerland a traditional right of public access is also recognised, particularly over land which is not cultivated. The Swiss enjoy ancient rights of access (also called Betretungsrecht) to forests and woodlands enshrined in a civil code[1]. Access is also relatively unrestricted in the high mountains. Federal law ensures legal protection for walking and hiking path networks. In Austria there is a traditional right to roam throughout. The

[1] A civil code is a systematic compilation of laws designed to comprehensively deal with the core areas of private law.

Forstgesetz provides a legal right of access to forests, subject to conditions and restrictions. Austrian society's historical respect for the countryside (especially agricultural production and nature conservation interests) and the nature of the terrain (Alps) limits the extent to which such rights may be exerted.

Virtually all of the land in England is under private ownership and access to the countryside has historically been possible through an extensive network of rights of way (Mulder et al., 2006). People in Britain are accustomed to free access to the wider countryside whether in a de facto[2] or de jure[3] sense (Crabtree and Chalmers, 1994; Beard, 1995; Bennett and Tranter, 1997). In England and Wales the Countryside and Rights of Way Act 2000 applies. This gives rights of free access only in certain areas that are mapped. The legislation confers a right of access (foot access only) to defined "access land" but not the "right to roam" over all land. The Countryside Agency (now Natural England) and the Countryside Council for Wales have the power to map and designate 'open country' as 'access land' over which, subject to certain conditions, the public have a statutory right of access. The Act considers that 'open country' means land that appears to consist wholly or predominantly of mountain (land situated above 600 m), moor, heath, down or registered common land (Keirle, 2002). There is no compensation for any landowner resulting from the creation of a statutory right of public access over his or her land where it is defined as "access land". The Act does, however, remove landowners from owing any duty to any persons from risks resulting from the existence of natural features or from walls, fences or gates (except proper use of gates or stiles). Landowners may restrict access for any reason for up to 28 days per year without

[2] Authority being exercised or an entity acting as if it had authority, even though the legal requirements have not been met.
[3] Lawful

permission, with the opportunity to seek further restriction or exclusions on land access for management reasons. In addition, the Act provides for a "country code" to cover the arrangements for land access. It establishes a National Countryside Access forum composed of representatives from landowners, local government and recreational groups to advise on the development of policy and procedures on access to the access land and rights of way.

(iii) **Countries with public rights of way but few rights of access over private land**

In the Netherlands and France, provision is made for access in specifically designated areas (recreation areas and national parks) or by voluntary access arrangements. In France, rights to privacy and private ownership of land take precedence in the French countryside. Traditional rights of way are largely restricted to rights of passage and to walking along canals and rivers. Private ownership rights are dominant in the Dutch countryside. Access rights relate primarily to public rights of way such as public roads, cycle-ways and footpaths and public access to seashores. This situation most closely reflects the situation in the Republic of Ireland. However, the network rights of way, voluntary access areas and national parks in the Republic of Ireland are very limited.

2.3 Public access in other developed nations

Outside of Europe, New Zealand has traditionally assumed freedom of access to state lands. However, access is not freely available to privately managed land or to Maori lands except where well established routes are in place. New Zealand has 13 national parks covering one third of the country, as well as forest parks, regional parks and an extensive national network of trails (Fitzpatricks, 2005).

According to Acheson (2006), in the USA virtually all states have a legal situation where landowners control the right of access. There is no tradition of others using the land for recreation without permission except in Maine. However even access in Maine is becoming increasingly problematic. In Minnesota for example, hunters must obtain permission of landowners before hunting on agricultural land. Failure to get permission constitutes a misdemeanour. In Kansas, hunters must have permission of the landowner to hunt on any kind of land, posted[4] or not. In Michigan it is illegal to trespass on the land of another "after having been forbidden to do so" (Acheson 2006, pg.23). Even in the state of Maine where there has historically been an open access tradition, hunters from other states are fully aware of the rights of landowners, but are still loathe to enter private property without permission when they come to Maine. Acheson (2006) noted that Maine has a strong landowner liability law. This protects landowners from lawsuits by people who get hurt on their land while they are engaged in some recreational activity. The landowner is protected whether or not permission is given to use the land. This protection removes a strong motive for landowners

[4] "Posting" refers to legally serving notice on members of the public that trespassing in general, or certain activities, will not be permitted on the land. The most common means of posting is to place signs around the perimeter of the property.

to forbid people to use their land. Maine has a land use tradition that is unique in the USA. In Maine, landowners have traditionally allowed members of the public to use their property for a wide variety of recreational activities free of charge. In recent years, this "open land" tradition has been changing, and large amounts of private land are being posted. This transformation has been driven by several basic demographic changes at work. A larger population and more suburban sprawl have reduced the amount of sparsely populated rural areas, while an increase in rural sports has brought more people to rural areas seeking recreational opportunities. These trends have brought those using other people's land into close proximity with those who own the land. In addition it is noted that posting tends to be self reinforcing. When a number of people in a small area post their land, others will follow suit to avoid excessive use of their property. As one respondent put it, "If I am the only person with unposted land on the peninsula, my land would get all of the hunters and [the] others who used to be on a thousand acres" (Acheson 2006, pg. 25).

State legislatures in the US have passed recreational use statutes designed to encourage landowners to open up their lands to the public. These provide private landowners with immunity from lawsuits over accidental injury to recreational users while on a landowner's property (Copeland, 1998). Most state recreational use statutes insulate landowners from liability if access is granted without a charge. However, there are an increasing number of states allowing landowners to charge a fee and retain the liability protection (Wright, 1989; Wright et al., 2002). Today all 50 states in the US have adopted recreational use statutes that are intended to encourage landowners to make their lands available for public recreational use by providing greater liability protection to the landowner (Wright et al., 2002). However,

liability issues or at least perceived liability still continues to be a major concern to landowners (Henderson and Dunn, 2007).

2.4 Public access in the Republic of Ireland

All land in the Republic of Ireland is owned privately or by state linked organisations such as Coillte[5], the National Parks and Wildlife Service, Bórd na Móna, Local Authorities and the Electricity Supply Board (ESB). As noted by (Quinn, 2007) public access to the countryside in the Republic of Ireland may be obtained in one of 4 main ways:

1. By public rights of way established by common law.
2. By permissive access to land in public ownership.
3. By voluntary permissive arrangement between a local authority and a landowner.
4. By a private landowner, on his or her own initiative, opening up land for access to user groups or to the public at large.

In the past, a tradition amongst farmers of allowing access to their lands prevailed. This tolerance was due to small numbers of people involved in outdoor recreational activity which generally caused little inconvenience. Increased demand has caused some level of conflict between landowners and recreational users (O'Reilly, 2006). Access is at the discretion of the landowner and he/she may prohibit access or withdraw consent without prior notice. Similarly, there is no entry right to state or semi-state lands, though permission is normally

[5] Coillte is a commercial company operating in forestry. Coillte was established in 1989 when it acquired ownership of the State's forests in return for shares valued at IR£575 million (€730 million).

given or implied, except where security, health and safety or habitats would be put at risk. The following is a synopsis of current opportunities for walking in the Republic of Ireland.

2.4.1 Rights of way

Rights of way do exist in the Republic of Ireland, however the network is limited. The public can claim a right of way over land only if a particular and defined route has been dedicated by a landowner and accepted by the public. A dedication is an absolute statement that permission never need be asked again and that the owner is no longer involved. The right of way is created by grant and is solely between the landowner affected and the relevant local authority (Quinn, 2007).

Providing the traditional rights of way have been recorded, it cannot be extinguished by non use, no matter how long a period or by action of a landowner whose land it crosses. Abolition occurs only with involvement of local authority and the Minister and must involve a public enquiry. Unrecorded rights of way are difficult to prove with the passing of time.

Since the formation of the state, much information has been lost on rights of way. The register has also been the occasion of conflict, as a landowner affected is entitled to object. The onus of proof is on the public and requires a demonstration of dedication and acceptance. Many rights of way are difficult to prove at law and are open to challenge by an owner (Quinn, 2007). In *Collen -v- Attorney General* (June, 2006), Judge Seán O'Leary ruled that rights of ways could not be created without the agreement of the land owner and that such

rights of ways did not exist unless through the agreement of the landowner. It is also worth noting his concluding comment, "that the use of the concept of public rights of way as a mechanism for creating new or revising old rights for walkers is unlikely to be a satisfactory overall solution" (O'Brien, 2006).

2.4.2 Permissive schemes

There are a small number of official and quasi-official schemes in the country for establishing and managing walking routes. The principal ones are the Slí na Sláinte Scheme and National Way-marked Ways. The Slí na Sláinte scheme was set up by the Irish Heart Foundation in 1996 and 140 walking routes have been established throughout the country varying in length from 3km to 60km. Each kilometre is marked with a distinctive way mark. These are mainly over public roads and land (Quinn, 2007).

The National Way-marked Ways Advisory Committee (NWWAC) was formed in 1978. At present 31 way-marked ways are in existence, these are estimated to account for 3,421 kilometres in total distance (Irish Sports Council, 2007). The agencies and committees who have overseen the development of the ways in partnership with the NWWAC include local authorities, local Rural LEADER groups, Coillte and Waterways Ireland. However 50% of the ways are on country roads, while approximately 26% are on Coillte lands. The remaining 24% crosses private property, national parks or other public lands. Permissive paths have been procured as access routes by means of negotiations between the occupiers and local committees. The paths are not rights of way and may be revoked at any stage by the owners.

Normally the agreement is secured for a stipulated period. In the case of way-marked ways promoted by a local authority and approved by the NWWAC, indemnity is given through an insurance policy with the Irish Public Bodies Mutual Insurances Limited. When a new way is being created, the names and addresses of all owners and occupiers affected are given to the IPBM and form part of the policy. The NWWAC of the Irish Sports Council subsidises 45% of the cost of insurance with the remainder being paid principally by the local authority. Local management committees (Leader, Coillte, local authority etc.) administer the routes and have responsibility for annual maintenance.

Some local initiative have also been undertaken in this area mainly through local partnership arrangements, for example The Wicklow Countryside Access Service is a joint Wicklow Rural Partnership/Wicklow Uplands Council project which commenced in July 2005 with the aim of establishing a network of access routes, on private lands in the Wicklow uplands by means of voluntary agreements with landowners (Wicklow Uplands Council, 2009). The project is in the process of developing four access routes. However, progress has proven protracted.

2.4.3 Public lands

There is permissive access to National Parks and Wildlife Service lands, to Coillte Forests, and to walks along canals and rivers managed by Waterways Ireland. Coillte permits access to over 440,000 hectares of forest land and actively promotes the use of certain forests for recreation. There are a small number of occasional walking routes through lands owned by

ESB. National Parks have been established to conserve extensive areas of important landscapes and natural and cultural resources in the Republic of Ireland and to enable the public to visit and appreciate them. The National Parks and Wildlife Service is responsible for their management. There are 6 national parks covering in excess of 56,500 hectares. These are located in Wicklow (17,000 hectares), Donegal (Glenveagh, 14,000 hectares), Mayo (Ballycroy, 11,000 hectares), Kerry (Killarney, 10,230 hectares), Galway (Letterfrack, 2,957 hectares) and Clare (The Burren, 1,500 hectares). The public generally have free access to the parks, except in peak season, and are only delimited by issues of safety or protection of habitats.

2.4.4 Private initiatives

A private landowner, on his or her own initiative, could open up land for access to user groups or to the public at large. This has happened in a limited number of locations. These represent commercial ventures where visitors are charged for car parking or an entry fee. Charging for car parking does not put a duty of care on the landowners under the Occupier Liability Act but those charging for entry do have a responsibility to ensure facilities are safe for visitors and normally carry appropriate occupier liability insurance.

2.5 Public access – liability issues

Under Irish case law, occupiers of land have a duty of care to those entering their private property, including trespassers. The matter of liability has considerably troubled farmers who are concerned about potential liability should walkers crossing their land suffer an injury. The

marginal economic nature of farming in the uplands makes it highly unlikely that owners of hill farms and commonage would carry private liability insurance due to the low relative incomes of this group.

The Occupiers Liability Act of 1995 contains specific provisions designed to facilitate the use of land for recreational activity. It created three categories of entrants – visitors, recreational users and trespassers (Comhairle, 2007). The duty for the occupier of premises differs depending on the kind of people who come onto the property.

(i) **Visitors -** In general terms, visitors, for the purposes of the Act, are people who come on to a premises because they have been invited or allowed in; because they are there to perform a term of a contract or they have a right to be there and are exercising that right.

(ii) **Recreational Users -** A recreational user is a person who is on a premises without charge (except for reasonable charges for car parking), who may or may not have permission to be there and who is there for recreational activity. The Act defines a recreational activity as that conducted in the open air, including any sporting activity, research and nature study so conducted, exploring caves and visiting sites and buildings of historical, architectural, traditional, artistic, archaeological or scientific importance (Quinn, 2007).

(iii) **Trespassers -** Trespassers are people who are neither visitors not recreational users. The law of trespass gives landowners the right to exclude access from all of their land. If land is entered without the express consent of the landowner, he / she is entitled to use 'reasonable

force' to eject a trespasser if a request to leave is declined. The law on trespass gives landowners the right to exclude people from all their land except where a public right of way exists.

The duty of the occupier of the land towards a recreational user is not to 'intentionally injure' or to act with reckless disregard for the person or his / her property. The Irish Supreme Court in 2005 referred inter alia to the requirement of 'reckless disregard' as a condition by which a landowner would be found liable for injury under the Act. The Mountaineering Council of Ireland (MCI) takes the view that persons engaged in recreational activity in the countryside should be doing so entirely at their own risk (Mountaineering Council of Ireland, 2005) and suggest the adoption of what is known in Australian law as 'volenti non fit injura' – a willing person cannot be injured (in law). In Australia, liability increases if a fee is charged to gain access.

Farmers and their organisations have persistently cited public liability as a prohibitive concern to provision of improved public accessing for walking. A report in the Irish Farmers Journal indicated that one farmer had to pay out £8,000 to a shooter who injured his foot by stepping on a harrow which was covered in grass. This farmer had no public liability insurance cover. Another farmer paid £5,000 to a tradesman who rolled down a hill and a spike in the ground went through his arm. Another incidence was highlighted where a Department of Agriculture official received an injury from an animal while on a routine inspection of a farm and the farmer's insurer had to pay out £10,000. These cases all happened since the new Occupiers' Liability Act came into force in July 1995 (Burke, 1999).

Lack of insurance or under-insuring is an issue of great concern to farmers. Farmers in marginal areas are less likely to carry privately funded public liability insurance.

2.6 Recent policy initiatives

To improve public access provision a right to roam legislative approach similar to Scotland is favoured by some (Keep Ireland Open[6]). A legislative framework "Access to the Countryside Bill" was recently proposed by a member of the opposition in Dail Eireann, Deputy Ruari Quinn (Quinn, 2007). The Bill proposed a right of access to land in excess of 150 metres above sea level and to any open and uncultivated land, including moors, heaths and downs. It also suggests amendments to the Occupier Liability Act where persons would enter land entirely at their own risk. This Bill met with vociferous opposition from the farm organisations who are vehemently opposed to any proposals that might lead to a diminution of property rights.

In 2004 the Minister for Community, Rural and Gaeltacht Affairs set up the countryside recreational council "Comhairle Na Tuaithe" (CnT). The role of this council is to examine the issues of access to the countryside, develop a countryside code and develop a countryside recreation strategy. Significant progress has been made on the latter two objectives[7]

[6] 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.

[7] Countryside Code agreed by Comhairle na Tuaithe is based on the leave no trace principles of outdoor ethics. It contains 7 main headings: plan ahead and prepare, be respectful of others, respect farm animals and wildlife, keep to durable ground, leave what you find, disposal of waste properly and minimise the effects of fire (Comhairle na Tuaithe, 2006). The National Countryside Recreation Strategy was launched by Minister Ó Cuív on the 29th September 2006. It can be downloaded at http://www.pobail.ie/en/RuralDevelopment/ComhairlenaTuaithe/file,8590,en.pdf

(Comhairle na Tuaithe, 2006) but the problematic issue of access remains (O'Reilly, 2006). Comhairle na Tuaithe initiated a legal review to examine whether public access could be implemented by means of legislation without redress to the Irish constitution. A report on the finding of this review is reported not to have ruled out this option (Owens et al., 2007). The legislative approach is not favoured by government and the mainstream political establishment. The Minster for Community, Rural and Gaeltacht Affairs, Eamon O'Cuiv dismissed Deputy Quinn's Bill as "simplistic" and said there was very little support for it in the countryside stating that "Laws that don't have a general consensus are unenforceable" (Corkery, 2007). Interference with property rights is unlikely given the historical evolution of land tenure in Ireland and its associated with Irish nationalism and emancipation from the British Empire. In a parliamentary debate Minster Eamon O'Cuiv is quoted as saying "I have repeatedly made clear my view that a local community-based approach is the best way forward where issues of access to the countryside arise" (O'Cuiv 2007, pg 26).

A scheme "walkways management scheme" was agreed by stakeholders in Comhairle na Tuaithe in 2007 where landowners would be compensated for walkway development and ongoing maintenance. Under the scheme, landowners will receive payments for the development, maintenance and enhancement of approved, way-marked ways, and looped walking routes that pass through their land. Participation in the scheme will be optional and access granted by permission of the landholder. The scheme will allow landowners to work an agreed number of hours, on an annual basis, on the section of walkway that passes through their land. They will be paid an hourly rate of €14.50 for this work and all materials will be supplied. Farmers will be eligible for payments of up to €2,900 a year. Some €4 million has

been provided for the scheme in 2008. The four trails selected for the pilot are the Bluestack Way in Donegal, Sheep's Head Way in west Cork, Suck Valley Way in Roscommon and Galway and Eamonn a' Chnoic Loop Walk in Tipperary. This scheme is in an embryonic stage and may have more relevance to existing walkways and its' success in attracting new walking routes remains to be seen.

In a review of over 20 case studies of successful walking routes in Ireland, the UK and Mainland Europe, the Western Development Commission (2005) highlighted a number of key factors that were necessary for the establishment of a successful walking tourism product. The dominant success factor identified related to support structures. In most successful cases a tripartite partnership was found to exist amongst public, private and community players, at both local and regional levels. The relevant authorities recognised the need for this partnership approach.

Secondly, for many of the successful walks attracting significant international tourists, resources were provided both in-kind and financially, primarily from public bodies. However, considerable variation existed from country to country because of different prevailing public funding mechanisms. Thirdly, the public sectors in each case recognised and supported communities as the initial 'drivers' in the identification of the walking routes and negotiation of the lines of way.

Fourthly, the public sector supported the communities in the development, resourcing and marketing of routes, and frequently assumed management of the walks in the longer term.

This was particularly well demonstrated in the UK and France, where there has been a strong tradition of state support for recreational walking since the 1950s. Fifthly, walk development, maintenance, sales and marketing, were properly resourced with dedicated personnel. However, the private sector was tasked with providing appropriate back-up services, such as meals, accommodation, transport, tours, drying and laundry facilities, maps, published guides, transfer from points of entry, luggage transfers, walker information points and good quality food. This is the key area from a local community tourism perspective. Finally, many of the successful international walks had dedicated staff such as route managers and rangers for the long term management, networking and marketing of the routes.

2.7 Conclusion

The demand for recreation has increased significantly in the Republic of Ireland as well as other developed countries and this trend is expected to continue into the future. It is clear that access to the countryside for walking is not as readily available as in other countries. This is potentially a serious constraint on the development of recreation and nature based tourism in the Republic of Ireland as our main competitors (across Europe) generally have no such constraints. Special interest activity tourism is recognised and targeted as a key development area by the tourism authorities in the Republic of Ireland (Tourism Policy Review Group, 2003).

Across Europe and other developed nations public access to the countryside is generally provided through either rights of access or through a network of rights of way or access areas. In recent years legislation has been enacted in Scotland (right to roam) and in England and

Wales (access land over 600 metres) to formalise access to the countryside. Heretofore access in these countries was limited to rights of ways and informal permissive access. Legislation governing access in other European countries has its origins in tradition and cultural heritage. A legislative approach in the Republic of Ireland although favoured by some (Keep Ireland Open, 2005; Quinn, 2007) is strongly opposed by landowners (Dempsey, 2007) and is not favoured by government and the mainstream political establishment (O'Cuiv, 2007). Hence, this seems an unlikely option for improving public access in the Republic of Ireland.

In absence of compulsion through legislation achieving improved public access will be dependant on permissive arrangements involving landowners as there is a limited network of both rights of ways and public lands across the Republic of Ireland. The willingness of landowners to engage and provide improved public access for walking will depend on supply side factors such as cost of provision, monetary incentives and landowner goodwill. These issues will be discussed further in Chapter 8.

3 COMMONAGE – A SHARED RESOURCE

Commonage is associated with large tracts of unenclosed areas or marginal land predominantly located in scenic areas with significant demand for walking. Hence, it represents a unique case study opportunity in the Republic of Ireland to study consumer demand for public access as well as investigating returns to traditional agriculture. In this context the objective of this chapter is:

(i) Provide an introduction and definition of the commonage resource in the Republic of Ireland.

3.1 Definition of commonage

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 (Wylie, 1997; Pearce and Mee, 2000).

Each shareholder has equal right of possession of land held in commonage. No tenant has the right to exclude another co-tenant from possession of any part of the land. Therefore, no tenant has the right to prevent another shareholder from taking a share in the rent and or

profits from commonage land (Wylie, 1997). Shareholders have the right to exclude non-shareholders; however this maybe extremely difficult to enforce.

A shareholder does not relinquish his/her interest in commonage to the other tenants upon death. When a shareholder dies his/her interest in commonage passes to a family beneficiary under his/her will or intestate. Such tenancies in common can lead to problems as when a shareholder dies it allows the possibility of dividing the legal title in to many separate shares. For example if a shareholder stipulates under a will that his/her share be divided between his / her children then the number of shareholders in the commonage has increased. Each of his / her children now owns a fraction of one share (Lyall, 2000). This may cause significant problems when trying to remedy conflicts that may occur with commonage land as all shareholders need to be in agreement for the problem to be resolved (Pearce and Mee, 2000).

3.2 History of commonage

Commonage in the Republic of Ireland is a remnant of a system of communal tenure which is thought to have originated under the Brehon laws but which became known during the early 19th century as the rundale system (Andrews 1987; Kelly 1997). Rundale was a term used to describe the mixing of different farm plots in a single field. This system essentially had a fragmented in-field area, beside a clachan (cluster of houses) and a common outfield area (away from the clachan). Under the rundale system land around the houses (or clachan) was used primarily for growing oats or potatoes while the common higher ground (or outfield) was used for livestock grazing (O'Loughlin, 1987; Whelan, 1997). Commonage grazing rights prevailed mostly on upland tracts of land as this was considered agriculturally

uneconomic and unproductive and therefore unsuitable for division during land reforms (Interdepartmental Committee on Land Structure Reform, 1978; O'Loughlin, 1987). This was particularly prevalent in counties along the poorer western seaboard.

The rundale system gave rise to a situation where an individual might occupy seven or eight acres of land but this might be scattered all over the locality. Under the rundale system the rough pasture (or outfield) was held in common. The rundale system and commonage in general was condemned by the select committee of the house of commons in 1810 and by the Devon Commission in 1845. It was said to impede the development of agriculture and reclamation of hill pasture. The Devon Commission suggested the land be compulsorily acquired and reclaimed. This reclamation would give permanent existence for three times as many people on the land in question (O'Loughlin, 1987).

Under the Land Act of 1891, the Congested Districts Board (CDB) was established (Spellissy, 1999). During the 16-17th century, native landlords were replaced by English colonists (Cromwell plantations), many becoming sub-servant to the new English landlords. Others were driven into the poorer western seaboard. Consequently these areas suffered from over crowded conditions due to the aforementioned practice of constant subdivision, among family members, of holdings which were already undersized and of inferior agricultural potential (Interdepartmental Committee on Land Structure Reform, 1978). Despite their wide open spaces, areas along the western seaboard were classed as congested districts because only a small portion of their land was productive. Under the CDB, people in areas of high population density were resettled in relatively less congested regions. This was achieved by

the breaking and re-ordering of thousands of Rundale house clusters and intricately meshed fields, gardens and by the enlargement of small agricultural holdings (Spellissy, 1999). The rundale system was essentially ended by striping the land. Each tenant received a parcel of land, where possible, including a variety of the good and bad soil types as well as a share of the common grazing. Commonage grazing rights prevailed on upland tracts of land as this was considered agriculturally uneconomic and unproductive and therefore unsuitable for division. This was seen as only a temporary measure and these were to be divided in due course (O'Loughlin, 1987).

The Congested Districts Board was eventually merged with the Land Commission in 1923. The 1939 Land Act gave the Land Commission the power to divide commonages compulsorily and to aid those co-owners who wished to divide by agreement. From this period till its abolition in the mid 1980's progress on commonage division proved difficult, as given the history of land tenure in Ireland the Commission were slow to use their compulsory power. This was set out in the Commission's annual report of 1971-72 "The Irish Land Commission are anxious to encourage division and development of commonages and offer advice and in certain cases practical assistance to owners who want their commonage divided" (Land Commission, 1971-72).

A policy was also promoted that economic viability and potential returns from the commonage should be a determinant in promoting commonage division. This was inherent in the Land Commission thinking and was re-affirmed by the Interdepartmental Committee on Land Structure reform in 1978 which made recommendations in respect of commonage.

The Committee recommended the following (Interdepartmental Committee on Land Structure Reform, 1978):

"Although in very many instances commonage division is not economic, there are areas of potentially productive commonage in the poorer parts of the West where division could be a worthwhile proposition. Almost all the shareholders who would benefit have non-viable holdings and very little prospect of off-farm employment. In many of those cases division (and reclamation) of the commonage could double the carrying capacity of the holding concerned and help stabilise the population.

From the information available to the Committee it was not possible to quantify the total area of commonage in the country or to assess the extent to which division could be a viable proposition. Although commonage was not one of its priorities, the Land Commission has done considerable division work over the years and our understanding is that such work is complex and time consuming, calling for a high degree of patience and tact".

The Land Commission was abolished in 1984 (Lafferty et al., 1999) when its remit – the division of land in Ireland was practically complete. The only area still "unresolved" was the division of commonage. Its duties were taken over by the Department of Agriculture. At this time the Department of Agriculture offered grants for reclamation after commonage division (through the ten-year Programme for Western Development introduced by the EEC in 1981). This provided grant aid for fencing and pasture improvement of land held in common and

used the 1939 Act to compulsorily divide commonage where there was at least 75% to 80% shareholder consent (O'Loughlin, 1987).

Commonage division has now practically ceased. The reasons for which were outlined in Dail Eireann by then Minister of State for Agriculture, Eamon O'Cuiv: "In 1998 my Department took the decision to withdraw from commonage division but to complete, where possible, cases already on hand. Much commonage is not suitable for division due to the nature of the terrain and the need for sheep in particular to graze over an extensive terrain. Should it become apparent that there is a demand for a division of a large number of commonages and that it would be generally beneficial, I would be willing to re-examine the matter" (O'Cuiv, 2001).

3.3 Commonage – a common property resource

The term common property refers to a distribution of property rights in resources in which a number of owners are co-equal in their rights to use the resource (Ciriacy-Wantrup and Bishop, 1975). This means that rights are not lost through non use. It does not mean that the co-equal owners are necessarily equal with respect to resource ownership. The concept implies that potential resource users who are not members of a group of co-equal owners can be excluded. The property concept has no meaning without the feature of excludability of all those who are not either owners themselves or have some arrangements with owners to use the resource (Ciriacy-Wantrup and Bishop, 1975).

Abuse of the resource can occur because each user, while striving for private gains, can spread some of the costs of his or her use to other users. Where limited entry has been accomplished, the group of included users has the ability to collude and systematize use (Stevenson, 1991). Commonage land is not generally well defined and often boundaries are physically weak in terms of fencing. It is often the case that there is no division between adjoining commonages so livestock are free to roam between commonages. Hence it can be very difficult for shareholders to exclude non shareholders from commonage use. This problem could of course be more easily addressed if the shareholders themselves had organised to manage the commonage resource. There is a distinct lack of explicit or well understood rules among shareholders themselves regarding their rights and their duties to one another in regard to resource extraction. There is some historical evidence to suggest that informal management arrangements had developed on some commonages. These had their origins in grazing restrictions placed on local tenants by English landlords. These took various forms some of which were often called a “band” or “collop”. This provided tenants with grazing rights for a set number of livestock for a set period of time (Jones, 1995). When land was return to Irish ownership after the Land Acts these informal agreements continued whereby shareholders would set an agreed stocking rate which was of maximum benefit to all and were based on a ‘Gentleman’s agreement’ (Butler, 2000). These systems were originally designed to ensure fairness and equity of grazing extraction and in some instances a grazing manager was appointed to police the regime and a graziers meeting was called if rules were breached and sanctions applied.

These arrangements seemed to be more prevalent on better quality commonage and few if any remain. It seems likely this better quality commonage land was eventually divided. Self governance and regulation by shareholders is the principal characteristic of robust common property regimes. This is definitively absent for commonage in the Republic of Ireland. In the absence of organisation by shareholders themselves the commonage resource is vulnerable to exploitation from internal and external agents. This will be discussed further in Chapter 7.

3.4 The commonage resource in the Republic of Ireland

According to Bleasdale (2006) the total commonage area in the Republic of Ireland stands at 441,125 hectares. This represents 10% of agricultural land in the Republic of Ireland. At the last Census of Agriculture in 2000 there were 11,837 farms using commonage for agricultural activity (Central Statistics Office, 2000). This represents over 8% of total farms in the Republic of Ireland. The majority of commonage is concentrated in 4 western counties. In total Mayo, Galway, Donegal and Kerry account for over 70% of the commonage as outlined by Table 3-1 below.

Table 3-1: Location of commonage by county in the Republic of Ireland

County	Area (ha)	% of total commonage
Carlow	2,631	0.6%
Cavan	5,093	1.2%
Clare	5,785	1.3%
Cork	22,832	5.2%
Donegal	79,990	18.1%
Dublin	2,328	0.5%

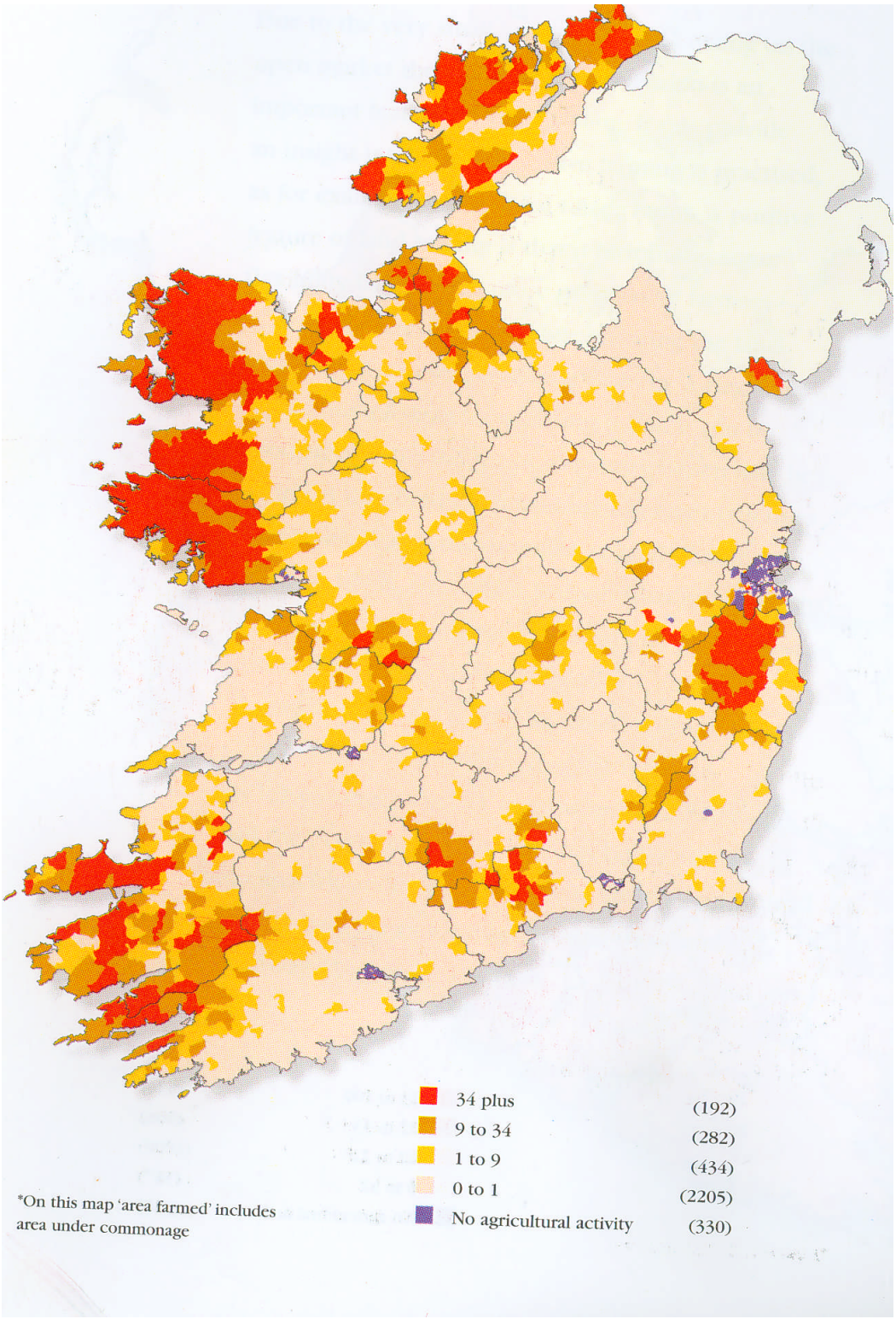
County	Area (ha)	% of total commonage
Galway	65,848	14.9%
Kerry	66,385	15.0%
Kildare	1,541	0.3%
Kilkenny	666	0.2%
Laois	1,629	0.4%
Leitrim	13,103	3.0%
Limerick	2,387	0.5%
Longford	378	0.1%
Louth	3,163	0.7%
Mayo	109,331	24.8%
Meath	112	0.0%
Offaly	330	0.1%
Roscommon	1,603	0.4%
Sligo	15,700	3.6%
Tipperary	11,092	2.5%
Waterford	6,488	1.5%
Westmeath	113	0.0%
Wexford	2,362	0.5%
Wicklow	20,233	4.6%
Total	**441,125**	**100.0%**

(Bleasdale, 2006)

An assessment of the importance of commonage in the Republic of Ireland was undertaken by Lafferty et al., (1999) using data from the Census of Agriculture 1991. The analysis suggests that the majority of farms with commonage have grazing rights of under 30 hectares. However, there are a relatively small number, fewer than 200 farms, which have access to about one third of total commonage area. Figure 3-1 shows the importance of commonage in

terms of total area farmed. It is clear that apart from County Wicklow on the east coast, commonage activity is predominantly concentrated along the Western Seaboard.

Figure 3-1: Commonage as a percentage of area farmed



Source: Lafferty et al., (1999)

3.5 Conclusion

Two of the goals of the thesis were to evaluate public preferences for walking across farmland and to evaluate the economic value of traditional farm enterprises on marginal land of high recreational demand. Commonage represents a unique case study opportunity in the Republic of Ireland to examine both these issues as it is associated with large tracts of unenclosed marginal land (10% or total agricultural area) yet it is predominantly located in areas of outstanding natural beauty where the demand for public access for walking is considered significant. Any future schemes that aim to enhance access for recreation purposes will have to take account of the local institutional and property right features that are associated with commonage in the Republic of Ireland.

4 THEORITICAL BASIS FOR NON-MARKET VALUATION

4.1 Introduction

This chapter discusses how a market mechanism does not exist for some public goods, such as public access for walking, due to the inherent characteristics of non-rivalry and non-excludability. Consequently, this chapter presents the case for applying non-market valuation to estimate supply and demand schedules for the public good under investigation in this thesis and outlines the theoretical basis of adopting such an approach.

In this context this chapter seeks to address the following research question:

(i) Discuss the case for adopting a non-market methodology to estimate the supply and demand schedules for improved public access to farmland for walking.

4.2 Public Goods

Zilberman (2005) defines a public good (or service) as something that can be consumed simultaneously by several individuals without diminishing the value of its consumption to any one individual. This key characteristic is termed non-rivalry and this distinguishes a public good from a private good. A pure public good also exhibits the characteristic of non-excludability. Non-excludability is where an individual cannot be prevented from consuming the good regardless of whether or not the individual pays for it. Classic examples of pure public goods include fresh air, public parks, beautiful views and national defence.

Zilberman (2005) also notes that public goods are a special interest to economists because there can be "market failure[8]" in the private market provision of both pure and impure public goods. The principle reason of market failure involving public goods is non-excludability. However, non-excludability is a relative, not an absolute, characteristic of most public goods. A good is usually deemed non-excludable if the costs of excluding individuals from consuming the good are very high or prohibitive. Private markets often under-supply non-excludable public goods because individuals have the incentive to free ride, or have no incentive to pay for the benefits they receive from consuming the public good. With a free-rider problem, private agents cannot earn sufficient revenues from selling the public good to induce them to produce the socially optimal level of the good in question. This is the topic under consideration in Chapter 8 of this thesis as landowners in the Republic if Ireland have exclusive property rights to allow public access to their land for walking. However, unless they have a sufficient quantity of land, natural barriers (to stop free riding) or can realise an entranced fee then there is no incentive for landowners to open up their property and supply improved public access for walking (other than altruistic motives). Additionally, due to the public good nature of public access provision there is no market mechanism where potential consumer can express a desire for increase demand by way of a pricing mechanism. This is the topic under consideration in Chapter 6.

As set out by Zilberman (2005) in cases where the private market fails to provide an efficient level of public goods, provision of public goods requires collective action. People need to

[8] Market outcomes are supposed to be efficient, both productively and allocatively. When market outcomes are not efficient, they are considered failures. If a free market produces too much of one good, or not enough of another type of good, then resources are being either over-allocated or under-allocated. Market failures are hence either productively or allocatively inefficient (Francis, 2009).

appreciate that a public good situation exists and either raise contributions from private individuals to fund the public good or let the government provide the good. The government can correct market failure and provide the socially optimal level of a public good by financing the provision of public goods from tax revenue. Public financing of public goods may be the only option in cases where the public good is non-excludable and, therefore, entry fees cannot be realised. The supply of public access to the Irish countryside exhibits all the characteristics of market failure as set out in Chapter 2 (this will be further discussed in Chapter 8). As this public good is not traded in a market it requires some form of non-market valuation to establish levels of consumer demand and the supply schedule of potential producers (landowners). The rationale and theoretical framework for non-market valuation is discusses in the following sections.

4.3 Rationale for Non-market valuation[9]

The concept that a non-market good although not traded in a market, has economic value introduces two important concepts. The first concerns how to conceptualise these values in a theoretical sense, the second relates to how to measure these values empirically (Hanemann 1992, pg. 10).

An evaluation study involves estimating the economic value an individual places on goods and services that are not traded in a market. This measurement is almost always expressed in monetary terms. Chapters 6 and 8 of this thesis are concerned with estimating the economic value in monetary terms of the demand and supply of improved public access to farmland for

[9] The following sections draws heavily on Flores (2003) and Mitchell and Carson (1989).

walking. This approach has been advocated elsewhere, notable by Curry (1994) and Christie (1999) (this will be discussed in further detail in Chapters 6 and 8).

The basis for both defining and measuring this economic value comes from standard neoclassical welfare economics. According to Stiglitz (1986) economics can be divided into two main branches, positive and normative. Positive economics seeks to depict how the world functions, while the normative branch (often referred to as welfare economics), seeks to make judgements about the desirability of having government undertake particular policies (how the world could work).

In economics the concept of value normally relates to some equivalent in monetary terms. The economic concept of value can be thought off as an individualistic measure of value since it's generally rooted in neo-classical welfare economics. It's based on consumer sovereignty where each individual is assumed to be the best judge of how well off he or she is in a given situation. Consequently, an individual's welfare depends not only on the consumption of private goods and services, but also on the quantities and qualities each receives of non-market goods or service (Freeman, 2003, pg. 7). Hence, changes in the welfare of an individual forms the basis for assessing the economic value of changes in a non-market good or service.

Mitchell and Carson (1989) state that public decision making often involves balancing the benefits of a policy intervention with the costs. When a policy affects goods and services traded in normal markets, costs and benefits result from consumer responses to changes in

prices faced and incomes received. A considerable body of empirical evidence exists that links price and income change to consumer behaviour. This evidence may be employed in a reasonably straight forward fashion to calculate a policy's costs and benefits for a private good. On the other hand, when a policy affects the availability or character of a public good, one does not observe price and income changes, and thus must infer the change in consumer behaviour by using non market valuation techniques.

As outlined by Mitchell and Carson (1989) the history of welfare economics has been dominated by the notion of a "social welfare function" and the "optimal" output of an economy has been seen as determined by the point of tangency between the social welfare function and the production possibility frontier (PPF). The earliest interpretation of the social welfare function was defined simply as the sum of the utility of the members of that society for the production of different combinations of goods. Utility was assumed to be measurable in a cardinal[10] sense and comparable across individuals. However, by the late 1930's cardinal utility across individuals was almost completely rejected in favour of an ordinal[11] definition of utility (with no comparability across individuals). This severely undermined the theoretical basis of the social welfare function. Begson (1938) and Samuelson (1947) attempted to rebuild the social welfare function in a rigorous fashion on the new ordinal utility foundation. However, their efforts were dealt a mortal blow by the work of Arrow (1951) and others (Mueller, 1979; Sen, 1986). Arrow (1951) showed that there was no non-

[10] Cardinal implies utility or satisfaction can be measured and that the magnitude of the measurement is meaningful.
[11] Ordinal utility theory states that while the utility of a particular good and service cannot be measured using an objective scale, a consumer is capable of ranking different alternatives available.

dictatorial way to aggregate preference into a social welfare function without violating a few simple and quite desirable axioms of behaviour and choice.

In the search for a new welfare criterion, economists turned to a weaker but ethically more neutral Pareto criterion. This states that policy changes which make at least one person better off without making anyone else worse off are Pareto-improving and should be undertaken. Pareto improvement can arise from points in the interior of the production possibility frontier until the PPF is reached. Any point on the PPF is known as a Pareto-optimal position (Mitchell and Carson, 1989).

The criterion used in welfare economics to evaluate a given policy is whether that policy is pareto-improving. In reality, there are few, if any, policy changes which make no one worse off, the only manner such a criterion can be implemented is to allow those who gain from a policy change to compensate the losers. According to the compensation test, the pareto criterion is achieved if and only if, after the gainers have compensated the losers, one agent is better off and no one is worse off. In reality compensation is rarely (if ever) paid, hence this test is of no practical use.

Cost-benefit analysis (CBA) is the modern day applied side of welfare economics. CBA essentially operationalises a variant of Pareto criterion by attempting to find ways to monetise the value on the gains and losses to those affected by a change in the level of provision of a public good. This allows the calculation of net gains or losses from a policy change and to determine whether the change is potentially Pareto-improving (Mitchell and Carson, 1989).

John Hicks (1939) and Nicholas Kaldor (1939) proposed the potential Pareto-improvement criterion (potential compensation test). The potential Pareto-improvement criterion has been defensible on a number of grounds. The most common is the argument that projects should be decided on a basis of strict economic efficiency, since governments can, if necessary, use lump sum transfers to readdress any distributional consequences (Mitchell and Carson, 1989). A closely related argument is that potential Pareto-improvement is only one piece of information and policymakers are free to reject policy changes with adverse distributional consequences if they so desire. Another common justification is that any single policy change may have adverse consequences for some group and as the government undertakes a large number of projects to improve the welfare of its citizens. However, if each of these projects meets potential pareto-improvement criterion, it is likely that everyone, or at least almost everyone, will be better off it they are all implemented (Friedman, 1984).

4.4 Theoretical basis of non-market valuation

As outlined by Flores (2003) the basic premise of neoclassical economic theory is that people have preferences over goods (both market and non-market). Individual agents are assumed to be able to order these bundles (of a good or service) in terms of desirability, resulting in a complete preference ordering. Preference ordering can be represented through a utility function defined over goods.

In this instance, let $X = (x_1, x_2, ..., x_n)$ denote a column vector of n market goods from which individual i chooses and let $Q = (q_1, q_2, ..., q_k)$ denote a column vector of k non-market goods. Now assume a utility function $U = U(X, Q)$ which assigns a single number

for each bundle of goods (X, Q) and that U is a complete representation of preferences. It thus holds that for any two bundles (X^A, Q^A) and (X^B, Q^B), that $U(X^A, Q^A) > U(X^B, Q^B)$ if and only if (X^A, Q^A) is preferred over (X^B, Q^B). Money enters the process through scarcity. In this case, a fixed level of income is denoted by (Y) for an individual who chooses X on the basis of preferences. Relative prices are denoted by $P = (p_1, p_2, ..., p_n)$. Q is assumed to be fixed or 'exogenous' (quantity rationed).

The basic economic problem can be described as an individual seeking to maximise utility by choosing the optimal bundle $X^* = (X_1^*, X_2^*, ..., X_n^*)$ given a fixed monetary income (Y) and rationed level of a non-market good (Q). This can be specified as:

$$\underset{X}{Max}\left[U(X, Q) \,\middle|\, P'X \leq Y, Q = Q^O\right] \qquad (1)$$

Hence, X^* depends on an individual's income, relative prices, as well as the initial quantity of the non-market good Q^0. Solving equation (1) yields a vector of optimal 'Marshallian' (ordinary) demand functions $X^* = X(P, Q, Y)$. Deriving $U = U(X, Q)$ at X^* gives the indirect utility function where $V(P, Q, Y) = U(X^*, Q)$, denoting how the highest level of obtainable utility depends on market prices, the levels of the non-market goods and income.

4.5 Compensating and equivalent variation

Policies that provide non-market goods often involve costs. It is hence necessary to assign value to policies in order to evaluate whether the benefits justify the costs. Two basic measures of value, which are standard in welfare economics, maybe used to estimate value in a given situation. The first is known as the compensating variation welfare measure. This relates to the amount of income an individual would give up after the policy has been implemented that would exactly return utility level to that of the status quo situation. This is set out by Flores (2003) as:

$$v(P^0,\ Q^0, Y^0) = v(P^1,\ Q^1, Y^1 - C) \qquad (2)$$

Where $v(\bullet)$ is an indirect utility function. C is a monetary value such that if an individual gives up C with the changes, then he / she is back to original utility, where the superscript indicates the time period. If costs are less than C then the individual is better off then before the policy and the policy is implemented, if cost are greater than C then the individual is worse off. This is analogous to willingness to pay. In this research it relates to the WTP of an individual for an improved public access scenario across farmland as set out in Chapter 6.

The second basic welfare measure is the amount of additional income (E) that an individual would need with the initial conditions to obtain the same utility after the change. This is the equivalent variation welfare measure, and is defined as follows:

$$v(P^0,\ Q^0, y^0 + E) = v(P^1,\ Q^1, Y^1) \qquad (3)$$

This is analogous to willingness to accept. In this research it relates to WTA of landowners to facilitate improved recreational access to farmland for walking as derived in Chapter 8. The two measures differ by the implied assignment of property rights. For the compensating measure, the initial utility level is recognised as the basis of comparison. For the equivalent measure the subsequent level of utility is the relevant measure. Which measure is appropriate depends on the given situation and the status of property rights.

4.6 Duality and expenditure function

A customary way to examine the welfare implications associated with policy changes is through the expenditure function. This is commonly known as the dual problem as instead of looking at maximizing utility subject to a budget constraint, it focuses on minimizing expenditures subject to obtaining a given level of utility. The expenditure minimization problem can be denoted as (Flores, 2003):

$$\underset{X}{Min} \left\lfloor P'X \middle| U(X,Q) \geq U^{O}, Q = Q^{O} \right\rfloor \qquad (4)$$

The solution is a set of 'Hicksian' or 'compensated' demand functions which are a function of prices, the levels of the non-market goods and the level of utility, such that $X^{*} = X^{h}(P,Q,U)$. The dual relationship between the ordinary (Marshallian) demands and Hicksian demands is that $X(P,Q,Y) = X^{h}(P,Q,U)$ when either $Y = P'X^{h}(P,Q,U)$ in the utility maximisation problem (as set out in Equation 1) or $U = V(P,Q,Y)$ in the cost minimisation problem (as outlined in Equation 4). As the phrase duality suggests, this relationship represents two ways of viewing the same choice process. As noted by Flores

(2003) the important conceptual feature of the compensated (Hicksian) demand is that utility is fixed at a specific level[12], which relates directly to the compensated and equivalent welfare measures. For the expenditure minimization problem, the expenditure function $e(P,Q,U) = P'X^h(P,Q,U)$ takes the place of the indirect utility function and has some very convenient properties and is the "ticket to understanding welfare economics" (Flores 2003, pg. 32).

As outlined by Haab and McConnell (2002) there are two ways for describing monetary-based welfare measures within this framework that are equally applicable. The first is based on the definitions of compensating variation (CV) and equivalent variation (EV) as set out in the previous section. The second is premised on the concepts of willingness to pay and willingness to accept. However, in reality both concepts are analogous and measure the same construct. To observe the relationship, consider the different definitions set out in Haab and McConnell (2002). WTP is defined as the maximum amount of income a person will pay in exchange for an improvement in a situation, or the maximum amount he/she will pay to a avoid a decline in a situation. WTA, on the other hand, is the minimum amount a person will accept for a decline in situation, or the minimum amount he/she will accept to forego an improvement in a situation. Since CV is defined as the amount of income (paid or received) that leaves a person at the initial level of utility, and EV as the amount that leaves an individual at the new level of utility, then WTP and WTA relate to the right to a level of utility, as defined by their taxonomy (Haab and McConnell, 2002). In other words, the welfare measures differ by the implied assignment of property rights (Flores, 2003).

[12] In contrast to ordinary or "Marshallian" demand which does not hold the level of utility or satisfaction constant, but rather holds income constant.

The relationships between CV, EV, WTP and WTA are set out in Table 4-1. For CV, when the final level of utility or well-being is less than the initial level, then it is equal to WTA. If the final level of utility is greater than the initial level, it equals WTP. The opposite holds for EV. Thus, EV is the same as WTP when considering a decrease in utility and equal to WTA when considering an increase.

Table 4-1: Relationship between WTA / WTP and EV / CV

	CV	**EV**
Utility decreases	WTA	WTP
Utility increases	WTP	WTA

Source: Haab and McConnell (2002, page 7).

The different measures presented in Table 4-1 can be used to measure welfare changes arising from changes in X or Q. Consider firstly the welfare implications of a decrease in the price of a good X_i, such that $P_i^0 > P_i^1$ (as set out by Flores, 2003). The welfare impacts are straightforwardly measured through the expenditure function. The superscript 0 and 1 signify the initial and new situations respectively. Let P_{-i} signify the price vector left after removing p_i. The compensating variation and equivalent variation measures of the welfare change can be specified as :

$$CV = e(p_i^0, P_{-i}^0, Q^0, U^0) - e(p_i^1, P_{-i}^0, Q^0, U^0) \quad (5)$$

while,

$$EV = e(p_i^0, P_{-i}^0, Q^0, U^1) - e(p_i^1, P_{-i}^0, Q^0, U^1) \quad (6)$$

It is also possible to estimate both CV and EV by integrating under the Hicksian demand curve between the initial and subsequent price (Flores, 2003). Thus, CV and EV may also be calculated as:

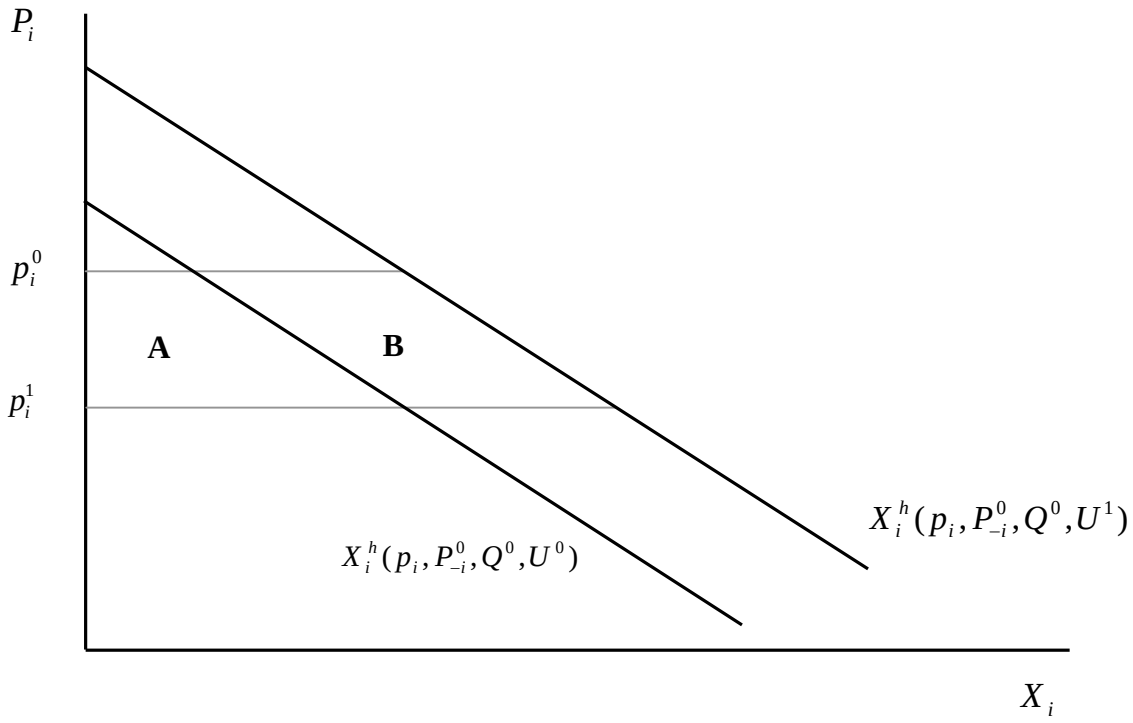
$$CV = \int_{P_i^1}^{P_i^0} X_i^h(s, P_{-i}^0, Q^0, U^0)ds \quad (7)$$

and:

$$EV = \int_{P_i^1}^{P_i^0} X_i^h(s, P_{-i}^0, Q^0, U^1)ds \quad (8)$$

where s represents P_i along the path of integration. So, CV and EV are equal to the areas under the respective Hicksian demand curves between the two prices, as represented in Figure 4.1. The compensating variation measure equates to area A, while the equivalent variation measure is corresponds to areas A + B. This is since CV is measured at the initial utility level (represented by the Hicksian demand function $X_i^h(p_i, P_{-i}^0, Q^0, U^0)$), while EV is measured at the new utility level (represented by the Hicksian demand function $X_i^h(p_i, P_{-i}^0, Q^0, U^1)$).

Figure 4.1: Compensating Variation and Equivalent Variation Measures for a Decrease in the Price of a Market Good



Source: Adapted from Flores (2003, pg. 35).

A number of issues are worth mentioning in relation to the above. Firstly, for a price increase the analysis is conceptually similar, however the status quo price will be the lower of the two and the welfare measurements will be negative. Secondly, multiple price changes can also be measured using a compensated framework by decomposing them into a sequence of single price changes.

In conceptualising compensating and equivalent variations in relation to market goods it is useful to consider that while prices are in a sense public, the demands for these goods vary across individuals. This is not the case for non-market goods. For non-market goods it's the levels or qualities of the good that are public, while the marginal values vary across the

individuals. Thus, in general, it is logical to think about the welfare effects of price changes for market goods and about the welfare effects of quantity changes for non-market goods (Flores, 2003).

For changes in the quantities of goods consumed, the relevant welfare measures used are known as compensating and equivalent 'surpluses'. Maler (1974) showed that the derivate of the expenditure function with respect to non-market good *j* gives the negative of the inverse Hicksian demand curve for the good in question. Flores (2003) shows that for a change in the quantity of the non-market good, the compensating and equivalent measures equate to the compensating surplus (CS) and an equivalent surplus (ES) measure respectively. These can be specified as follows:

$$\begin{aligned} CS &= e(P^0, q_j^0, Q_{-j}^0, U^0) - e(P^0, q_j^1, Q_{-j}^0, U^0) \\ &= \int_{Q_i^0}^{Q_i^1} P_j^v(P^0, s, Q_{-i}^0, U^0)ds \end{aligned} \tag{9}$$

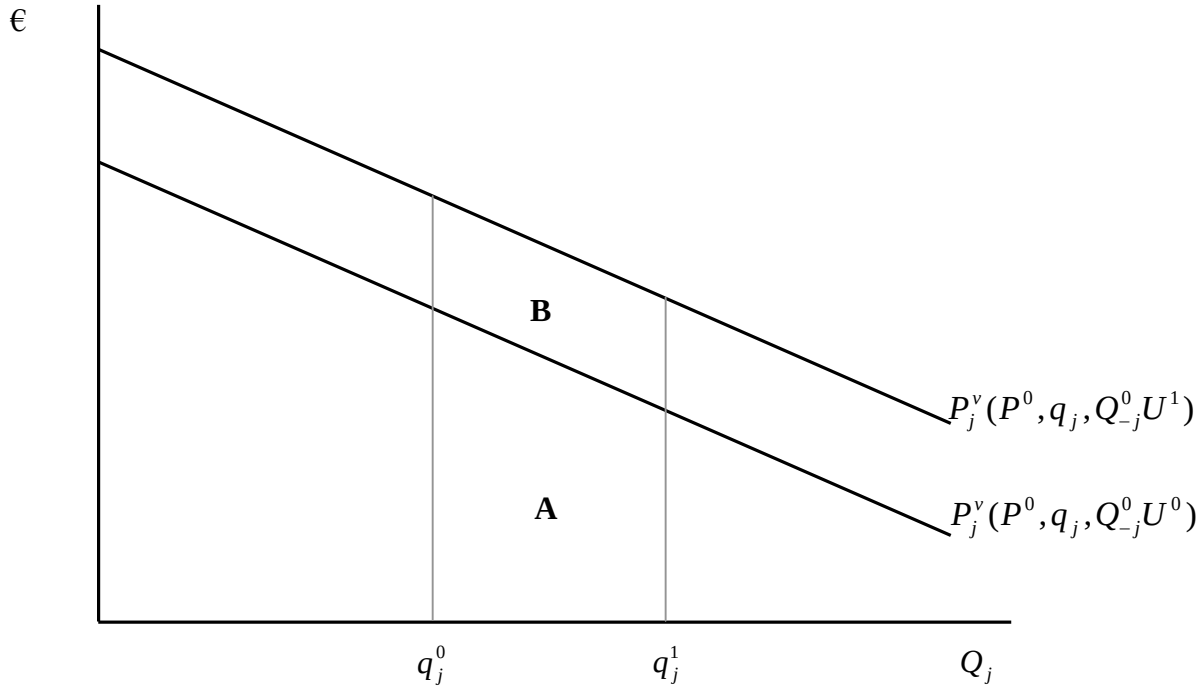
and,

$$\begin{aligned} ES &= e(P^0, q_j^0, Q_{-j}^0, U^1) - e(P^0, q_j^1, Q_{-j}^0, U^1) \\ &= \int_{Q_i^0}^{Q_i^1} P_j^v(P^0, s, Q_{-i}^0, U^1)ds \end{aligned} \tag{10}$$

where $P_j^v(.)$ represents the shadow value of environmental good j (Flores, 2003) and we assume an increase the quantity of environmental good j from q_j^0 to q_j^1.

Figure 4.2 shows a graphical representation of CS and ES in the case of an increase in the quantity of q_j. CS, measured at the initial level of utility, is represented by area A, while ES, measured at the new level of utility, is the area A + B. As before the analysis is conceptually the same when considering a quantity decrease.

Figure 4.2: Compensating Surplus and Equivalent Surplus Measure for an Increase in the Quantity of a Non-market Good



Source: Adapted from Flores (200, pg. 37).

4.7 Conclusion

This chapter discusses how an alternative non-market methodology is appropriate to establish demand and supply schedules for increased public access to farmland due to its public good nature. Finally, the theoretical framework underpinning non-market valuation is outlined.

5 NON MARKET VALUATION METHODOLOGY

This chapter reviews the principal techniques used in non-market valuation and will outline why contingent valuation was adopted in this analysis. This chapter also includes a synopsis of how to conduct a contingent valuation study and the various biases and challenges which need to be accounted for when applying the technique.

5.1 Introduction

The valuation of an environmental or natural resource amenity attempts to estimate the economic value, in monetary terms, which members of society receive from the use of natural resources (Loomis, 1997). These resources cannot be efficiently allocated through conventional markets as they exhibit the public good characteristics of being non-rivalrous and non-excludable. Because these goods are not routinely bought and sold in the market, actual cost / sales information is seldom available. Therefore, measurement of a public good such as the benefits of access to farmland for walking requires some alternative form of non-market valuation. In this context this chapter seeks to address the following research question:

(i) Discuss appropriate non-market valuation techniques for investigating recreational supply and demand for walking.

5.2 Categories of non-market valuation techniques

Recreation has been widely studied in the past using a variety of non-market valuation techniques. Methods of non-market valuation are usually categorised into revealed and stated preference approaches.

5.2.1 Revealed preference techniques

The revealed preference methods are based on behaviour in real markets from which inferences may be drawn on the value of a related non-market good. There are two predominant revealed preference techniques which might be applied to environmental public goods or recreational demand at a given site, the hedonic price and travel cost methods. These approaches are based on the assumption of weak complementarity. Weak complementarity holds when the individual places no value on the non-marketed good unless they consume some of the marketed goods.

1. **Hedonic Pricing** - The hedonic pricing method is used to estimate economic values for ecosystem or environmental services that directly affect market prices. It is most commonly applied to variations in housing prices that reflect the value of local environmental attributes. It can be used to estimate economic benefits or costs associated with environmental quality including air pollution, water pollution, or noise. It can also be applied to value environmental amenities such as aesthetic views or proximity to recreational sites (Ecosystem Valuation, 2007).

The basic premise of the hedonic pricing method is that the price of a marketed good is related to its characteristics, or the services it provides. For example, the price of a car reflects the characteristics of that car—transportation, comfort, style, luxury, fuel economy, etc. Therefore, we can value the individual characteristics of a car (or other good) by looking at the price an individual is willing to pay for changes to its characteristics. The hedonic pricing method is most often used to value environmental amenities that affect the price of residential properties (Ecosystem Valuation, 2007).

Noise pollution is another well established example where the hedonic price method has been employed in the literature (Nelson, 2004). In general, the price of a house is related to its own characteristics and that of the local neighbourhood. People normally prefer a quiet environment but since no market exists for peace and quiet there is no direct market evidence as to how much they value this peace and quiet. Peace and quiet are however implicitly traded in the property market. Individuals can express their preference for a quiet environment through purchasing a house in a quiet location. A measure of the value of peace and quiet could be taken as the extra that an individual would pay for one of two identical houses, where one is located in a quieter area. This difference is known as a price differential.

2. **Travel cost method –** The basic premise of the travel cost method is that the time and travel cost expenses that people incur to visit a site represent the "price" of access to the site. Thus, peoples' willingness to pay to visit the site can be estimated based on the number of trips that they make at different travel costs. This is analogous to estimating

peoples' willingness to pay for a marketed good based on the quantity demanded at different prices (Ecosystem Valuation, 2007).

The travel cost method (TCM) has been used to estimate the demand for the services of recreation facilities in a wide variety of applications. Examples include Shaw and Jakus (1996) for rock climbing; Chakraborty and Keith (2000) for mountain biking; Font (2000) for national park recreation; Loomis et al., (2000) for whale watching; Curtis (2002) for recreational fishing and Hynes and Hanley (2004) for kayaking. The logic underlying travel cost is simple. Recreationalists at a particular site pay an implicit price for using the site's services through the travel and time costs associated with a visit. Individuals visit from different points of origin, hence differences in implicit price and travel behaviour can be utilised to analyse recreational demand for the site. An individual will choose to visit a site if the recreational enjoyment or value derived is at least as high as the travel expense and the opportunity cost of the time associated with getting there.

The TCM is attractive as a non-market valuation tool as it mimics the more conventional empirical techniques used by economists to estimate economic values based on market prices. It cannot however deal with future changes that might occur in response to a change in the natural resource amenity being offered. The TCM can only calculate the current use value of a recreational site or area, based on the existing behaviour in the market for transport to that site. It cannot measure non use values or value for changes in future provision as is being investigated in this research.

5.2.2 Stated preferences techniques

The key difference between revealed and stated preference methods is the type of data used to estimate values. Revealed preference methods rely on data that records actual choices or revealed behaviour. Whereas, stated preference methods rely on data from carefully worded survey questions asking people what choice they would make for alternative levels of an environmental or natural resource amenity (Boyle, 2003). Key limitations of revealed preference methods is the inability to estimate non use values and inability to estimate values for new levels of a natural resource amenity that have not yet been experienced or provided. From a conceptual perspective, stated preference methods can provide estimates of Hicksian surplus, whereas revealed preference methods typically provide estimates of Marshalian surplus (Freeman, 1993).

Stated preference methods have two major classes of elicitation techniques associated with recreational demand for environmental amenities. The first type, contingent valuation, measures the value of a change from the status quo to some other state of the world. The second, the choice experiment (CE) technique, involves the respondent choosing the preferred option from a number of scenarios in which elements of the attribute bundle describing the good are varied. Choice experiments have been applied to environmental management problems such as hunting in Canada (Louviere et al., 2000), rock climbing in Scotland (Hanley et al., 2001) and rural landscapes in Ireland (Campbell, 2007).

A choice experiment usually asks a respondent to perform a sequence of choices. Each alternative is described by a number of attributes or characteristics. A monetary value is

included as one of the attributes, along with other attributes of importance, when describing the profile of the alternative presented. Thus, when individuals make their choice, they implicitly make trade-offs between the levels of the attributes in the different alternatives presented in a choice set.

Hanley et al., (1998a) provided a discussion on the relative merits of the choice experiment methodology. They point out that the harsh yes or no response in CV studies is replaced in CE by a series of choices, which vary by the specification of the separable attributes of the good. The respondent therefore has the opportunity to select those options in which the attributes that conform to his or her preferences are displayed.

Although CE has become very popular in recent years it still has a number of drawbacks that need to be considered. Firstly, the repeated dichotomous choice format used in CE raises issues in connection with choice complexity and choice consistency which may be at odds with the economists' assumptions of the behaviour of the respondent (Hyde, 2004). Also Swait and Adamowicz (1996) have found evidence of respondent fatigue and learning effects over repeated choice tasks, which may influence choice making. Respondents may expend increasing effort until the task is learned after which effort is reduced leading to a situation where choice making is no longer conforming to the neoclassical notion of rational, informed decision making.

5.3 Introduction to contingent valuation

Contingent valuation is an economic valuation method that utilises sample surveys or questionnaires to elicit the respondents' willingness to pay for hypothetical projects or programs (Portney, 1994). The first contingent valuation study was conducted by Davis (1963) to estimate the value of big game hunting in Main. A decade later, Hammack and Brown (1974) applied the contingent valuation to valuing waterfowl hunting. At the same time it was being applied to valuing visibility in the Four Corners region of the southwest USA. This represented a turning point after which contingent valuation filled a substantial void by providing a way to estimate values when markets do not exist and revealed preference methods are not applicable (Boyle, 2003).

As outlined by Boyle (2003) results from early applications of contingent valuation met with scepticism and criticism. One of the more notorious comments was expressed by Scott (1965) who referred to contingent valuation as a "short cut" and concluded: "ask a hypothetical question and you get a hypothetical answer" (p.37). Some of this criticism was deflected by Bishop and Heberlein's (1979) landmark validity study in which they compared welfare estimates for goose hunting from actual cash transactions, contingent valuation and travel cost. This study indicated that CVM estimates of willingness to pay (WTP) were of similar magnitude to estimates of WTP provided by a travel cost model and cash transactions. These results suggested that contingent valuation met the conditions of convergent validity (results were comparable to travel cost estimates) and provided a conservative estimate from the perspective of criterion validity (less than the cash transaction estimate) (Carmines and Zeller, 1979). A workshop sponsored by the U.S. Environmental Protection Agency was the

first attempt to synthesize what was known about contingent valuation (Cummings et al., 1986). The notable outcome of this "state of the art assessment" was a set of reference operating conditions for conducting a credible contingent valuation study. The conditions set down require the respondent to have familiarity and choice experience with the commodity, little uncertainty in the valuation exercise, and the use of willingness to pay. While the conditions provided some guidance for the types of applications where contingent valuation could be credibly applied, Freeman (1986) noted that the restrictive nature of the conditions essentially implies that contingent valuation is likely to work best for those kinds of problems where it is needed the least. That is, the conditions imply that contingent valuation works well only where travel cost or other revealed preference methods are readily applicable. The assessment by Cummings et al., (1986) set off a multitude of research projects to evaluate the validity of contingent valuation and to probe the limits of the types of applications where contingent valuation could provide credible welfare estimates (Boyle, 2003).

Mitchell and Carson (1989) presented the first attempt to develop detailed recommendations for designing a contingent valuation study. This provided a broad overview for conducting a contingent valuation studies, as well as prescriptive recommendations that set off the new wave of validity research. Mitchell and Carson (1989) fundamentally shifted the research focus to one that considered the details of study design. Validity, rather than being a global, all-or-nothing criterion, was now viewed as a function of specific aspects of study design.

For the first 25 or more years of contingent valuation use, critiques of the methodology seemed to ebb and flow, without a specific focal point of attack. This all changed when

contingent valuation estimates began to be used in legal cases as the basis of damage payments by parties responsible for large scale pollution. The controversy became particularly heated after the settlement of the natural resources damage claim for the Exxon Valdez oil spill. Exxon supported the publication of a book that critiqued the fundamental premises of contingent valuation (Hausmann, 1993), and the National Oceanic and Atmospheric Administration (NOAA) responded with a blue ribbon panel to evaluate the credibility of using contingent valuation to estimate non use values (Boyle, 2003).

The panel of high profile economists (chaired by Nobel Prize laureates Kenneth Arrow and Robert Solow) was convened under the auspices of the National Oceanic and Atmospheric Administration (NOAA) in 1993. The recommendations of the NOAA panel were that contingent valuation surveys should be carefully designed and controlled due to the inherent difficulties in eliciting accurate economic values through survey methods. The most important recommendations of the NOAA panel were that; personal interviews should be used to conduct the survey, as opposed to telephone or high street stop methods. Surveys are designed in a yes or no referendum format put to the respondent in the context of a voting framework to protect a specified resource. Respondents be given detailed information on the resource in question and on the protection measure they were voting on. This information should include threats to the resource (best and worse case scenarios), scientific evaluation of its ecological importance and possible outcomes of protection measures. Income effects be carefully explained to ensure respondents understood that they are to express their willingness to pay to protect the particular resource in question, not the environment

generally. Subsidiary questions be asked to ensure respondents understood the question posed.

While contributions by Cummings et al., (1986), Mitchell and Carson (1989) and Arrow et al., (1993) have been ground breaking, they have not dispelled on going criticisms of CVM. In fact, the critiques of contingent valuation, which have become more direct and focused over time, have made contingent valuation practitioners much more cautious about using estimates of non use values when evaluating public policies and developing damage claims for court cases. The critiques have helped to focus the research agenda in a manner that has led to more credible welfare estimates (Boyle, 2003).

Guaranteed public access for walking across farmland in the Republic of Ireland is limited at present and one of the key research questions in this thesis is whether there is a demand for increased provision. A template for improving public access for walking currently exists through the national way-marked ways. Contingent valuation is seen to work best when respondents are familiar with the hypothetical good being offered (Cummings et al., 1986; Mitchell and Carson, 1989; Bateman and Turner, 1993). Contingent valuation was hence adopted as the most appropriate technique for investigating the demand (and supply) for an improved access scenario for recreational walking across farmland using the way-marked way template but with a formal access agreement with landowners. CVM was chosen as revealed preference techniques are not well suited to investigate the demand for public goods that will provided in the future and choice experiments at this stage may have introduced a degree of complexity to the public access debate. A CVM template familiar to respondents

was thought the best option to establish basic levels of consumer (and producer) demand to improved public access provisions. The CVM technique and its application will be discussed in greater detail in the following sections.

5.4 Controversies surrounding the contingent valuation methodology

The following section details the principal problems and controversies that have arisen with the use of CVM. Carson (2000) suggested that the debate over the use of CV has two major thrusts. The first one is largely philosophical revolving around whether non use values[13] should be included in an economic analysis. Economists have traditionally thought of marketed goods where it is necessary for a consumer to physically use a good to get utility from it. However, it is possible for consumers to get utility from a good without physically using it. The second major issue is largely a technical one which revolves around what economic criteria the results of a CV study should meet. Much of the debate concerns the merits of particular tests and whether various phenomena are anomalies from the perspective of economic theory, and if so, whether they are peculiar to particular studies or CV practices (Randall, 1998) or symptomatic of more general problems with CVM (Diamond and Hausman, 1994). The next section examines these issues in more detail.

5.4.1 Non use values

Passive use values can be traced back to the seminal observation by Krutilla (1967) that many people value natural wonders simply for their existence. Krutilla argued that these people derived utility through vicarious enjoyment of these areas and, as a result, have a positive

[13] Also referred to as passive use values or existence values.

WTP for the government to exercise good stewardship of the relevant land. Thus, an agent can have both direct and passive use values for a good.

As noted by Carson (2000) without the inclusion of passive use considerations, *pure public goods*, including overall level of air quality, national defence, and remote wilderness areas, have little or no measured economic value. Pure public goods are non rival and non excludable and typically (but not always) are provided by government. The estimate inferred from the contingent market will generally be an estimate of total economic value. Any estimate of total economic value includes both direct and passive use considerations. Efforts to disaggregate these two components, however, have been shown to be problematic (Carson et al., 1999). The exact dividing line between direct and passive use is to some degree dependent upon knowledge of physical and biological linkages and upon what activities of consumers are observed. Even in the quintessential example of lost passive use, harm from the Exxon Valdez oil spill to households outside Alaska, household behaviour was influenced by spill coverage in the media.

As articulated by Carson (2000) there are three principal viewpoints with respect to the inclusion of passive-use: (a) that passive use values are irrelevant to decision making (Rosenthal and Nelson, 1992), (b) that passive use values cannot be monetised but should be taken account of as a political matter or by having experts decide (Quiggan, 1993), and (c) that passive use values can be reliably measured and should explicitly be taken into account (Kopp, 1992). Carson (2000) suggested the first position is hard to defend from an economic perspective. Failure to consider passive use value is clearly inconsistent with economic

theory if the objective is to maximise public welfare in any well defined sense as pure public goods would clearly be under supplied. The difference between the second and third position depends largely upon whether one wants the monetary value placed on the good to be kept implicit (Cropper et al., 1992) rather than explicitly disclosed; whether one wants the preferences of experts or the public, and one's view on whether CV techniques can be reliably implemented. Criterion validity studies that compare valuation estimates of non use values with cash transaction generally indicate CV estimates to be higher, some significantly so (Kealy et al., 1988; Champ et al., 1997; Brown et al., 1996). Non incentive compatible payment methods, elicitation formats and scope effects have all been cited as factors (Boyle, 2003). In any event CVM is seen to work best when direct use values are being investigated in the valuation exercise as is the case in this thesis (Bishop and Heberlein, 1979; Boyle, 2003).

5.4.2 Validity and reliability

The consideration of validity and reliability, as well as the efficiency of the point estimates of value are key issues concerning the credible of a contingent valuation study. Reliability involves the extent to which a CV survey yields the same estimates in repeated trials. Validity examines whether a CV study accurately measures the value it is designed to estimate. Three types of validity are commonly investigated in the literature: criterion, content and convergent (Carmines and Zeller, 1979). Criterion validity compares CV estimates to measures external to the CV study. A seminal study by Bishop and Herberlein (1979) compared cash transactions for goose hunting permits with welfare estimated from a

CV analysis and found results of a similar magnitude. Content validity examines whether the CV methodology and results are consistent with economic theory, established practice, and the valuation objective. The simplest test corresponds to a well known economic maxim: the higher the cost, the lower the demand. In the binary discrete choice format, this can be easily tested by observing whether the percentage favouring the project falls as the randomly assigned cost of the project increases. This price sensitivity test has rarely failed in empirical applications (Carson et al., 1999). Convergent validity investigates the consistency of contingent valuation estimates with those provided by another non-market valuation technique. Bishop and Herberlein (1979) compared CVM results with those from travel cost analysis and again found similar orders of magnitude. The work by Bishop and Herberlein (1979) and later by Dickie et al., (1987) suggested that CV can provide plausible estimates of use values from the perspective of criterion and convergent validity. Subsequent research has not reversed this conclusion (Carson et al., 2001).

Boyle (2003) noted that many of the critics of CVM tend to hold the technique up to a criterion of perfection; this is unrealistic as perfection does not exist in actual market decisions (Yadov, 1994; Randell and Hoehn, 1996). The key is to consider where CV has been shown to work well and where there may be a problem.

5.4.3 Scope

There are two main tests to examine whether CV results conform to the predictions of economic theory. First the percentage of respondents willing to pay a particular price should fall as the price they are asked to pay increases. This condition, similar to a negative own

price elasticity for a marketed good, is almost universally observed in CV studies (Carson et al., 2001).

Second, respondents should be willing to pay more for a larger amount of a desired good. A scope test looks at whether respondents are willing to pay more for a good that is larger in scope, either in a quality or quantity sense. Carson et al., (2001) suggested that failure to pass a scope test can be attributed to one of three factors: (1) lack of statistical power used to detect the difference in value which would be plausible given the difference in scope (Arrow and Leamer, 1994), (2) problems in CV survey design and administration which tend to mask sensitivity to scope (Carson and Mitchell, 1995), or (3) CV survey results that violate economic theory (Hausman, 1993).

This is one of the most debated points concerning the validity of CVM. Carson et al., (2001) noted critics have argued that the apparent lack of sensitivity of CV estimates to differences in scope is the most serious empirical problem with its use. Carson, (1997) provided a list of contingent valuation studies that have tested for scope effects; the review indicates that since 1984 (the date the original claim was made) 31 studies rejected the scope insensitivity hypothesis while four did not. However, Boyle (2003) noted that a review of this list reveals that many of the studies examined use values or use and non use values combined. The ability to detect scope appears to be purely an issue for the estimation of non use values. Carson et al., (2001) suggested that poorly executed survey design and administration procedures are the primary cause of problems in studies not exhibiting sensitivity to scope. Additionally, for many environmental goods, the public may have sharply declining marginal

utility for an environmental amenity after a reasonable amount of it has been provided (Rollins and Lyke, 1998).

5.4.4 Protest bids

There are three main categories of respondents who do not report their true values when asked a CVM valuation question (Boyle, 2003). The first category includes people who protest some component of the CVM scenario and give a zero answer. These respondents may answer €0 even though on the whole they have a value greater than this. The second category comprises people who do not understand what they are being asked in the survey but answer the CVM question anyway. This could bias the estimates of central tendency and increase the standard error. The third category is people who behave strategically in an attempt to influence survey results and ultimately the policy decision.

Different techniques have been adopted to try and identify and control for these types of responses. Some studies include questions to probe respondents understanding and motivations when answering the CV question (Ajzen et al., 1996; Berrens et al., 1998; Blamey et al., 1999) and then exclude what is regarded as protest bids. Others have trimmed the upper values if they are greater than a certain percentage of a respondents income (Mitchell and Carson, 1989). De-briefing questions post evaluation question are recommended to establish why respondents chose the option they chose, this may help to identify potential protest responses.

5.4.5 Willingness to pay or willingness to accept

Whether willingness to pay (WTP) or willingness to accept (WTA) is the correct measure to use in CVM analysis, depends on the property right of the good (Carson, 2000). If the consumer does not currently have access to the environmental good and does not have a legal entitlement to it then WTP is the correct measure. If the consumer has a legal entitlement to the good and is being asked to give up that entitlement, the correct measure is WTA. For marketed goods, theoretically the difference between the two measures should generally be small and unimportant as long as income effects and transaction costs are not large (Willig, 1976). However, for imposed quantity changes where the consumer is not free to trade to the desired quantity level, WTP and WTA may be far apart (Hanemann, 1991). Changes in environmental goods tend to fall into the category of imposed quantity changes. Consistently large differences were found between WTP and WTA in a variety of settings even using actual market transactions (Knetsch, 1990). Financial assets such as junk bonds and over the counter stocks, when thinly traded, often show much larger bid WTP / WTA differences than would be predicted by Willig's work (Carson et al., 2001). For non-marketed goods the difference between WTP and WTA is also dependent upon the substitutability of the non-marketed good for goods that are available in a market (Hanemann 1991). The difference between the Willig and Hanemann theoretical results is that for a price change, an income effect alone governs the difference between WTP and WTA, and for a quantity change, both an income effect and a substitution effect together govern the difference (Carson et al., 2001).

Property rights can also have a substantial influence on the magnitude of the welfare measure. Particularly when considering a reduction in an environmental service, the common

practice of substituting a WTP estimate for the desired WTA measure can result in a substantial underestimate, which in turn can have substantial policy implications (Knetsch, 1990). WTA questions are usually much harder to successfully implement, due to the need to convince respondents of the legitimacy of giving up an environmental good, but they often represent the correct measure from a property rights perspective.

5.4.6 Elicitation format

As noted by Carson (2000) a major focus of the technical debate concerning CV has been on the choice of the particular format used to elicit information about the preferences of respondents. Estimates from binary discrete choice questions tend to be higher than those from open ended questions. An argument is that if agents had well defined preferences for the good, both formats should result in similar estimates (Boyle et al., 1996). The counter argument, which comes from the economic theory on mechanism design, is that incentives for truthful preference revelation are different for these two formats. Consequently, one should expect the estimates should be different, with the binary discrete choice question predicted to yield truthful responses only if other conditions typically associated with a referendum are met (Hoehn and Randall, 1987).

The stylised facts concerning the comparative properties of different elicitation formats are fairly clear (Carson et al., 1999). WTP estimates from binary discrete choice formats tend normally to be higher than those from other formats. Responses to the two questions in the double bound dichotomous choice format are imperfectly correlated. Open ended type questions tend to yield many zeros, few very small amounts, and a small fraction of very

large amounts. Final WTP responses in iterative bidding games are correlated with the starting point used. Multinomial choice questions and sequences of paired comparisons tend to suffer from violations of the independence of irrelevant alternatives (IIA) condition (Carson et al., 2001).

Carson et al., (1999) suggested that all of the commonly used preference elicitation formats can be seen as generalisations of the single bound dichotomous choice (SBDC) question. The SBDC question asks for the most preferred alternative out of two options, normally the status quo versus some alternative. Generalisations of the single bound dichotomous choice take three main forms. First, a sequence of paired comparisons asks for the most preferred alternative in each pair. The key additional assumption of this format is independent responses across questions. From this format sprung a number of commonly used mechanism variations including double bounded dichotomous choice (DBDC) questions, complete rankings of alternatives and, with the additional assumption that preference intensity can be measured, rated pairs.

Second, open ended type questions, including payment cards and bidding games drop the cost amount for the second alternative, and instead, asks for the amount that would make the respondent view the two alternatives as equivalent from a utility perspective. Third, multinomial choice questions asks a respondent to pick the most preferred out of $k > 2$ alternatives.

Carson et al., (2001) states that it's known from the Gibbard-Satterwaite (Gibbard, 1973; Satterwaite, 1975) theorem that none of these generalizations of the SBDC question can be incentive compatible[14] without placing restrictions on the form of agent utility. Hence, one should expect divergences between the WTP distributions implied by responses to these formats and an incentive compatible SBDC question. Carson et al., (2001) notes that the Gibbard-Satterwaite theorem does not say that any SBDC question is incentive compatible, as has sometimes been asserted (Cummings et al., 1995; Cummings et al., 1997) only that other question formats cannot be. Several auxiliary assumptions, which can be summarised as implying a one time take-it-or-leave-it choice with the government having the power to supply the good and collect payment for it, are required to make a SBDC question incentive compatible (Carson et al., 2001).

The NOAA Panel (Arrow et al., 1993) recommended the use of a binary discrete choice question due to its desirable incentive properties. While the NOAA Panel did not specify the conditions necessary for this format to be incentive compatible, most are present in the context under which they recommend CVM use (Carson et al., 2001).

5.4.7 Sequencing and context effects

Adding up what people say they are willing to pay for specific public goods might easily exceed the income of some people. Hoehn and Randall (1989) show theoretically why adding together independently derived WTP estimates for goods is likely to overstate the

[14] In mechanism design, a process is said to be incentive compatible if all of the participants fare best when they truthfully reveal any private information the mechanism asks for. Voting systems which create incentives to vote dishonestly lack the property of incentive compatibility

value of a set of goods taken as a package, and often grossly so. The logic is that each new public good the agent obtains, reduces the agent's available income to spend on private goods. Further, if the public goods are substitutes for each other, then each one added to the package looks less desirable than when valued as if it were the only new addition to the stock of public goods. The problem as outlined by Carson et al., (2001) relates to incorrectly aggregating them without taking into account income and substitution effects.

The second typical empirical finding is that the value of a good falls the later it is valued in a sequence of goods. Again the standard economic explanation for this phenomenon is substitution and income effects. Carson et al., (1998) showed that if one assumes that the goods being valued are normal goods and (Hicksian) substitutes for each other, the value of a particular public good should be progressively smaller the later in a WTP sequence it is valued. An implication of this result is that the package of goods should be valued less than the sum of its independently valued constituents. Carson et al., (2001) noted that CV critics suggest that the sequence effects observed are too large because the contention is that income effects should be small and such goods have no close substitutes. It is also contended that these arguments about the likely magnitude of income and substitution effects are faulty because they are based on intuition derived from looking at price changes for private goods. Public goods are a special case of quantity rationed goods and, as a result, the focus should be on quantity space with an inverse demand system rather than price space with an ordinary demand system where consumers are free to chose their optimal consumption levels.

5.4.8 Other issues

Carson et al., (2001) noted that even if all of the survey related issues to valuing a public good as discussed can be overcome, CVM is not without its limitations. In common with other neoclassical preference based approaches to economic value the techniques have two principal limitations to which some object (Sagoff, 1994). First, WTP measures are inherently limited by wealth. This limitation is objectionable to many who believe that government decision making should not be based to any extent on ability to pay. Second, only the preferences of the current generation are taken into account. The actual preferences of future generations are not explicitly considered and, from a neoclassical economic perspective, are inherently unknowable. However relevant these limitations are from a policy perspective, they are not issues per se of the measurement of economic value.

5.5 Conducting a contingent valuation study

Careful design of a contingent valuation survey and careful analysis of the resultant data are crucial to the estimation of credible welfare estimates. Carson (2000) and Boyle (2003) suggested the following stages in conducting a CVM study:

5.5.1 Select target population

Once the policy change is specified the next step is to identify the target population. Contingent valuation studies result in point estimates of values on a per capita or per household basis. The relevant population may also indicate a mode of data collection that is appropriate or inappropriate.

Some studies elicit values at the level of the individual while others are at the level of the household. It is important when framing the contingent valuation question that it is clear whether the values sought are for the individual or the household. This also has significant implications if aggregating estimates.

When selecting a sample frame, ideally each unit in the sample should have a known probability of selection from a specified population. The choice of a unit of measurement can be refined in focus groups or one on one interviews and should be clearly stated within the valuation question. The population sampled should be the appropriate one for evaluating the benefits and or costs of the proposed project. The size of the population over which benefits and costs accrue can be one of the major factors in determining the economic value of a good. For a pure public good, the economic value of a good is the sum of the WTP of all agents in the relevant population, since enjoyment of the good by one agent does not diminish any other agent's enjoyment of it, unless crowding occurs (Just et al., 1982). A sample size in the order of several hundred to a couple of thousand observations is generally required to achieve reasonable reliability from a sampling perspective. All members of the relevant population should have a positive and known probability of being included in the sample. If inclusion probabilities are not equal, an appropriate set of weights is needed.

Carson et al., (2001) indicated that some studies looking at this issue (e.g., Sutherland and Walsh, 1985 and Bateman and Langford, 1997) tend to find that individual total value estimates decline as geographic proximity to the good decreases. For goods with primarily

passive use value, population subgroups that have a particular concern for the class of resource are likely to be a more dominant factor than distance. This for example would include individuals who are members of an environmental organisation. The possibility of obtaining a very large estimate by aggregating the small WTP amounts of individuals in a very large market is also a fundamental problem highlighted by some CV critics. Carson et al., (2001) argues that these critics have failed to grasp that the value of a public good is the summation of the values of individual agents who can enjoy it. It is this very characteristic which accounts for the presence of a wide array of public goods in larger cities and countries. Aggregation across agents has nothing to do with CV per se, it is merely part of the definition of the value of a public good.

5.5.2 Data collection

A contingent valuation study requires the collection of primary data. No one survey administration mode is unambiguously superior to another. Trade-offs associated with various modes include: survey administration costs, time constraints, sample coverage, sample non response bias and context issues. Both Mitchell and Carson (1989) and NOAA (Arrow et al., 1993) strongly advocated the use of personal interviews, mainly due to advantages in information provision with this method. Provision of information on the good being valued is a fundamental component of a contingent valuation survey. Personal interviews have the advantage on this front as visual information can be provided, with the interviewer on hand to explain and answer queries. The cost of conducting face to face interviews is the principal constraint. Other delivery methods include mail, telephone and in more recent times, internet or a combination of these various methods. Mixed mode surveys

using a telephone interview after respondents have received written and visual information in the mail may overcome informational deficiencies related to mail and telephone interviews. However, repeated contact associated with mixed modes may reduce response rates.

As noted by Schneemann (1997) the most common way to implement contingent valuation surveys is by mail. The primary reason behind this is that mail surveys are the cheapest to implement and given a limited budget can deliver a large sample. Response rate is a relevant factor and most problematic in mail surveys. If a segment of the population chooses not to respond to a survey or doesn't answer the contingent valuation question, then this can result in biased welfare estimates (Edwards and Anderson, 1987). Carson (2000) noted a high response rate to a survey (currently in the 60%-80% range for the surveys of the general population) helps minimise potential problems with extrapolating to the population of interest. A variety of weighting and imputation procedures are available to help correct for the inevitable deviations from the desired sample, and there are statistical methods to help correct for sample selection bias (Greene, 2000).

Other methods of implementing contingent valuation surveys include high street intercept or convenience samples (such as students). These can be targeted at a central location. These settings are generally accepted as more appropriate for undertaking methodological tests of CVM. The internet and web based surveys provide new opportunities for conducting contingent valuation surveys. However, many of the same methodological issues associated with mail and convenience sampling method also apply here.

5.6 Design of contingent valuation scenario

This section examines the issues and challenges associated with designing a CVM scenario including appropriate information to include, specifying a payment vehicle and choosing an elicitation format.

5.6.1 Information component

The information component of a CV study typically describes the change in quantity or quality of the good under investigation. As noted by Boyle et al., (2003) respondents to a CV survey need to be presented with information that clearly explains the policy change in a context that is specific to them. Various studies have shown that failure to do so can lead to biased welfare estimates (Carmines and Zeller, 1979 and Samples et al., 1986). The specific information included typically outlines the change being proposed and the effects of that change on the individual respondents or their household. This is strongly recommended by the NOAA panel (Arrow et al., 1993). There is no accepted one size fits all template for framing accurate and specific scenarios, hence pre-testing a scenario in a focus group or pilot phase is standard practice to aid design.

The NOAA panel also recommended giving respondents specific information about substitutes and reminders about budget constraint. This is strongly grounded in economic theory as availability of substitutes and income fundamentally affect the magnitude of welfare estimates (Freeman, 1993; Hoehn and Loomis, 1993; Flores and Carson, 1997). Split sample studies where one sample is reminded of substitutes and their budget constraint and

the cohort is not, indicate that information on substitutes, complements and budget constraints affect contingent valuation estimates of central tendency and dispersion (Whitehead and Bloomquist, 1995; Kotchen and Reiling, 1999). Theoretical validity considerations indicate that respondents must be prompted to consider substitutes and reminded that they could be spending this money elsewhere.

The NOAA panel also recommended the use of pictures in the study design. It is however important to pre-test the affect of photos as Boyle (2003) noted in some instances pictures can reduce the credibility of the scenario and other instances respondents used pictures to seek unintended clues. Other types of visual aids such as maps and graphs can also be effective in portraying the magnitude of the change. It is however normal for actual numbers to be presented in conjunction with these as some respondents have a preference for one or the other. Refinement of the appropriate information to present and the delivery method occurs in focus groups, one-on-one interviews and or in a small scale pilot pre-test phase.

A frequent claim is that familiarity with a good is a necessary prerequisite to providing "meaningful" responses to CV valuation questions (Desvousges et al., 1993). The rationale is that respondents cannot have well defined preferences in an economic sense for goods with which they have no direct experience. Carson et al., (2001) noted that many new products become available each year creating completely new markets in which consumers regularly make purchase decisions involving goods for which they have no prior experience. There is no precedent in microeconomic theory stating that prior experience is a pre-condition to rational decision making.

5.6.2 Payment vehicle

One of the crucial elements for the validity of CV studies is the payment vehicle since it provides the context for payment, implying that differences in cultural and institutional factors can affect results (Morrison et al., 2000). Mitchell and Carson (1989) argued that choice of payment vehicle requires balancing realism against payment vehicle rejection. Realism increases the likelihood that the payment vehicle will garner protest responses. For example an income tax vehicle can run into difficulties due to resistance to higher taxes; yet local option taxes would not be realistic in an area that does not use this funding mechanism. Respondents might reject the valuation exercise even if they value the change because the payment vehicle is not credible. A variety of payment vehicles have been used including income tax (Loomis and duVair, 1993 and Morrison et al., 2000), general increase in prices and taxes (Boyle et al., 1994 and Bergstrom et al., 2004), admission fee (Bateman et al., 1995b; Lunander, 1998; Richer and Christensen, 1999), utility bill (Brookshire et al., 1980; Powell et al., 1994), recreation trip cost (Bishop and Heberlein, 1979; Cooper and Loomis, 1992; Duffield et al., 1992) and donations (Bateman et al., 1995a; Champ et al., 1997). There is some evidence to suggest that payment vehicle can influence welfare estimates (Campos et al., 2007; Johnston et al., 1999). The research issue is to attempt to identify the payment vehicle that has relatively small impacts on welfare estimates and what magnitude of impact is acceptable. The design of the payment vehicle is another issue that can be refined in the pre-test phase.

Stevens et al., (1997) showed that repeated payments compared to a lump sum payment yield statistically different welfare estimates. It is important to note that there is often a disconnect between the time frame of payment in a contingent valuation scenario and the time frame over which the respondents will potentially enjoy the benefits of the policy change. Survey respondents are being asked to undertake personal discounting to answer valuation questions and the individuals may not be well equipped to do this. A one time payment generally produces more conservative estimates since it does not offer the opportunity to spread payments over time. A one time payment is appropriate in cases where providing the good represents a one time event, but in the majority of cases this is not the case and ongoing collection must be undertaken (Carson, 2000).

5.6.3 Elicitation format

The three primary formats in the CVM literature are open ended, payment cards and dichotomous choice. An open ended question asks respondents how much they would pay for good provision. The payment card has a series of bids and asked the respondents to pick the appropriate one relevant to them. The dichotomous choice asks respondents if they would pay a given price, which is varied across the sample. The dichotomous choice format has various hybrids including double bounded and multiple bounded, where respondents are asked a second or series of prices after the first one is presented. The NOAA panel (Arrow et al., 1993) recommended the use of a single bound dichotomous choice referendum questions. A dichotomous choice question can be framed as a referendum[15] in some instances. This is not as easily framed when investigating recreational demand on site. A

[15] A referendum is strictly speaking a decision rule – where the programme will be introduced if 50%+1 people vote for it.

dichotomous question can be framed as agreeing to pay / not to pay an entrance fee, which strictly speaking is not a referendum.

While dichotomous choice questions are most commonly used, each of the three main formats has strengths and weaknesses (Boyle, 2003). Conceptual arguments by Carson et al., (2000) and Hoehn and Randall (1987) suggested that "the take it or leave it" character off a dichotomous choice, framed in a referendum context, has desirable properties for incentive compatible or truthful indication of preferences. Respondents are presented with a single bid value and hence are not able to strategically mis-state their values. This is not the case for open ended and payment card questions where respondents can influence the outcome by indicating a value higher or lower than their true value.

Dichotomous choice formats gained popularity to avoid anchoring[16] effects seen in iterative bidding questions,[17] yet this format is not free from anchoring effects. The issue seems most problematic with higher bids where respondents have a propensity to indicate they would pay high bids even though it is likely to exceed their true value. This serves to inflate welfare estimates (Boyle et al., 1998). Another related problem has been termed "yea saying"; this relates to the propensity of respondents to say yes to any bid value presented. The consequences of this problem manifests itself through the exhibition of fat tails in the WTP distribution, with as much as 30% of a sample answering yes to any amount. The result is a very large estimate of central tendency and associated standard error. Dichotomous choice

[16] Anchoring describes the tendency to rely too heavily, or "anchor," on one trait or piece of information when making decisions. In this case the initial price presented.

[17] An iterative bidding question starts with by asking a respondent would you pay €X for a specific policy. If respondents answer yes then the bid is increased until they say no; conversely if they say no initially the bid is reduced until they eventually say yes.

double bounded questions seem to exacerbate anchoring as responses to the second bid are influenced by the initial bid value (Herriges and Shogren, 1996).

Both the payment card and dichotomous choice questions require selection of bids. Alberini (1995a; 1995b), Kanninen, (1993a; 1993b) and Boyle et al., (1998) indicated the optimal bid design has a small number of bids (5 to 8) clustered around the median WTP and out of the tails of the distribution. However, optimal bid design is only as good as the available information on central tendency and distribution of the value to be estimated. If previous research does not exist to indicate the appropriate bid profile, it is recommended that a field pretest with at least 50 to 100 observations be undertaken. This is more effective than a smaller sample size derived from a focus group (Boyle, 2003).

The literature does not support the choice of a single response format. The dichotomous choice format framed in a referendum vote is regarded as the safest option given NOAA recommendations (Boyle, 2003). The catch is that a single bounded dichotomous choice format requires a sample size into the hundreds. Despite the increased efficiency of double bounded dichotomous choice questions, the anchoring effect introduces bias and hence reduces its usefulness. Multiple bounded questions, may overcome anchoring issues but are untested (Boyle, 2003), hence a large scale single bounded format prevails at present.

5.7 Conclusion

Carson (2000) suggested a quality CVM analysis has to take cognisance of the following issues. The good and the scenario under which it would be provided should be described

clearly and accurately, and the trade off that the respondent is asked to make should be a plausible one. The respondent should be given enough information to make an informed decision but not be overwhelmed with it.

Most good CV surveys contain the following: (a) an introductory section that helps set the general context for the decision to be made; (b) a detailed description of the good to be offered to the respondent; (c) the institutional setting in which the good will be provided; (d) the manner in which the good will be paid for; (e) a method by which the survey elicits the respondent's preferences with respect to the good; (f) debriefing questions about why respondents answered certain questions the way that they did; and (g) a set of questions regarding respondent characteristics including attitudes and demographic information.

Producing a good CV survey instrument requires substantial development work. This work typically includes focus groups and in-depth interviews to help determine the understanding and plausibility of the good and the scenario being presented. Developing a useful CV survey instrument also requires a clear definition of what the proposed project will produce in terms of outputs, presented in language the target audience understand. Pretests and pilot studies are necessary to assess how well the survey works as a whole.

The particular population sampled should be the relevant one for evaluating the benefits and or costs of the proposed project. A sample size in the order of several hundred to a couple of thousand observations is generally required to achieve reasonable reliability from a sampling perspective. All members of the relevant population should have a positive and known

probability of being included in the sample. If inclusion probabilities are not equal, an appropriate set of weights is needed.

Consideration must be given to the mode of survey administration and the survey response rate. The NOAA Panel recommends in-person interviews, in part because visual materials such as maps and pictures that facilitate respondent understanding can be used. For in-person interviews, professional interviewers should be used.

Most studies construct an equation that predicts WTP for the good as a function of several other variables in surveys, such as income, past recreational use, and various attitude and knowledge questions concerning the good. An equation with reasonable explanatory power and coefficients with the expected signs provides evidence in support of the proposition that the survey has measured the intended construct. If this is not the case, either the research team has failed to collect the relevant covariates in the survey, suggesting inadequate development work, or the WTP responses are random and completely useless.

Guaranteed public access for walking across farmland in the Republic of Ireland is limited at present and one of the key goals of this thesis is whether there is a demand for increased provision and whether landowners have a willingness to supply this public good. Contingent valuation is seen to work best when respondents are familiar with the hypothetical good being offered. In this context a template for improving public access for walking currently exists through the national way-marked ways. Following a review of the literature CVM was adopted as the most appropriate technique for investigating the demand (and supply) for an

improved access scenario using the way-marked way template but with a formal access agreement with landowners. CVM was chosen as revealed preference techniques are not well suited to investigate the demand for public goods that will be provided in the future and choice experiments at this point may have introduced a degree of complexity to the public access debate.

6 RECREATIONAL DEMAND FOR WALKING ON COMMONAGE

This chapter outlines how an expert panel advised on the selection of case study sites to investigate recreational demand for walking across commonage landscapes in the Republic of Ireland. A detailed description of the upland and lowland commonage case study sites are presented. The contingent valuation scenario as proposed and implemented across both sites is outlined in detail as well as the modelling framework used to estimate consumer demand for the proposed scenarios. This chapter finally examines consumer willingness to pay for the improved access scenario as well as consumer preference for a number of trail related attributes.

6.1 Introduction

In recent years, there has been an increasing research interest in the non-market benefits of land based recreational amenities (Pruckner, 1995; Bateman et al., 1996; Kline and Wichelns, 1996; Fleischer and Tsur, 2000; Crabtree et al., 2000; Smailes and Smith, 2001; Hanley et al., 2002; Bennett et al., 2003; del Saz Salazar and Menéndeza, 2007). This interest is no more evident than in the Republic of Ireland where in the last decade the demand for rural recreation has increased as the population has become increasingly urbanised. The consumer driven interest in the use of Irish farmland for recreational pursuits has prompted policymakers and academic researchers to investigate the demand for rural recreation (Hynes et al., 2007; Mill et al., 2007). It is recognised that this activity has the potential to generate significant tourism revenue in non-urban areas of marginal economic value and is

increasingly proposed as a vehicle for rural and regional development (Moore and Barthlow, 1998; Lane, 1999; Vaughan et al., 2000; Failte Ireland, 2005).

The subject of promoting access to the Irish countryside involves a number of complex issues that affect the rural economy and its population. Tourism development is important particularly in areas like the Irish uplands where other opportunities for growth are limited. The number of overseas participants in hiking and walking amounted to 355,000 during 2006 and this represented the main outdoor activity undertaken by international tourists (Failte Ireland, 2007a). Bergin and O' Rathaille (1999) in their all island report (Republic of Ireland and Northern Ireland) on walking activities, estimated that, in 1997, 90,000 visitors took part in outdoor walking activities in the Irish uplands (66,600 of whom were from Ireland and the remainder were from abroad). They estimated that total expenditure on travel, food items, entry fees, accommodation and expenditure on walking equipment amounted to approximately £115 million (€146 million) during 1997. A report commissioned by the Irish Sports Council and Coillte to investigate the economic benefits associated with recreational trails and forest recreation in Ireland indicated that 13 per cent of the adult population (403,000) currently use developed recreational trails in Ireland on a regular basis (Fitzpatrick Associates, 2005). The total number of annual domestic trail visits undertaken by Irish residents was estimated to be 17.5 million. The average level of expenditure by those accessing trails was found to be €14.91 per person (Fitzpatrick Associates, 2005). Access to the countryside for heritage purposes has also been highlighted as a concern by the Heritage Council (2007).

As highlighted in Chapter 3 much of the Republic of Ireland's commonage farmland is located in remoter coastal, upland and mountainous regions. The exceptional recreation appeal of this land type along with increasing personal incomes and enhanced mobility has given rise to increased demands for a wide range of recreation activities including hill-walking, mountaineering, mountain biking, water-sports and horse riding (Mountaineering Council of Ireland, 2005; Hynes and Hanley, 2006; Irish Canoe Union, 2006; Irish Sports Council, 2006). Despite its outstanding recreational appeal, public access to farmland in the Republic of Ireland for such activity is limited. It is dependent on by-product access such as access to public forests and national parks as well as informal way-leave agreements across private land and commonage as outlined in Chapter 2. 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 (Mountaineering Council of Ireland, 2003). Access to farm and unenclosed commonage land for walking and mountaineering is in general unregulated and usually requires no payment by the recreationalist. This has arisen principally due to: low population density; marginal economic land value; difficulty of property right enforcement and consequent permissive attitude of many landowners.

In many instances landowners have started to prevent recreationalists infringing their property rights by denying access to private and commonage land. This has isolated walking clubs and their members who have voiced concerns that changing attitudes in landowner behaviour has increasingly restricted access rights (Keep Ireland Open, 2003). The problem has been compounded by the distinctive historic tradition of open access (by members of the public) to commonage land. Although this has instilled a strong perception of public access

rights, the law concedes exclusive use to the landowner who owns the commonage grazing rights (Wylie, 1997; Pearce and Mee, 2000). Any individual accessing commonage land, challenges the right to exclusive use, and may be expected by the landowner or shareholders to leave. Recreational access to commonage land is therefore not an enforceable right, and some landowners have displayed signs prohibiting trespassing on commonage. The Republic of Ireland is covered by walks which cross commonage land. Although many of these walks are documented in guidebooks and appear on tourist web sites they are not covered by access agreements with landowners and no one is responsible for their maintenance.

Perhaps the most promising solution to facilitating access on private farmland and commonage are the way-marked ways. In 1978 the National Way-marked Ways Association of the Irish Sports Council was set up to establish way leave agreements throughout the Republic of Ireland. These way leave agreements are not statutory rights of way, but operate on the basis on an informal agreement between the landowners, the local authority and the Irish Sports Council. Landowners are not compensated for access and the walks are managed and maintained by local authorities. At present 31 way-marked ways are in existence. These are estimated to account for 3,421 kilometres in total distance (Irish Sports Council, 2005).

In a study commissioned by Agri-aware[18] it was found that 84% of respondents (drawn from the general public in the Republic of Ireland) believe that the Government should intervene in order to introduce solutions for both landowners and users of the countryside with regard to land access issues. Of this number, a majority (77%) cited clearer legislation and provision

[18] A charitable trust, established in 1996 "To improve the image and understanding of agriculture, farming and the food Industry amongst the general public."

for dedicated walkways as possible solutions. Also, almost half (48%) of those surveyed said they would be willing to pay a nominal charge for countryside access (Bogue, 2005). Clearly there is a need to measure public preferences and demand for recreational trails on farmland with greater precision.

Whilst policy makers are aware of the economic opportunities associated with open-air outdoor recreation activities, rational public decision-making on financing the improvement of public access requires that these economic benefits should be clearly identified and valued. The maintenance of existing trails and the provision of new schemes for walking also depend on the supply of public funds, which must be justified to the public exchequer and the public at large. The increasing costs of trail expenditure in Ireland, as well as problems associated with funding and maintaining the way-marked ways by public authorities has focused attention on the benefits and costs of access.

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 should be clearly identified and valued (Hanley and Spash, 1993). To this end, this research addresses the measurement of non-market recreational values associated with walking on farm commonage using contingent valuation methodology (CVM). The aim of this chapter is to examine the hypothesis that the public are not willing to pay for access.

In this context this chapter seeks to address the following research questions:

(i) Establish whether respondents are willing to pay for an access agreement and trail facilities via implementation of a formal way-marked way scenario.

(ii) Determine which walking related attributes and facilities are important to respondents.

(iii) Determine the particular preferences and socio-economic attributes of respondents who express a positive willingness to pay.

(iv) Establish if respondents have a preference for lowland or upland commonage walks.

6.2 Methodology

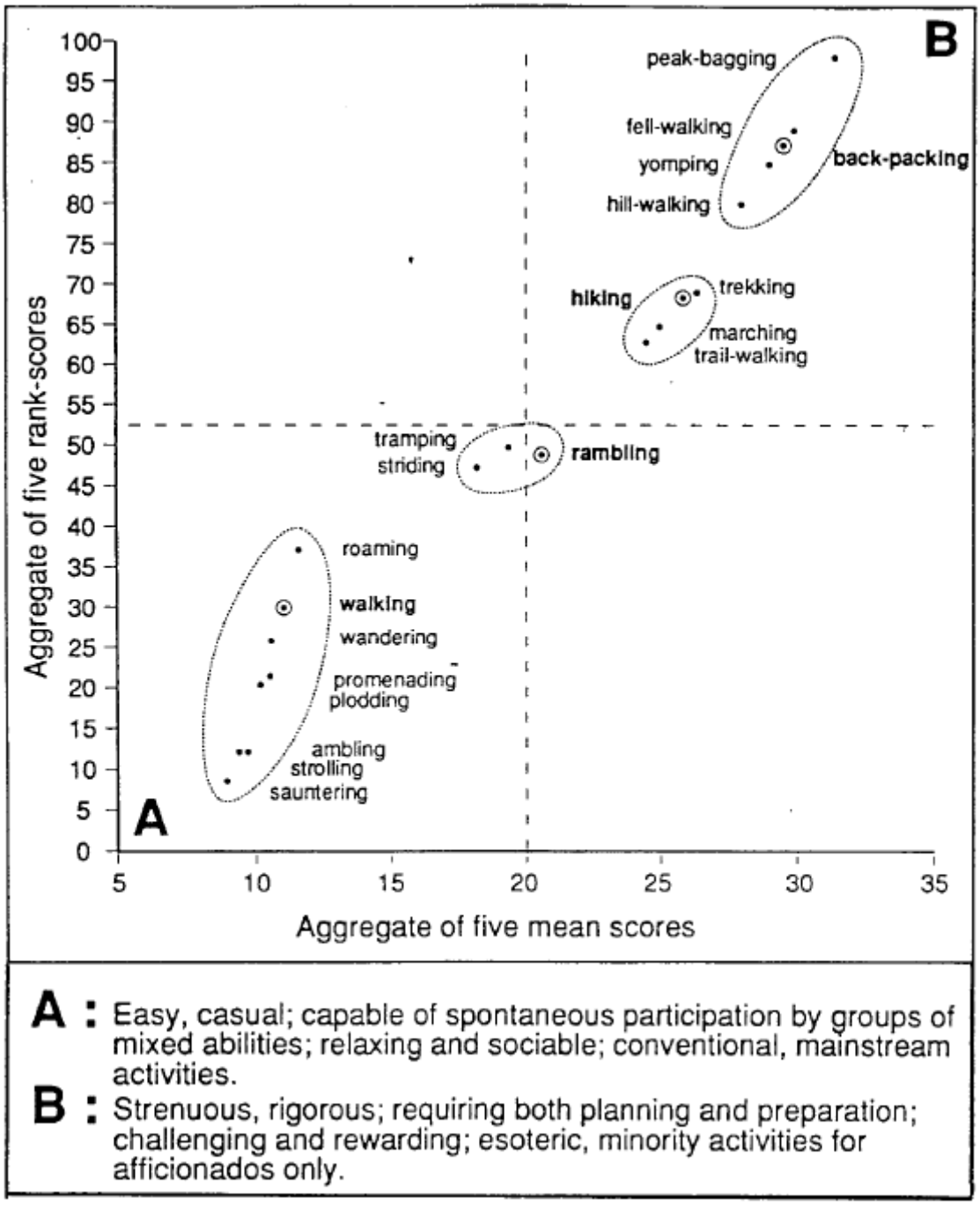
The tourism and walking literature was used as a basis for segmenting the walking market. An expert group was established to aid with this categorisation and to select appropriate case study sites. WTP for upgrading each commonage walks to a way-marked way with an access agreement and trail infrastructure was investigated by means of an on-site survey.

6.2.1 Segmentation of the walking market

Recreational walkers are not a homogenous group. Kay and Moxham (1996) suggest the activity can range from a daily stroll with a dog or an occasional short walk during a family outing in summer at one extreme, to solo back-packing over a National Trail, an organized 100 mile challenge walk and 'munro' or peak bagging at the other. Kay and Moxham (1996) came up with 20 types of walking. However, 5 main clusters emerged based on a scoring system taking account of: difficulty, suitability for mixed ability groups, capability of

spontaneous participation, sociability and conventionality. These clusters are outlined in Figure 6-1.

Figure 6-1: Categorisation of recreational walkers



Source: Kay and Moxham (1996)

Research by Visit-Scotland (2004) suggests that the walking market is very diverse but can be broken down into 3 main sub-categories: low level recreational walking, hill walking/distance walking and climbing. Climbing was not considered within the remit of this research. The other two categories were describes at follows:

(a) Low level recreational walking: Ranging from low level rambling through to longer distance walking (up to eight miles). This category includes walks across nature trails, forestry tracks or beach walks and a range of self guided routes in and around towns or cities. They will often be undertaken by experienced walkers but are also attractive to the more casual walker or day-trippers.

(b) Hill walking and distance walking: These tend to be walks of longer than eight miles involving a hill or mountain. This may include some winter walking where additional equipment is required which will be undertaken by more experienced walkers who are fit and have the necessary kit.

The Wales Tourist Board (2001) identified three categories of walking tourist:

(i) Walking holidays: Where walking is the main purpose. The walking holiday segment was estimated to represent only about 5% of all holiday trips to Wales. This group comprises keener walkers, committed to long distances and more hilly terrain.

(ii) Holiday walking: Where walking is an important part of the holiday and where the destination was chosen on the basis of its good walking routes.

(iii) Walking day visits: By far the largest sector is the holiday walking market which comprises those interested primarily in low level country walks of varying lengths with a bias towards short to medium distance walks. Most will use guidebooks and leaflets or will follow clearly defined way-marked paths. Most will also be on centre based holidays. The day visit (involving more than three hours from home) is the largest in terms of volume, but far less important in terms of economic benefit to an area.

Curtis and Williams (2004) undertook a detailed analysis of the participation by Irish residents in recreational walking in the Republic of Ireland. They found that almost three-quarters of the entire adult population (approximately 2.2 million people) reported having walked for recreational purposes in the 3 month survey period between July and September 2003. Given that the survey was undertaken during the summer, results are though to represent maximum values. Recreational walking was defined as including all types of walking for recreation, leisure, social or health reasons but excluding walking to work or to a shop. Recreational walking consequently exceeds any other activity as the most popular form of physical activity undertaken in the Republic of Ireland.

Curtis and Williams (2004) classified recreational walking into three categories: short walks (less than one hour), half day walks (between 1-4 hours) and longer duration walks (walks lasting more than 4 hours and full day walks).

(1) Short walks (less than 1 hour) - Approximately 63.7% of the population (1.9 million people) reported taking a walk of less than one hour. Nearly 20% took daily walks of this duration, 17% took short walks 4-6 times a week while 22% indicated taking one or fewer short walks per week. Short walks were generally taken close to a respondent residence. In all 77.1% of respondents regularly travelled to the start of their short walk by foot and 19.6% regularly used a car. Approximately 57% of people took short walks in urban locations with 45% taking short walks in rural locations. The most frequent locations for short walks in urban areas was on footpaths/streets (65.5%), parks and green areas (32.9%), on a beach/pier (12.7%) and finally on a walking route (10.5%). Frequently used locations for short walks in rural areas were public roads (55.3%), non-designated walking routes such as a beach, forest, hill or open country side (39.3%) and finally on a walking route (16.5%). The two most common reasons given for taking short walks were for health/fitness (78.3%) and recreational enjoyment (63.7%) with social aspect coming in third (21.1%). Socio-demographic factors influencing participation in short walk included gender, family status, profession and income. A female is generally 5-10 percentage points more likely to participate than a male. Respondents with children also engage to a far lesser extent than households without children. The participation rates of professional / non-manual workers are approximately 3-7 percentage points higher than other professions. Respondents in higher income deciles (the 5^{th} to 10^{th} income deciles) were much more likely to engage than those in the 1^{st} to 4^{th} income deciles. There was also a significantly higher participation rate for people with easily accessible areas for safe walking during daylight hours.

(2) Half day walks (1-4 hours): It is estimated that 16.7% of the adult population undertook a walk of 1-4 hour's duration (half day) during the survey period (503,000 people). Approximately 18% did so once per week, 39.1% engaged 2-3 times per week, while 30.3% did so more frequently. Similar to the findings for short walks, females participate at a higher level of frequency than males. Roughly 74% of half-day walkers reported that the average distance travelled to the start of the walk was between 0-1 miles. 90.5% of walks occurred within 5 miles of the walker's home. In total 7% of walks occurred within 6-10 miles of walkers homes and 2.6% of walks occurred various distances from the walkers homes up to a reported maximum of 90 miles. Approximately 52% of people took walks in urban areas while 50% took walks in rural location (but not mutually exclusive). A total of 64.6% of respondents undertaking half day walks in urban areas reported doing so on a footpath / street. A further 41% indicated a park or green area, 26.4% indicated a beach or pier while only 11.7% used a walking route. In rural areas 45.2% of respondents indicated using public roads, 41.6% indicated using areas such as beaches, hills, forests and open country. In total only 16.3% indicated using a walking route. The survey indicated that approximately 2% indicating taking half days walks in the context of a walking/hiking club. Nearly 69% and 62% of respondents on half day walks cited health and recreation as the two main motivations respectively. Socio-demographic factors of influence included income, education, safe access and the number of adults living in the household. People in the first (lowest) income decile are less likely to undertake half day walks versus all other income deciles (2-10th income deciles). Those with third level education are more likely to undertake half day walks than

others. The availability of easily accessible and safe areas also increases the likelihood that people engage in 1-4 hour walks. The more adults in a house the more likely a person engages in a half day walk.

(3) Longer Duration Walks (4 hours plus and full day walks) - The survey indicated that less than 1% of the population undertook walks in excess of 4 hours during the survey period and even fewer undertook full day walks. It was estimated that less than 20,000 individuals undertook one day walks in excess of 4 hours and less than 9,000 individuals undertook full day walks. Full day walks are more likely to be undertaken by males and by walking parties composed of small groups of friends or club members. Travel to the destination of the walk generally occurred by car and the destination itself is predominantly in rural areas, including both walking routes and other areas (hills, beaches and forests).

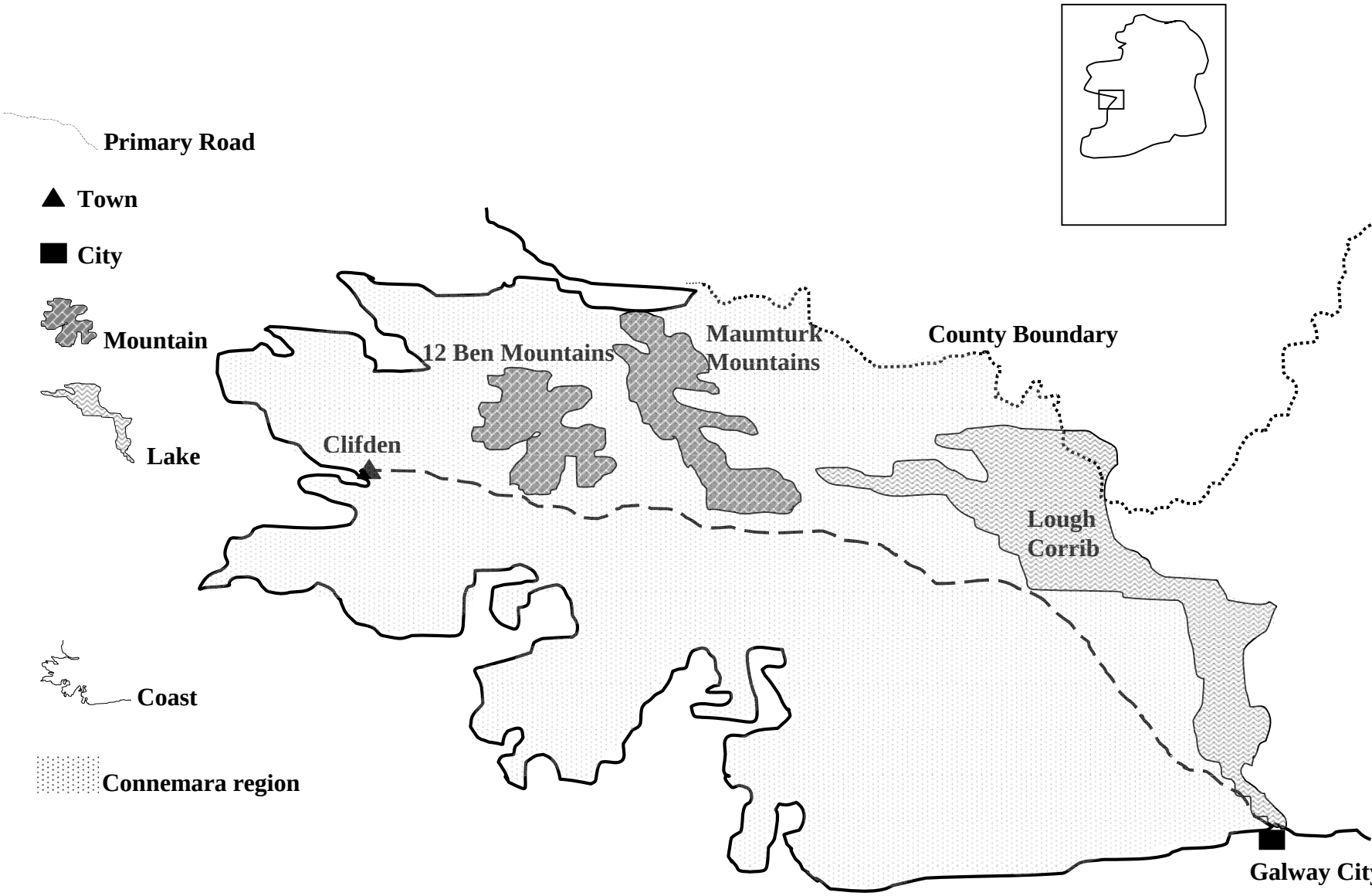
6.2.2 Expert panel and case study site selection

To advise on appropriate case study site selection a panel of experts with relevant experience was established. The panel contained Michael Gibbons, an archaeologist and walking tour operator based in Connemara; Mary Tubridy an ecologist and chairperson of the Irish upland forum and Professor Michael Keane of the economics department in NUI Galway who has extensive experience in the field of tourism economics.

The case study area was the Connemara region. This is a remote district in the west of Ireland associated with County Galway. It is broadly used to describe all of County Galway west of

Lough Corrib as seen by Figure 6-2. Connemara is renowned as an Irish speaking enclave or Gaeltacht with an outstanding scenic environment. Due to its' rugged wild landscape the region is distinctly marginal in terms of traditional agricultural activities. Tourism has hence long been promoted as the main strategy for regional development. Connemara with its combination of lakes, mountain ranges, bogs and coastline make it an ideal location for outdoor activity, particularly walking. It is recognised as having all the natural resources to cater for all sections of the walking market (Dillon, 2001; Gibbons, 2004).

Figure 6-2: Connemara region



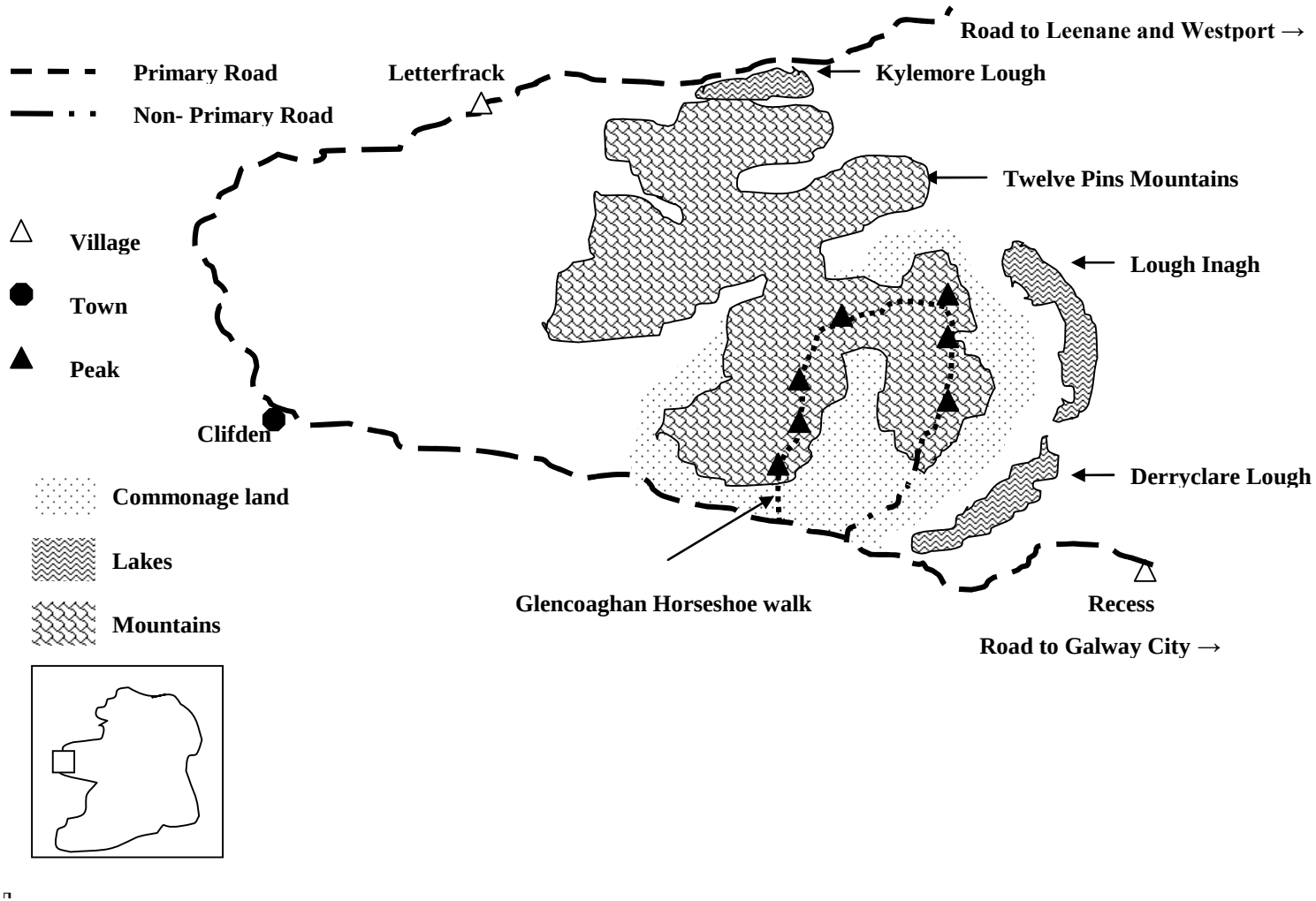
In consultation with the panel and using the tourism and walking literature there was a consensus that the market is characterised by 3 main segments; upland distance walkers, lowland distance walkers and casual walkers. Those undertaking a casual walk were not principally attracted to the region for walking so it was decided to focus on the first two categories, namely upland and lowland distance walkers. A number of informal upland and lowland commonage associated walks were identified across Connemara using guidebooks and local expertise (Corcoran, 1997; Simms and Whilde, 1997; Lynam, 1998; Dillon, 2001; Gibbons, 2004). The panel of experts was asked to select the most appropriate for examination in each category and chose the following case study walks.

An upland commonage walk - This is targeted at catering for the hill or distance walker. This group would be at the top of the walking scale as outlined by Kay and Moxham (1996) in Figure 6-1. This walk is strenuous, rigorous, requiring both planning and preparation. These walkers want very challenging, wild, mountainous type walking scenarios. The length of walk would be between 16 to 24 kilometres plus. These individuals are serious about their recreational walking and spending the full day walking would be common. This general grouping would correspond to the walking holiday market as outlined by the Welsh Tourist Board (2001) and longer duration walkers as outlined by Curtis and Williams (2004). The Glencoaghan Horseshoe walk was chosen to represent this category.

Glencoaghan Horseshoe: Is a rugged high altitude walk which loops through the Twelve Bens mountain range in the heart of Connemara. The route takes in 6 mountain peaks, five of which are over 2000 ft. It is 16 kilometres long and takes between 8-9 hours to complete. The route is characterised by mountain peaks of quartzite rock with little bog or

vegetation growing on it. It is generally only undertaken in its entirety by experienced hill walkers. It is regarded as probably the premier horseshoe walk in the Republic of Ireland. Almost the entire walk is over commonage land as illustrated by Figure 6-3.

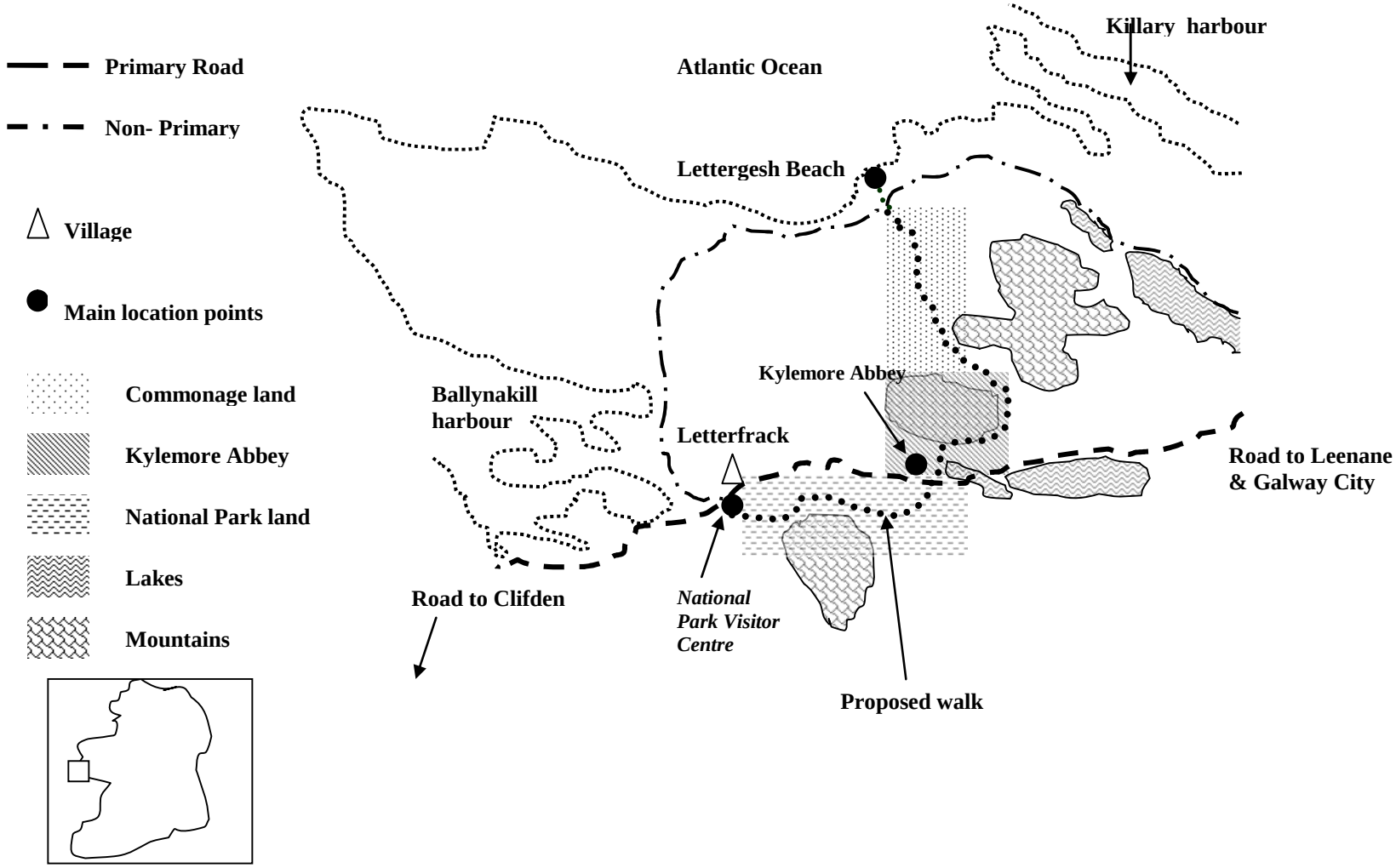
Figure 6-3: Glencoaghan Horseshoe upland walk



A lowland commonage walk - This walk relates to the two middle clusters as outlined by Kay and Moxham (1996). This walk would also equate to the demands of the Irish half day walker (1 to 4 hours) as outlined by Curtis and Williams (2004). This category would correspond to the second category (holiday walking) as defined by the Wales Tourism Board (2001). Where walking is an important component of the holiday and a destination is chosen on the basis of good walking routes, the National Park to Lettergesh beach walk via Kylemore Abbey was selected in this category.

The Connemara National Park to Lettergesh Beach walk: This route is pre-dominantly a lowland walk. The proposed route would officially link 3 of Connemara's main tourist attractions: the Connemara National Park, Kylemore Abbey and Lettergesh beach in a linear trail. Connemara National Park is a state owned park, Kylemore Abbey is an estate run by the religious order of the Benedictine nuns and the final section of the walk crosses commonage land to link up with one of Connemara's main beaches at Lettergesh as seen by Figure 6-4. It is approximately 11 kilometres in length and takes between 4-5 hours to complete.

Figure 6-4: National Park to Lettergesh beach lowland walk



6.3 Contingent valuation application

Each of these 2 case study sites is an informal walk and potential walkers do not have de-facto right of access. The hypothetical scenario, as proposed in this research, used the way-marked way template that currently exists nationwide but put it on a more formally basis. The proposed scenario offered the option of upgrading the case study walks to functional way-marked ways with appropriate infrastructure but with a 5 year landowner access agreement and a management structure. The way-marked template was chosen as it has a number of distinct advantages. A network of way-marked ways currently exist in the Republic of Ireland and this is advantageous from a CVM perspective. The literature has shown that contingent valuation works best when the scenario is simple and or the respondents as familiar with it (Mitchell and Carson, 1989). Additionally, approved way-marked ways are promoted by a local authority and approved by the National Way-marked Ways Advisory Committee (NWWAC) of the Irish Sports Council indemnify landowners through an insurance policy with the Irish Public Bodies Mutual Insurances Limited (IPBM). When a new way-marked way is being created, the names and addresses of all owners and occupiers affected are given to IPBM and form part of the policy. The indemnity is valid whether the walker is actually on the way-marked way or has strayed off it.

Surveying was undertaken at each of the case study sites. A pilot study was initially conducted in July 2005 over 14 days. The full interview sample was mainly conducted during the months of July – October 2005. Some additional surveying took place in the summer of 2006 to increase numbers on the Glencoaghan Horseshoe site. The pilot phase was used to inform general survey design and to gauge the likely range of respondents' willingness to pay in order to inform the bid design of the main survey. A total of 141 pilot surveys were collected during the pilot phase across the case study

sites. As recommended 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 (referendum format) 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; Scarpa and Bateman, 2000). The use of pilot data to choose bids in the main survey was informed by (Kanninen, 1995; Boyle et al., 1998; Creel, 1998; Langford et al., 1998; Hanemann and Kanninen, 1998). Using data from the pilot survey and following the procedures adopted by Boyle et al., (1998) bids ranging between €2 and €15 were identified. This spread bids between 15th and 85th percentile and had bids on both side of the mean and median (Kanninen, 1993b). In carrying out the survey each interviewee was told the Government is considering the promotion of the trail in question. There are two options: the trail as it is without an access agreement (status quo) and the trail with assured public access, insurance and recreational facilities under a management agreement (formalised way-marked way scenario).

The interviews were conducted on site in full view of the mountain/walk that was being referred to in the surveys. A total of 710 surveys were carried out across the two sites. Individuals were asked about their WTP at each of the five prices across each site. A total of 480 individuals were asked the WTP question (the remainder preferred the status quo). To avoid bias, every other person was interviewed. Each interview lasted approximately 15 minutes and followed a set format. Interviewers were rotated around sites each day.

On reaching the CVM section of the questionnaire respondents were shown two show cards. One illustrating the walk without an access agreement (status quo) and one illustrating the walk with assured public access and recreational facilities under a management agreement (formal way-marked way) as shown in Appendix A and B. Respondents were not given the option to choose an access agreement with assured access that did not include trail facilities. Respondents were also shown a map of the area in question and details for each option were read out by the interviewer. Immediately after being presented with this information, respondents were asked: 'Which of these options do you prefer?' Respondents were also asked to explain why they chose their preferred option. Those who preferred the status quo were asked a series of questions covering general information, including household characteristics, their attitudes to the environment, membership of walking organisations and participation in walking activities. These respondents were not asked about WTP. Respondents who preferred the way-marked trail with access rights were asked about WTP before going on to the same series of general questions. The questionnaire is included in Appendix C.

The willingness to pay questioning took the following form. Respondents were told: "This trail will impose additional costs on the Irish Sports Council, local authority and local landowners compared to the status quo of informal access. This cost could be paid for by the general public through increased taxation[19] so it is important to find out how much if anything, you would be willing to pay to have the site developed as an official way-marked way instead of the informal agreement. Bear in mind, however, your total annual budget, the amount you can allocate to recreational pursuits and finally how

[19] Taxation was chosen as it was the only mandatory vehicle that could potentially apply to all potential users. An increase in annual income was proposed for Irish residents and a landing tax was proposed for overseas visitors as these method are universally applicable to potential site visitors.

much of this you can afford to spend on this walk. Remember also that developing the walk as a formal way-marked way does not mean that it becomes a permanent right of way as the agreement only lasts for five years. Remember also that this agreement just covers the walk and it does not include other walks in Ireland. Also bear in mind that paying too much for this trail may mean that you cannot afford other worthwhile recreation schemes – for example there are other trails that might be developed".

All respondents who preferred the site with secured access rights (formal way-marked way) were then asked: "Are you willing to pay something toward the extra cost in order to have the site developed and maintained as a formal way-marked way for five years rather than the status quo of informal access? Respondents answering "No" to this question were then asked which of several statements best described why they were not willing to pay anything. Those who answered this question in the affirmative were then asked "Are you willing to pay €X in increased annual taxation to ensure that the site is established and maintained as a way-marked way for a period of five years?"

Using data from the pilot survey and aided by discussion in the literature (as discussed previously) bids of €2, €4, €8, €12 and €15 were chosen, assigned equally and randomly across respondents. Thus, contingent valuation was used to estimate the value of a marginal change in moving from the status quo scenario to a more formally developed way-marked way walk with an access agreement and a management structure on the sites in question. To seek to minimise respondents' expression of preferences not truly reflecting their willingness to pay on account of 'embedding', respondents were reminded that this was one of a number of walks which might be developed in the area. To minimise hypothetical bias respondents were reminded also about their budget - what they could afford to spend just on this site and particularly what they were actually

paying for - the characteristics and facilities of the walk. Respondents were told that the Irish Sports Council was using this information in order to decide which trail types to develop. They were told also that their answers might actually result in increased taxation payments. Where an zero incremental willingness to pay was tendered, a reason was sought. Protest bids were thus identified and omitted from further analysis.

One of the research goals was to determine the preferred attributes associated with those respondents who answered the willingness to pay question in the affirmative. Specific walking route attributes were examined under 3 main headings; landscape, biodiversity and trail facilities / features. The respondents were asked to indicate by circling the appropriate number how important each of the attributes were to them personally where the numbers and descriptors offered were: unimportant, neither important / unimportant, somewhat important, very important and most important. On the scale of 1 to 5, 1 denoted unimportant and 5 was most important.

The questionnaire also included questions covering general information such as the purpose of the visit; holiday maker / day tripper status; length of stay; whether the visit was the main purpose of their day out; frequency of visits to Connemara; reasons for visiting; distance travelled; activities undertaken; and various household characteristics. This made it possible to relate an individual's preferred option to preferences for various walking attributes as well as to a range of socio-demographic characteristics.

6.3.1 The economic model

The elicitation format chosen in this study is the dichotomous choice format. This means that respondents were asked whether they were willing or not (yes/no answer) to pay a pre-determined amount of contribution to establish a formal way-marked way.

The price was randomly assigned among respondents so as to generate price variation. The price range used in this study was based on the responses to the pilot study which utilised the open-ended elicitation format (Haab and McConnell, 2002) discussed in the previous section. The random utility model (Hanemann, 1984) was assumed in this study in a form that is additively separable in deterministic and stochastic preferences as:

$$\upsilon_i(y_j z_j \varepsilon_{ij}) = v_i(y_j z_j) + \varepsilon_{ij} \qquad (11)$$

where y_j represents discretionary income, z_j is an m-dimensional vector of socio-economic variables, ε_{ij} is a stochastic error term and $(i = 1)$ represents the way-marked way route implemented and $(i = 0)$, the status quo. Assuming linear utility in the deterministic part yields the indirect utility function:

$$v_{ij}(y_j) = \alpha_i z_j + \beta_i(y_j) \qquad (12)$$

where α is an m-dimensional vector of parameters such that $\alpha_i z_j = \sum_{k=1}^{m} \alpha_{ik} z_{jk}$ and βi represents the bid parameter. If the CV question requires the respondent to choose between the proposed way-marked walking route at the required payment P $(i = 1)$ and the current state $(i = 0)$, then the change in deterministic utility with the CV state ("yes" response) can be expressed as:

$$v_{1j} - v_{0j} = (\alpha_1 - \alpha_0) z_j + \beta_1 (y_j - P_j) + \beta_0 y_j \qquad (13)$$

Equation (5) shows that the respondent will answer yes if his utility deriving from the proposed way-marked way (v_{1j}) and paying the price (P) is higher than not having improved walking route facilities (v_{0j}) and not paying the price (P=0). Assuming that

the marginal utility of income is unaffected between the non-CV and the CV states so that $\beta_1 = \beta_0$, then difference in utility will be $\upsilon_{1j} - \upsilon_{0j} = \alpha z_j - \beta P_j$ where $\alpha = \alpha_1 - \alpha_0$ and $\alpha z_j = \sum_{k=1}^{m} \alpha_k z_{jk}$. Therefore the probability of a 'yes' response is:

$$\Pr(yes_j) = \Pr(\alpha z_j - \beta P_j + \varepsilon_j > 0) \qquad (14)$$

To estimate the parameters of the deterministic component of the utility function, the nature of the stochastic terms should be specified. When the response to the bid question is expected to be binary in nature i.e. 'yes' or 'no', then it is appropriate to assume a logistic distribution of the stochastic component of the utility function with a mean of 0. If the distribution of the stochastic error term ε is logistic, the logit model can be used for the estimation. Hanemann (1984) shows that if $\upsilon_i(y_j z_j \varepsilon_{ij})$ is linearly specified, then the probability of the respondent saying yes can be expressed with the dependent variable as the log-odds ratio of WTP as below:

$$\text{Log}\left[\frac{\Pr(yes_j)}{1-\Pr(yes_j)}\right] = \beta_0 - \beta_1 P_j + \sum_{k=1}^{m} \beta_k z_k \qquad (15)$$

Parameters β_0, β_1, β_k (k=1,…, m) will be estimated parametrically. The mean or median maximum WTP for establishing a way-marked way can then be calculated.

6.4 Results

The results section outlines a profile of the sample, preferences for walking related attributes and finally WTP for the proposed scenario across the case study sites.

6.4.1 Sample profile

The sample profile is outline in Table 6-1. Given the methodology used to segment the walking market as previously set out, results are consistent with expectations. Individuals on the upland commonage walk were more likely to be male, under the age of 30 years and tended to have lower relative income. Median income on the upland site was in the €20,001- 30,000 category. Those on the lowland commonage walk were older, had higher income and were more likely to have children compared to those on the upland site. Median age fell into the 40-49 year bracket and median income was in the €30,001- 40,000 category. Results indicate that those on the upland site were more likely to walk for longer durations as 83% either often or occasionally walk 6 hours or more compared to 54% on the lowland site. This pattern was repeated for walks of 3-6 hour duration as can be seen from Table 6-1. Those on the upland site were also more likely to walk at higher altitudes as nearly 90% indicated often or occasionally walking over 600 metres compared to 64% on the lowland site.

Table 6-1: Sample profile of upland and lowland commonage site respondents.

	Upland commonage walk	**Lowland commonage walk**
Number Surveyed	256	454
Socio-demographics:		
Males	58%	51%
Children	22%	48%
Age (median)	20-29 years	40-49 years
University Degree	75%	74%
Income (median)	€20,001 – 30,000	€30,001- 40,000
Walking profile:		
Walk 6 hours:		
Frequently	23%	9%
Occasionally	60%	43%

Walk 3-6 hours:		
Frequently	40%	22%
Occasionally	54%	54%
Walk 600 metres		
Frequently	37%	19%
Occasionally	53%	45%

6.4.2 Attribute analysis

Before examining the walking related attributes as explanatory variables in the estimation of the willingness to pay (WTP), site attributes are firstly examined in their own right. Recall that an important aim of the chapter was to identify who is actually willing to pay for the access agreement and site facilities. It is hypothesized that site attributes can be expected to influence WTP. A further research goal was to determine the preferred walking related attributes associated with those respondents who answered the willingness to pay question in the affirmative.

It was found that there are systematic variations between those who are willing to pay for the way-marked way scenario and those who prefer the status quo to remain. To illustrate the differences, respondents were partitioned into two groups. The first group was comprised of "Payers" – those who were willing to pay for the way-marked way scenario. The analysis hence focused on those who answered the WTP question in the affirmative. The second group were referred to as the "Status Quo group" – those who preferred the status quo to remain. Walking route attributes were examined under 3 main headings; landscape, biodiversity and trail facilities / features. The respondents were asked to indicate by circling the appropriate number how important each of the attributes were to them personally where the numbers and descriptors offered were: unimportant, neither important / unimportant, somewhat important, very important and

most important. On the scale of 1 to 5, 1 denoted unimportant and 5 was most important. Differences in socio-demographic variables between the two groups were also investigated.

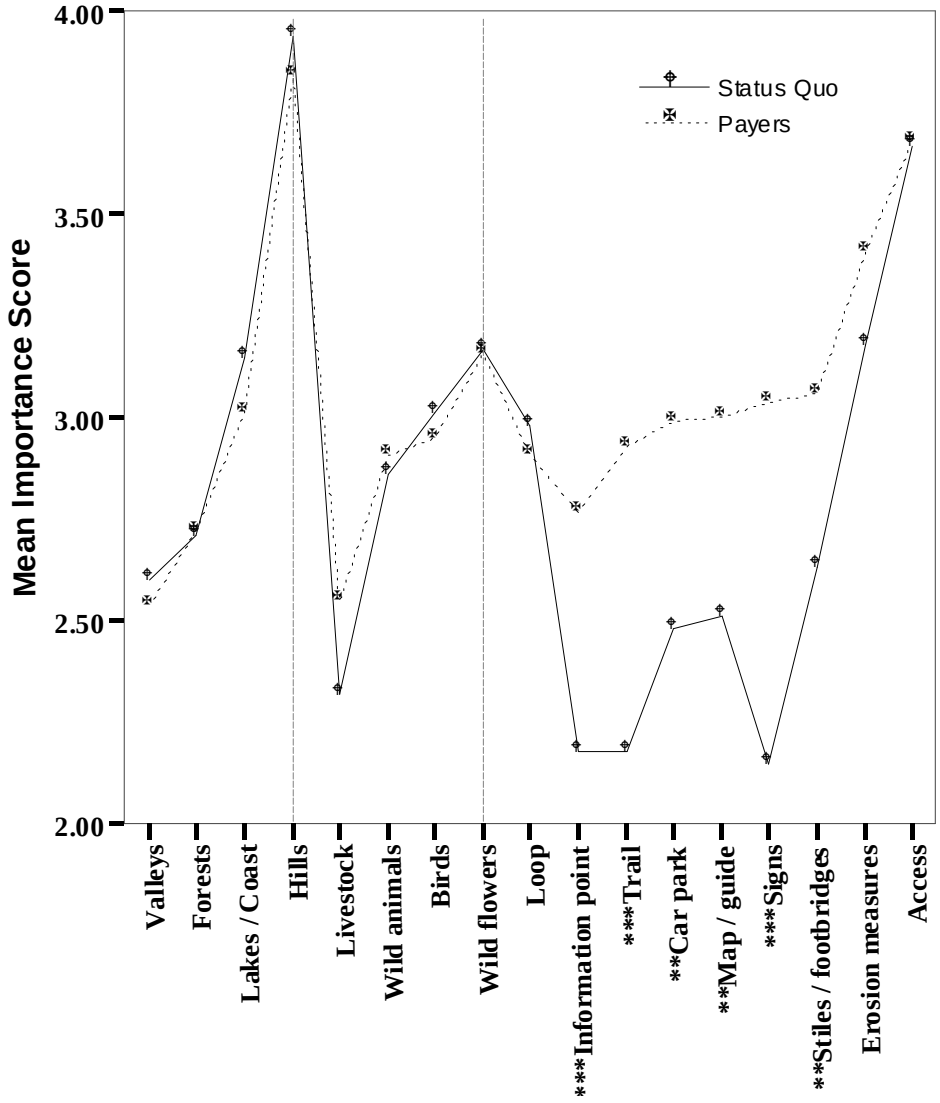
6.4.2.1 Upland commonage walk (Glencoaghan Horseshoe)

A total of 256 valid surveys were conducted on the Glencoaghan Horseshoe walk in respect of the proposed hypothetical walking scenario. In all 162 respondents (66%) preferred the proposed way-marked way scenario while 88 (34%) had a preference for the status quo situation to remain. In all 69 individuals indicated a willingness to pay for the scenario at the offered bid price. This makes up the payers group and is contrasted with the 88 in the status quo group.

Landscape variables tested included the presence of hills, valleys, forests and lakes / coastline. Unsurprisingly on the upland site both the payer and the status quo groups indicated a score around 4 denoting 'very important' for the presence of hills as outlined in Figure 6-5. The other landscape features (valleys, forests, lakes / coast) generally scored between 2.5 and 3 for both groups (3=somewhat important). There was little difference between the two groups on landscape features as confirmed by t-test analysis. This pattern was repeated for features of biodiversity. Attribute scores (wild animals, birds and wild flowers) generally fell in a range between 2.5 and 3 and indicated no significant differences between groups. The payer group did however place a much greater level of importance on infrastructural features. The payers indicated a rating of around 3 for such features as information point, trail, car park, map /guide, signs, stiles & footbridges (3=somewhat important) compared to an average rating 2 to 2.5 for the status quo group (2=neither important nor unimportant). T-tests for equality of means confirm this impression, with equality of means between the two groups decisively

rejected at the 1% significance levels for all attributes except looped walks, erosion measures and an access agreement as seen in Figure 6-5. However, it should be highlighted that (excluding hills) measures to control erosion and an access agreement with the landowners were the highest ranked attributes by both groups in absolute terms.

Figure 6-5: Mean attribute importance scores for status quo and payer groups on the upland site (Glencoaghan horseshoe).



*** significant at 1% level, ** significant at 5% level, * significant at 10% level

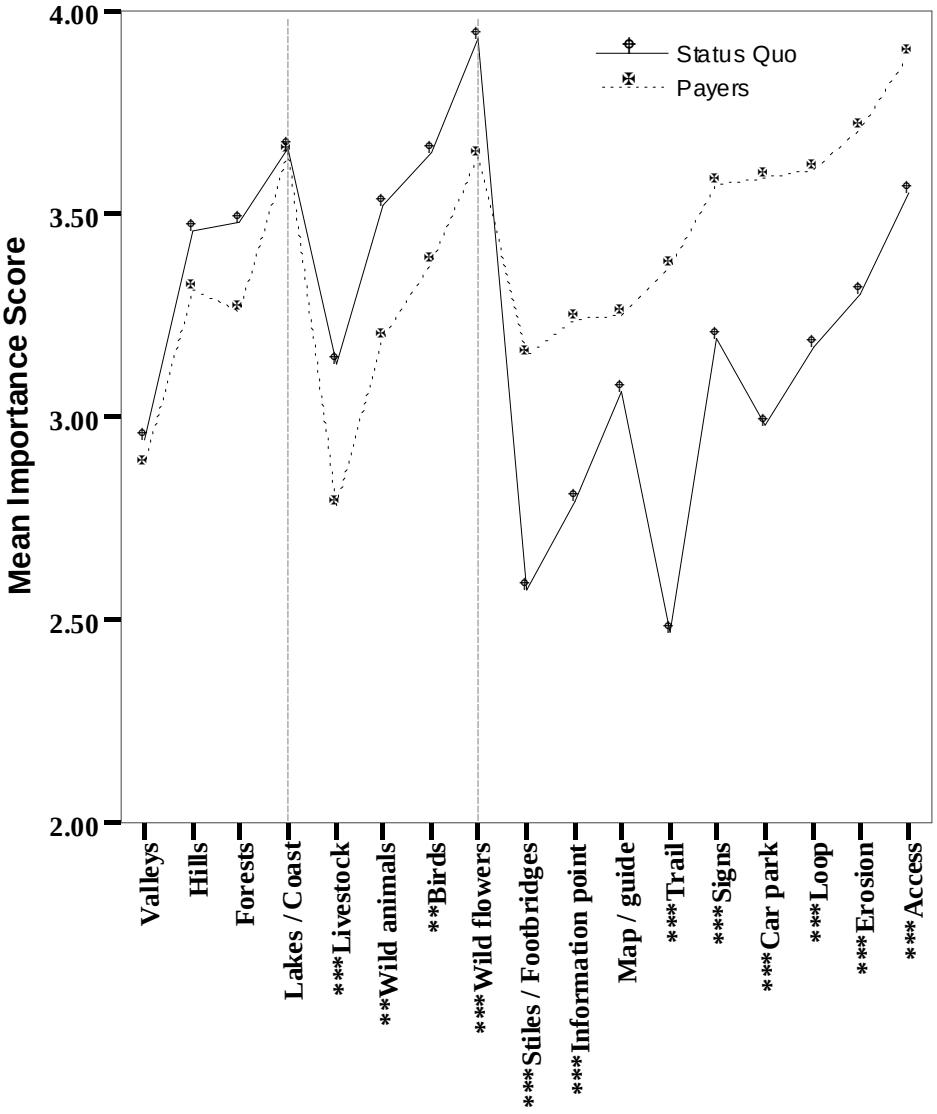
6.4.2.2 Lowland commonage walk (Connemara National Park to Lettergesh beach)

A total of 446 valid surveys were conducted in the Connemara National Park in respect of the proposed hypothetical walking scenario. In all 306 respondents (69%) preferred the proposed way-marked way scenario while 140 (31%) had a preference for the status quo situation to remain. In total 162 individuals indicated a willingness to pay for the

scenario at the offered bid price this makes up the payers group and is contrasted with the 140 in the status quo group.

On the lowland site generally all landscape scores (except valleys) lie between 3 and 4, i.e. between ‘somewhat important’ and ‘very important’ for both groups as illustrated in Figure 6-6. The status quo group placed a greater level of importance on walking over hills and through forestry than the payers. However, this difference was not statistically significant. The status quo group also placed a higher level of importance on biodiversity attributes such as wild animals, birds and wild flowers as well as the presence of livestock. Importance scores generally ranging from 3.5 to 4 compared to a range of 3 to 3.5 for the payers. This is in line with other results (de-briefing questions outlining why they preferred the status quo scenario) which show that the majority of this group preferred to walk in a more natural un-developed environment. T-tests analysis confirms this impression as equality of means between the groups is rejected for birds, wild animals (5% significance level), wild flowers (1% significance level). Respondents were asked to indicate the importance of the presence of a trails infrastructure and facilities for their safety and enjoyment of a walk in the countryside. Again attributes tested included stiles and footbridges, an information point, a map or guide, a trail, route signs, a car park, that the walk be looped, measures to control erosion and a guaranteed access agreement with the landowners. The payer group systematically placed a much higher level of importance on all these attributes. Mean importance scores for the payers generally ranged from 3 to 3.75 compared to 2.5 to 3.25 for the status quo group. T-tests for equality of means confirm this impression, with equality of means between the two groups decisively rejected at the 1% significance levels for all attributes except for map/guide on the lowland site as seen by Figure 6-6.

Figure 6-6: Mean attribute importance scores for status quo and payer groups on the lowland site (National Park to Lettergesh beach)



*** significant at 1% level, ** significant at 5% level, * significant at 10% level

6.4.3 Willingness to pay analysis

In calculating the parameter estimates for the CVM model the dichotomous choice format outlined in the previous section was followed. Two logistic regressions were run, one for each of the study sites. The analysis is restricted to those indicating a positive WTP. A relatively similar two-thirds majority across the lowland (68.6%) and upland (65.6%) sites favoured the proposed way-marked way scenario over the status

quo. Of those favouring the way-marked way scenario 266 individuals on the lowland site and 124 on the upland sites indicated that they are in principle willing to contribute something towards the cost of scenario implementation. A further 24 respondents on the lowland site and 11 on the upland site were excluded from the analysis for reasons of protest bidding as these respondents indicated that they didn't like the payment vehicle or that the government should be financing this activity. The WTP analysis was hence restricted to 242 on the lowland site and 113 on the upland site. This represents 54.3% of the total sample on the lowland site and 44.1% on the upland site as outlined in Table 6-2.

Table 6-2: Profile of sample responses to proposed way marked way scenario

	Total number surveyed		**Preference – Way marked way**		**WTP – In principle**		**Protests**		**Sample – WTP analysis**	
Case Study Site	**No.**	**% total sample**	**No.**	**% total sample**	**No.**	**% total sample**	**No.**	**% total sample**	**No.**	**% total sample**
Lowland site	446	100%	306	68.6%	266	59.6%	24	5.4%	242	54.3%
Upland site	256	100%	168	65.6%	124	48.4%	11	4.3%	113	44.1%

As previously outlined the bid amounts that were randomly assigned to the respondents were €2, €4, €8, €12 and €15. Table 6-3 presents the responses to CVM question by the bid amount across both case study sites. It is evident from this table that as the price offered to respondents increased the % of respondents answering in the affirmative decreased.

Table 6-3: Responses by bid amount across both case study sites

	Lowland case study site (N=266)				Upland case study site (N=113)			
Bid Amount	**No to Bid Value**		**Yes to Bid value**		**No to Bid Value**		**Yes to Bid Value**	
(€)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
2	7	14%	43	86%	3	10.7%	25	89.3%
4	8	14.5%	47	85.5%	3	10.3%	26	89.7%
8	25	46.3%	29	53.7	10	47.6%	11	52.4%
12	32	54.2%	27	45.8%	14	73.7%	5	26.3%
15	32	66.7%	16	33.3%	14	87.5%	2	12.5%

The variable price in Figure 6-4 and Table 6-5 is the bid price presented to respondents in the WTP question. The variable walking activity relates to importance of walking activity (from 1=one of my many outdoor activities to 4=my most important outdoor activity). The variable European is a nationality dummy variable (1=from mainland Europe, 0=not from mainland Europe). The variable Loop NB is a dummy variable where 1 indicates that a looped walk is ranked an important attribute. Finally the variable income relates to pre-tax income where 1 is less than €10,000 per year and 9 is €80,000 euros or over. A number of socio-economic variables (age, education, martial status and children) and other attribute variables (landscape, biodiversity and infrastructural features) were examined through a stepwise regression in the

model and did not add to the explanatory power of the model and were hence not included.

Table 6-4 indicates that respondents' WTP on the lowland walk were positively affected by higher incomes and greater levels of walking activity. These are in line with expectations and are consistent with economic theory. Factors that negatively affected WTP were higher prices, whether the respondents were European and whether they had a preference for looped walks. The higher the suggested price the less likely the individual was to respond positively to the WTP question. Those from mainland Europe were not generally open to paying for such a good as it was not the norm in their home country. They generally suggested it should be provided by government. Finally, the hypothetical walking scenario linked a walk in the Connemara National Park with commonage in a linear trail. Those who preferred looped walks indicated a negative WTP for this linear trail arrangement. A Likelihood ratio test was performed to test whether the parameters of the model are all equal to zero. The likelihood ratio statistic for this model (73.09) exceeds the critical value of the $\chi 2$ distribution with a significance level of 1%. Thus the null hypothesis is rejected and the co-efficients in the model as different from zero.

Table 6-4: Willingness to pay logistic regression results for lowland case study site (Connemara National Park to Lettergesh)

Price	-0.25
	(-6.49)**
Walking activity	0.31
	(2.14)*
European	-0.83
	(-2.47)*
Loop NB	-0.72
	(-2.15)*
Income	0.20
	(2.78)**
Constant	2.03
	(3.02)**
Log Likelihood (-141.46)	
Likelihood ratio (73.09)	
Pseudo R2 (0.2053)	

(N=242) Z values are given in parenthesis under co-efficients. Individual co-efficients are statistically significant at the **5% level; * 1% level.**

Additional survey questions corresponding to the independent variables in Table 6-5 are as follows: variables Irish and walking altitude. The variable denoted "Irish" is a nationality dummy where 1 indicates that the individual is from the Republic of Ireland. Walking altitude relates to altitude of walks most frequently undertaken (from 1= often over 600 meters to 4= normally under 200 meters). Again a number of socio-economic variables (age, education, martial status and children) and other attribute variables (landscape, biodiversity and infrastructural features) were examined through a stepwise regression in the

model and did not add to the explanatory power of the model and were hence not included.

Table 6-5 indicates that respondents' WTP on the uplands walk was positively affected by being an Irish national. Irish nationals seemed more aware of the problems associated with access to the uplands and were more responsive to formal access with trail improvements. The higher the proposed price offered to the respondent (ranged from €2 to €15) the less likely the individual was to respond positively. Finally those who tended to walk more frequently at lower altitudes were less likely to pay for this upland walk. A Likelihood ratio test was performed to test whether the parameters of the model are all equal to zero. The likelihood ratio statistic for this model (61.50) exceeds the critical value of the $\chi 2$ distribution with a significance level of 1%. Thus the null hypothesis is rejected and the co-efficients in the model as different from zero.

Table 6-5: Willingness to pay logistic regression results on upland case study site (Glencoaghan Horseshoe)

Price	-0.38
	(5.55)**
Irish	1.46

	(2.04)**
Walking altitude	-0.84
	(2.62)**
Constant	4.49
	(4.91)**
Log Likelihood (-44.79)	
Likelihood ratio (61.50)	
Pseudo R2 (0.407)	

(N=113) Z values are given in parenthesis under co-efficients. Individual co-efficients are statistically significant at the **5% level; * 1% level.**

In contingent valuation applications, it is conventional to compute and report mean or median willingness to pay. The mean WTP (MWTP) from the logit model is the same as the median WTP given the linearity of the utility function (Ahtiainen, 2007).

The mean willingness to accept is a function of estimated regression co-efficients and independent variable means as outlined in Equation 16 (Loomis, 1988):

$$\text{Mean WTP} = \frac{\beta_o + (\beta_2 * \text{var}\,iable\,mean)....}{-\beta_1\ (\text{Pr}\,ice)} \qquad (16)$$

For the two walks this can be computed using parameter estimates of the significant variables as outlined in Table 6-4 and Table 6-5 in conjunction with the relevant mean of each variable.

Table 6-6 shows MWTP estimated for both the lowland and upland site. From this comparative ranking of the sites it is clear that WTP is significantly higher for the lowland walk at €12.22 per annum compared to €9.08 per annum for the upland site.

Table 6-6: Mean willingness to pay on lowland and upland commonage case study sites.

Walk	Mean WTP
Lowland Walk (National Park- Lettergesh)	€12.22
Uplands walk (Glencoaghan Horseshoe)	€9.08

6.4.4 Analysis of status quo responses

As discussed previously approximately one-third of respondents across both case study sites favoured the status quo. This section explores the motivation for this decision:

Lowland site - When asked why they preferred the status quo (31% of respondents on the lowland site) a total of over 86% of valid responses suggested they preferred a more natural or undeveloped environment. A further 7% suggested it would become overcrowded or too commercialised, 4% indicated it was more challenging / adventurous in its present state while 2% gave other reasons.

The fact that 31% of respondents on the lowland site chose the status quo option was a significant finding and was deemed worthy of further exploration. A focus group of 8 individuals who are familiar with walking in the Connemara region was organised through the NUI Galway mature student association. Results from this focus group

indicated that those who preferred the status quo (25% of the focus group) were concerned that formalisation of the lowland walk could potentially unduly damage the natural environment. As one participant put it "Ireland's natural environment is what draws visitors to the countryside in the first instance and the walk should be kept as natural as possible". This is in line with annual visitor attitude surveys which repeatedly confirm that Ireland is prized by overseas visitors for its clean, green natural image (Millward Brown IMS, 2007). A total of 80% of visitors rated Ireland's scenery as an important reason for visiting Ireland in 2007. Additionally, 71% said they were attracted by the natural unspoilt environment (Millward Brown IMS, 2007). However, there was recognition among those favouring the status quo (in the focus group) that a large volume of walkers would put pressure on the landscape and a formal trail structure would prevent and minimize erosion and damage to the natural environment.

Another participant was concerned that the formal access agreement with the landowner was only for 5 years at that this did not represent a long term solution or guarantee that the walk would be kept open in the longer term. This and another participant were also concerned that formalisation of this walk would lead to overcrowding. This attitude is in line with economic theory which suggests that crowding out can diminish the enjoyment (and utility) an individual can derive from a resource. Participants who favoured the status quo did however indicate the desirability of an access agreement with the landowners and indicated that on the whole they would still walk the route if it was developed into a way marked way. It was also noted that participants in this focus group who chose the formal way-marked way scenario (75%) indicated that security of access with the landowner and ability to walk in and safe and comfortable environment as the principle motivations for this preference.

Upland Site - When asked why they preferred the status quo (34% of respondents on the upland site) a total of 61% of valid responses suggested they preferred a more natural or undeveloped environment. A further 16% suggested it was more challenging / adventurous in its present state, 14% suggested it would become overcrowded or too commercialised while 8% gave other reasons.

Again the fact that nearly one-third of respondents on the upland site indicated a preference for the status quo was a significant finding and a focus group comprising of 9 members of the NUI Galway mountaineering club was commissioned to investigate this result further. These individuals are frequent walkers in Connemara and have experience of walking on the upland case study site. When presented with the hypothetical scenario over 40 per cent of the focus group preferred the status quo option. When ask to explain the rationale for this choice there was a consensus around a number of key points. Firstly, it was suggested that this walk is a significant undertaking and formalisation of the walk in the form of a way-marked may give a false impression of its difficulty and encourage inexperienced and unprepared individuals to undertake the walk. As one participant put it "I believe that a way marked way may lead to problems with inexperienced walkers being tempted to take on these mountains" another participant echoed this sentiment "official trails can provide a false impression of how tough the walk is". A similar percentage indicated that the reason they hike in the mountains, in the first instance, is for a challenge and being able to navigate is part of this experience. Formalisation of this walk would somewhat diminishing this challenge and experience. In a similar vein one participant stated "I think map reading is part of the mountaineering challenge". A final concern mentioned was the possibility that the walk could become overcrowded and this would again diminish the experience. However, it should be noted that those who preferred the status quo indicated that on

the whole they did not have a strong objection to the walk being formalised into a way-marked way as security of access with the landowners is highly desirable and some infrastructure such as signs and stiles would improve safety on the walk.

Finally, the focus group participants who favoured the way marked way option indicated the primary reason behind this preference was security of access with the landowner. Additionally, the presence of a trial may prevent erosion and environmental damage on sections of the walk most at risk, especially if a large volume of walkers are undertaking the walk.

6.5 Discussion and conclusion

An important research aim of the chapter was to explore which trail related attributes and facilities are important to respondents. On the lowland site those preferring the status quo to remain placed a significantly greater level of importance on features of biodiversity such as wild animals, birds and wild flowers as well as the presence of livestock grazing on the landscape. Results are in line with de-briefing questions which suggest that the majority of this group preferred to walk in a more natural undeveloped environment. Provision of a trail received the lowest ranking of any attribute by the status quo group on the lowland site. Conversely, those indicating a positive WTP for the proposed way-marked way scenario systematically placed a much higher level of importance on infrastructural attributes.

On the upland commonage site both groups rated the presence of hills very highly. This is consistent with the literature which suggests a primary motivation by upland walkers is experiencing a challenge (Kay and Moxham, 1996). However,

in general, there was little difference between the two groups on landscape or biodiversity attributes. As with the lowlands, those indicating a positive willingness to pay again placed a much higher level of importance on infrastructural features. An access agreement with the landowners and measures to control erosion were highly ranked across the 2 sites by both groups in absolute terms. This is consistent with other recent research on the topic (Bogue, 2005). Results indicate that potential consumers have a strong recognition of landowners' property rights as well as the potential damage that can occur by un-coordinated, unmanaged access to farmland for recreational walking. Policy initiatives that deal with improving recreational access to farmland for walking must address both these issues.

Additional research aims were to investigate whether respondents were WTP for a formal way-marked way scenario and whether respondents had a preference for such a scenario on the lowlands or uplands. A two-thirds majority across the lowland (68.6%) and upland (65.6%) sites favoured the proposed way-marked way scenario over the status quo. Those preferring the status quo were strongly averse to a formal trail scenario with associated infrastructure. It must be acknowledged this research does not have any evidence that the status quo group (across both sites) will not pay for highly rated features such as an access agreement with landowners, measures to control erosion or features of biodiversity. This is because they were never asked this. They are however strongly averse to a formal trail scenario with associated infrastructure. If such a scenario were implemented on both sites this cohort may well substitute away to other un-formalised walks. Indeed, following the work of Clinch and Murphy (2001) this group may well be WTP to avoid the implementation of the prescribed scenario. It is probable that there are also differences between overseas visitors and recreationalists

from within the Republic of Ireland. A large cohort of tourists who come to Ireland to walk tend to prefer established routes that are easy to locate and follow (Failte Ireland, 2007a). Arguably, given that a significant proportion of the sample are infrequent overseas visitors it is unlikely that this group would be willing to pay to avoid the scenario.

A total of 54% of the sample on the lowland site and 44% on the upland site expressed a positive WTP for scenario implementation. This suggests that the formalised scenario as proposed is not universally accepted, particularly in the uplands. Imposition of a trail scored particularly poorly in the attribute rankings. Clearly there are individuals who favour a less formal walking experience. Focus group analysis indicated that those favouring the status quo on the lowland site were concerned that development of a way marked way could lead to overcrowding on the walk and could potentially damage the natural environment. Focus group analysis of the upland site indicated that those favouring the status quo were concerned that formalisation into a way marked way may attract inexperienced and unprepared individuals to undertake the walk and this has safety implications. Additionally, it is more of a challenge without map boards and signage. However, focus group analysis revealed that those who preferred the status quo across both sites on the whole they did not have a strong objection to the walk being formalised into a way-marked way as security of access with the landowners is highly desirable and some infrastructure such as signs and stiles would improve safety on the walks.

Results indicate that the demand for the proposed walking scenario was stronger on the lowland site as reflected by a mean WTP of €12.22 compared to €9.08 for the uplands. These results dispel the myth that the public are not willing to pay for improved access

scenarios. On the lowland case study site if the MWTP of €12.22 was aggregated over annual visitor numbers to the Connemara National Park (Kirby, 2006) then total WTP for the scenario could conservatively be estimated to be close to €430,000 per annum. However, these estimates need to be interpreted in the light of the fact that the status quo group were not asked about possible alternatives to a formal trail scenario. Thus a limitation of these empirical results is that they concentrate only on those respondents that had a preference for the way-marked way scenario. However, the analysis indicates that there is significant scope for policy approaches that support the development of non-consumptive recreational land uses and sustainable tourism in marginal areas of the Republic of Ireland.

7 AGRICULTURAL RETURNS TO COMMONAGE

Commonage in the Republic of Ireland has traditionally been used for agricultural activity, mainly livestock grazing. As outlined in Chapter 6 this resource is increasingly attracting the interest of recreational enthusiasts. However, the potential opportunity costs associated with recreation – namely the commercial value of sheep and cattle grazing on commonage remains to be investigated. This chapter examines the agricultural returns from livestock rearing enterprises on commonage land for a sample of farmers in the west of Ireland.

7.1 Introduction

Historically, commonage has been used for extensive livestock grazing. There has been little, if any, research to-date exploring the agricultural returns to commonage even though it accounts for approximately 10% of land in the Republic of Ireland (Bleasdale, 2006) and involves 8.5% of all farms (Central Statistics Office, 2000). Results from the Teagasc[20] National Farm Survey[21] (NFS) indicated returns to livestock farming to be heavily dependant on CAP payments, particularly in marginal areas (Connolly et al., 2004). If these payments were removed then livestock rearing activity in commonage areas may be uneconomic for the majority of farms.

[20] 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.

[21] National Farm Survey (NFS) is collected as part of the Farm Accountancy Data Network of the European Union (Farm Accountancy Data Network, 2005). The aim of this network is to gather accountancy data from farms in all member states of the EU for the determination of incomes and business analysis of agricultural holdings. 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. Within the NFS, the farm system variable is broken down into six different categories as follows: Dairying, Dairying and Other, Cattle rearing, Cattle Other, Mainly Sheep and Tillage Systems.

A considerable international literature (Ostrom, 1990; Stevenson, 1991; Bromley, 1992; Ostrom, 2000) exists on the use of common property resources, yet research to-date in Ireland on this topic has been limited. Access to grazing is technically restricted to shareholders of a commonage. Although shareholders have distinct undivided shares they cannot exclude other co-shareholders, so shareholders can rival each other for the grazing resource.

Commonage in the Republic of Ireland is characterised by the distinct lack of shareholder organisation and essentially no local rules exist for managing the resource. In many instances, due to the un-segregated nature of commonage it is not possible to exclude non-shareholders. Hence, individual decisions to control stock numbers do not give a farmer exclusive rights over the benefits of his / her actions and consequently many commonages suffer from overgrazing (Bleasdale 1995; Bleasdale and Sheehy-Skeffington 1995; Emerson and Gillmor 1999). Regulation was introduced to address overgrazing and with the move to a fully decoupled single farm payment in the Republic of Ireland under the last CAP reform, many commentators now believe that agricultural abandonment is now a more realistic scenario (Carton et al., 2005).

Multifunctionality and the delivery of public goods through agriculture is now at the forefront of the policy agenda in the EU and elsewhere (Hanley et al., 1998b; Fleischer and Tsurz, 2000; Randall, 2002; Hall et al., 2004; Bills and Gross, 2005; Brunstad et al., 2005). This is particularly relevant in areas of low returns to commercial agricultural activity but which have high recreational and environmental values. It would not be economically efficiency from a national economy perspective to continue to have areas exclusively dedicated to agriculture if associated recreational values are substantially higher. Results from chapter 6 indicated that recreational values attaching to

commonage are significant. Farmers have argued that agriculture is more important than recreation. This chapter examines this hypothesis by exploring agricultural values attaching to commonage land.

In this context, the aims of this chapter are to:

1) Explore the importance and commercial values associated with traditional agricultural use of commonage;
2) Evaluate the importance of CAP related payments to profitability of livestock grazing enterprise on commonage;
3) Compare returns to commonage with that from privately owned land and to highlight policy concerns associated with the resource.

7.2 Background

Commonage in general doesn't have well defined boundaries. There is often no division between adjoining commonages so livestock are free to roam between commonages. This can often encompass several kilometres in all directions. Hence, it can be very difficult for shareholders to exclude non-shareholders from commonage use through physical and legal barriers. There is a distinct lack of explicit or well understood rules among shareholders themselves regarding their rights and their duties to one another in regard to resource extraction. This was exasperated upon the Republic of Ireland's entry into the EEC in 1973. The Common Agricultural Policy (CAP) became applicable to the Republic of Ireland and the focus was concentrated on bringing more land into production and promoting intensification in order to stimulate output (Hickie et al., 1999).

Direct non-market payments began in 1975 with the Less Favoured Areas scheme (LFA). Under this scheme headage payments were introduced on mountain / hill farming and farming in certain less-favoured areas (Hickie et al., 1999). Seventy-two per cent of the Republic of Ireland was classified as a LFA. In these areas, farmers were eligible to receive headage payments for cattle, sheep, goats, horses and donkeys. The aim of the scheme was to compensate farmers in order to provide a reasonable level of income in areas with natural disadvantages. In practice, this incentivising increased production in more marginal farming areas such as commonage. Further livestock premia schemes in the form of the ewe and suckler cow premiums were introduced in 1980 (Heritage Council, 1999).

Under the 1992 (McSharry) and 2000 (Agenda 2000) CAP reforms, market supports were significantly reduced and additional direct livestock based payments were introduced to offset a fall in product prices. In operational terms, post Agenda 2000 direct livestock payments included 10 measures overall, six of which were premia measures (suckler cow, special beef for male cattle, ewe, extensification, a slaughter premium and area aid for cereals) supported by FEOGA funding and four for headage payments (suckler cows, male cattle, sheep / goats and mares) paid to farmers in disadvantaged areas and partially funded by structural funds. Higher stocking rates were attributed to direct livestock payments under the CAP and more specifically to headage payments under the LFA (Hickie et al., 1999). Overgrazing in the upland regions in the west of Ireland subsequently became an issue. This was first highlighted by the Salmon Research Agency in 1990 when it reported damage to important game fisheries in the west, due to run-off from eroding peat lands (Hickie et al., 1999). The common pool nature of commonage and the lack of institutional controls made it very vulnerable to such over-exploitation. In the period 1980-1992, sheep numbers in the

Republic of Ireland rose from 3.2 million to 8.9 million. It has been estimated that in counties Galway and Mayo there were 2 million sheep in 1994-5, a quarter of the Irish sheep population (Bleasdale, 1995). The foothills came under increased grazing and animal traffic, pressure mainly deriving from activities associated with changed husbandry practices (Walsh et al., 2001).

The Rural Environment Protection Scheme (REPS) was launched in 1994. It was introduced to encourage farmers to farm in an environmentally friendly manner and to alleviate the negative externalities of farming such as habitat destruction and soil erosion, brought about by intensive agricultural practices encouraged by the price support mechanisms of the CAP (Department of Arts, Heritage, Gaeltacht and the Islands, 1999). Due to the financial incentives provided by REPS it was thought the scheme would be highly attractive to farmers in marginal areas and would go some way towards addressing overgrazing on commonage.

Towards the end of REPS 1 (1999) it was recognised that it in itself was not a sufficiently adequate policy tool for tackling overgrazing on Irish commonages. REPS was initially a voluntary 5 year scheme with no guarantees of renewal which invariably consisted of a reduction in stock numbers, whereas CAP based livestock payments were seen as more guaranteed. Such was the concern with the soil degradation caused by overgrazing, that the EU threatened to stop CAP payments to commonage farmers in the worst affected area, predominantly the west of Ireland. Subsequently, targeted EU legislation was introduced which required all commonage farms, irrespective of whether they were in REPS or not, to farm according to a Commonage Framework Plan (CFP), (Department of Agriculture, Food and Fisheries, 1999). The EU stipulated that

commonage regeneration was to be achieved by the drawing up of a Framework Plan for every commonage.

Since the task of preparing a CFP for every site in the Republic of Ireland would take some time (it was only finished in 2005) a blanket 30% de-stocking on all commonages was introduced until an individual CFP for every commonage had been prepared. Commonage farmers in REPS now had to comply with the overarching compulsory CFP. REPS II was updated to provide a more comprehensive approach to the conservation and regeneration of designated target areas including commonages. The extra conditions required, included avoiding grazing on degraded commonages from November 1 to April 30 each year for the five years of the scheme.

Framework Plans were used to produce individual farm plans. An overall destocking percentage for the commonage is specified if the commonage is overgrazed by domestic animals. Each shareholder in a commonage is obliged to abide by a REPS plan or a farm plan drawn up by Dúchas[22] (if not in REPS) as a condition of eligibility for CAP related payments (livestock premia and compensatory allowance payments). Alternatively the shareholder can withdraw from using commonage entirely (Department of the Environment and Local Government, 2002). The Dúchas Scheme[23] paid compensation on the basis of proven loss of income, while REPS payments are fixed and are based on the area of both target and non-target area farmed.

Direct livestock payments and headage payments have now ceased entirely. Headage payments were abolished in 2001 and the disadvantaged area compensatory allowance scheme (DACAS) was introduced instead and has since been paid on a per hectare

[22] The then heritage agency.
[23] Now called 'The National Parks and Wildlife Service Farm Plan Scheme for Designated Areas and Commonage'

basis. Under the so called Fischler CAP reform (2002-03) the Republic of Ireland has opted for full decoupling. This means that a single farm payment has replaced direct livestock payments since 2005[24]. REPS, the compensatory allowance scheme, Duchas Scheme and livestock premia (base year was 2003 and not de-coupled) are the significant direct payments applicable to commonage farmers in the sample. Payment rates are outlined in Appendix D.

7.3 Methods

The case study area used in this paper was the Connemara region in Co. Galway Ireland. This is a remote district in the west of Ireland. In the spring and summer of 2004, questionnaires were undertaken on a face to face basis with the owner-operators at their residence by trained recorders. Questionnaire delivery took approximately 45 minutes and followed a standard format. The questionnaire was piloted for one month during February 2004 and this aided in the design of the survey. The questionnaire is included in Appendix E. Given the large geographic dispersion associated with commonage farmers, area cluster sampling was used to draw a sample from the population based on secured listings[25]. Townlands or villages with more than 3 commonage farmers were targeted. Geographically, all areas of Connemara were covered. In total 278 usable questionnaires were collected. Each survey provided detailed data on revenue and cost summaries, farm premia, labour and costs of farm operations (particularly in relation to grazing and livestock activities). Information was also collected on whether each farm included dairying, sheep, beef or suckler cow production. Additional information on the movement of livestock was also obtained. The base year for data collected was 2003.

[24] The single farm payment is based on the number of premium claims made in the historical 3 year reference period from 2000-2002.
[25] A listing of commonage farmers was secured from Teagasc advisors and from other researchers working with farmers who claimed under the Duchas scheme.

The following conventions were used in data gathering and in performing the analysis; all inputs even though subsidised were valued at their market price; production was valued at farm gate prices and all prices were expressed in euros. Gross margin[26] analysis was used to determine economic returns to commonage and to private land from agricultural activity. There is a debate in the literature as regards to the most appropriate costs to include when analysing production decisions in the short run (Jones, 2007), as some costs traditionally thought of as fixed costs are relevant and linked to production. However, in this research, gross output and variables cost categories adopted were in line with that used in the Teagasc National Farm Survey, so that direct comparisons could be drawn for farms of a similar soil type and topography. This was done for validity purposes[27]. During the pilot phase an attempt was made to collect fixed costs so that net margins could be derived. However, due to the nature and type of farming in commonage areas, the quality of information provided by respondents on these costs was sparse so the focus was placed instead on deriving gross margins. Stocking rates[28] were the main methodology for apportioning outputs and variable costs between commonage and private land, except where payments such as REPS and DACAS allowances applied specifically to commonage land.

7.4 Results

The average total commonage size was 516.6 hectares and the average commonage shareholding per farm within this was 56.9 hectares as seen in Table 7-1. There was very little inward or outward leasing of commonage. The average amount of private land owned was 22.8 hectares. Commonage farms tend not to be homogenous as seen by the significant standard deviations across Table 7-1. Farm size in the sample varies

[26] Gross margin is derived from total output less variable costs.
[27] Results were compared with the NFS for mainly hill sheep and cattle rearing farms on marginal soils.
[28] Livestock unit equivalents as used in the Teagasc National Farm Survey and grazing time on commonage and private land was used to establish relevant stocking rates.

from 4 hectares to over 800 hectares. Sheep was the main farm enterprise across the sample, averaging 12.7 livestock units[29] per farm followed by cattle at 7.0 livestock units. Only two farms had a dairy enterprise but dairy cows were never grazed on commonage. Other livestock units consisted mainly of horses, but other enterprises were not prevalent across the sample and were not grazed on commonage.

Within the sample, 12% of respondents did not graze livestock on commonage during the base year. About 30% of the sample were exclusively sheep farming, 25% were exclusively cattle farming while 45% had both cattle and sheep enterprises. Sheep was the dominant farm enterprise across 63% of the sample. The weighted average farm stocking rate across the sample was 0.26 livestock units per hectare (LU/Ha) as indicated in Table 7-1. Stocking rates were much higher on private land at 0.48 LU/Ha compared to 0.16 LU/Ha on commonage. Commonage framework regulations obviously influenced stocking rates as 44% of the sample reported having to reduce stocking rates on commonage for reasons of compliance. In total 76.6% of the sample had a higher stocking rate on their private land.

Table 7-1: Average land resource and livestock units per farm

	Mean	**Standard Deviation**
Land Resource (Hectares)		
Total commonage size	516.6	748.8
Commonage share	56.9	87.1
Commonage leased in	0.32	2.9
Commonage leased out	0.1	1.3
Private land owned	22.8	37.6
Private land leased out	0.2	1.8
Private land leased in	1.2	4.8

[29] A dairy cow is taken as the basic grazing livestock unit of 1. All other grazing stock are given equivalents in relation to this animal. The following livestock unit equivalents apply; suckling cow is 0.9, cattle 1-2 years are 0.7. Hill ewes are 0.14.

Total available land	80.9	96.8
Livestock Units	**Mean**	**Standard Deviation**
Dairy	0.1	1.3
Beef	6.9	9.6
Sheep	12.7	14.1
Other	0.3	.95
Total	20.1	16.9
Mean stocking rate	**Private land**	**Commonage land**
Livestock units / hectare	0.48	0.16

(N=278)

Mean total gross output across all sampled farms was €18,690 as shown in Table 7-2. Direct payments were responsible for 74% of gross output across the sample (Livestock premia, REPS, DACAS and Duchas scheme). This is slightly higher than comparable farms in the NFS which averaged 65% (Connolly et al., 2004). However, it should be noted that commonage does attract higher payment under REPS and DACAS as outlined in Appendix D. In total 68% of the sample (189 farms) were in REPS and 24% (64 farms) claimed under the Duchas scheme. Due to the extensive nature of farming in the case study region, livestock premia were responsible for just 23% of gross output. Area based payments (REPS, DACAS) were a much larger component, accounting for 47% of gross output.

Average total variable costs across the sample were €4,090. Feed was by far the most significant cost, accounting for 42% of direct costs. This is broadly in line with results from the NFS which shows feed costs to be 48% of total direct costs (Connolly et al., 2004). Livestock purchases (14%), fertilizer (10%), and veterinary / artificial insemination (12%) were the next most significant costs across the sample. Average farm gross margin across the sample was €14,600. This is similar to results from the NFS for a similar cohort of farms operating on marginal soils (Connolly et al., 2004).

Table 7-2: Analysis of average farm gross margin

Outputs	**Mean (€)**	**% output**
Livestock sales	4,628	25
Other outputs	246	1
Livestock premia	4,328	23
REPS	5,430	29
DACAS	3,353	18
Duchas Scheme	705	4
Total output	*18,690*	*100*
Variable costs	**Mean (€)**	**% cost**
Feed costs	1,715	42
Fertiliser costs	401	10
Crop protection	126	3
Seeds	21	0
Contractors	302	7
Veterinary / artificial insemination	511	13
Livestock purchases	569	14
Casual labour	445	11
Total variable costs	*4,090*	*100*
Farm gross margin	*14,600*	

(N=278)

In absolute terms, gross margin returns were higher on commonage (€8,004) compared to private land (€6,596). However, per hectare returns to private land were 97% higher at €276 compared to €140 for commonage. The average gross margin per hectare across the entire sample was €180 as indicated in Table 7-3. When livestock premia payments are excluded (a decoupled scenario) average farm gross margin falls by 29% to €10,272. Excluding livestock subsidies gross margin returns were higher on private land at €173 per hectare compared to €108 per hectare for commonage. In all 3% of farms in the sample showed a negative gross margin net of livestock premia payments. When all subsidies are removed, gross margin falls to €775 per farm across the sample.

On a per hectare basis, returns to private land declined to €23 and returns to commonage to €4 per hectare. In total, 45% of farms indicated a negative gross margin net of all subsidies.

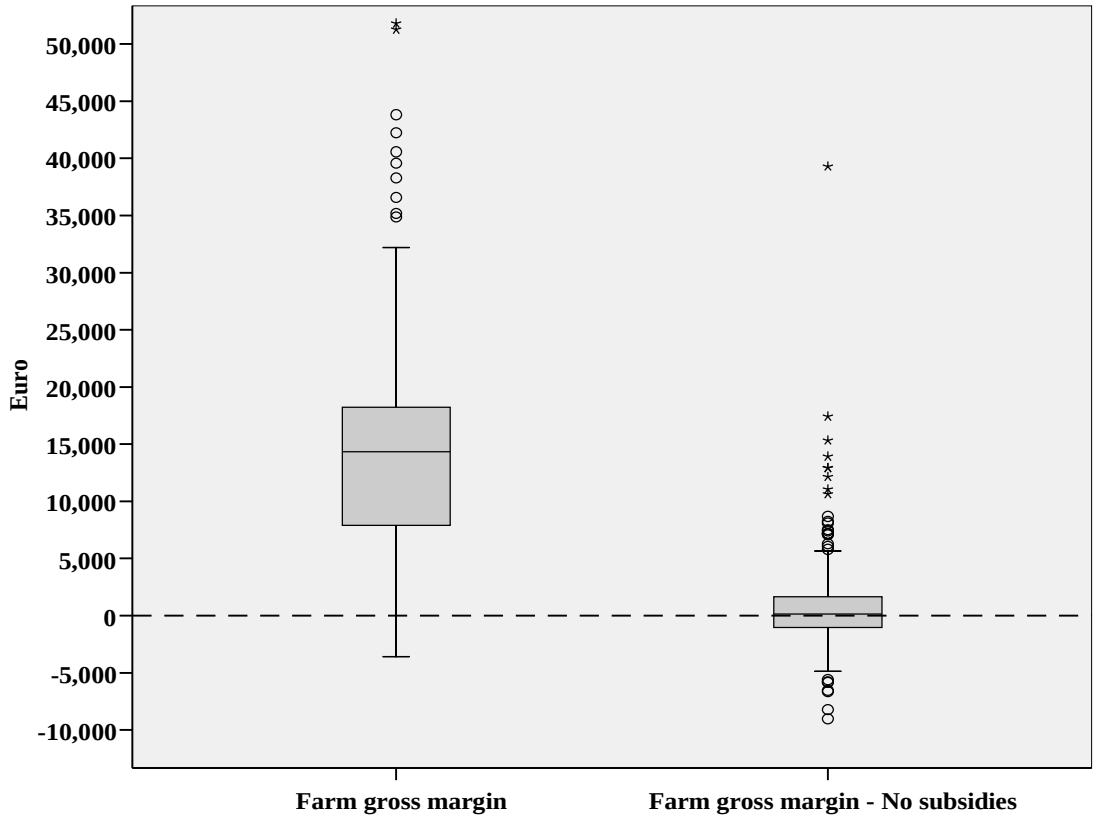
Table 7-3: Analysis of average farm gross margin inclusive and exclusive of subsidies

	Total Farm (€)	**€ / ha farm**	**€ / ha private**	**€ / ha commonage**
Farm gross margin	14,600	180	276	140
Gross margin – no livestock subsides	10,272	127	173	108
Gross margin – no subsidies	775	10	23	4

(N=278)

In terms of the distribution of gross margin returns, over 80% of the farms in the sample have a gross margin under €20,000 as illustrated in Figure 7-1. One farmer in the sample indicated a negative gross margin. In total, 31% of the sample had a gross margin under €10,000, while half the sample had a gross margin between €10,000 and €20,000. Excluding all subsidies a total of 46% of the farms in the sample showed a zero or negative gross margin.

Figure 7-1: Distribution of farm gross margin inclusive and exclusive of subsidies



Results indicate that agricultural returns across the sample were highly dependent on subsidies. In total, 94% of farm gross margin is attributable to direct payments, with a 2 to 1 ratio between area based and direct livestock subsidies as shown in Table 7-4. In all, 65% of gross margin on commonage and 54% on private land was attributable to area based subsidies. Due to higher stocking rates on private land livestock based subsidies were more important accounting for 43% of gross margin compared to 28% on commonage.

Table 7-4: Analysis of average farm direct payments as a proportion of gross margin

Direct Payments	Total farm		Private land		Commonage land	
	€/Ha	% gross margin	€/Ha	% gross margin	€/Ha	% gross margin
Livestock subsidies	62	34	118	43	39	28
Area subsidies	108	60	149	54	91	65
Total	170	94	267	97	130	93

(N=278)

The results presented here were restricted to gross margin analysis and do not factor in overhead costs. NFS data for farms of a similar type indicate average overhead costs of approximately €70 per hectare. Accepting this as a proxy for our sample, 19% of farms would show a negative overall net margin in a decoupled scenario and 86% of farms would show a negative net margin exclusive of all subsidies.

7.5 Conclusions and discussion

One of the main aims of the chapter was to explore the importance of commercial values associated with traditional agricultural activity on commonage. Results indicate that although farmers had twice as much land in commonage, stocking rates were three times higher on private land than they were on commonage land.

Additional aims of the study were to evaluate the importance of CAP related payments to the profitability of livestock grazing enterprises on commonage and to compare returns to commonage with that from privately owned land. Average gross margin returns were 97% higher on private land at €276 per hectare compared to €140 per

hectare for commonage land. If premia payments directly linked to livestock production are excluded, a decoupled scenario, average farm gross margin falls to €173 per hectare for private land and to €108 per hectare for commonage. In all, 3% of farms in the sample showed a negative gross margin net of livestock payments. This is lower than might be expected but is due to the extensive nature of farming in the region driven by prevailing topography. When all subsidies (livestock and area based payments) are removed, returns to private land fall to €23 and to €4 per hectare for commonage. In total 45% of farms indicate a negative gross margin net of subsidies. CAP based payments are hence highly significant for positive gross margin returns. In total 94% of gross margin is attributable to CAP payments; area based payments were twice as important as livestock subsidies.

The results presented here were restricted to gross margin analysis and do not factor in overhead costs. Using Teagasc NFS overhead cost data as a proxy, then 19% of farms would show a negative overall net margin in a decoupled scenario and 86% of farms would show a negative net margin exclusive of all subsidies. It is accepted that production henceforth will be more market driven and this could precipitate a decline or discontinuation of production in marginal areas such as commonage (Matthews, 2002). Results presented here concur with this outlook.

Much of the Republic of Ireland's commonage is located in remoter coastal, upland and mountainous regions and has considerable recreational appeal. Based on results presented here the opportunity cost to traditional agricultural activity of opening up the commonage resource for recreational activity would be low. Indeed there is little to suggest the two activities could not operate in tandem in any event. Comparing results

from this chapter with recreational values derived in Chapter 6 refutes the hypothesis that agriculture has greater value than recreation on commonage land.

8 LANDOWNERS ATTITUDES TO IMPROVED PUBLIC ACCESS PROVISION

This chapter explores the attitudes of landowners across the Republic of Ireland to the wider provision of public access for recreational walking, using a multinomial logit model and investigates the level of compensation required to improve the supply of this public good. Firstly a short synopsis of the factors that influence the supply of public access provision is provided. Then the methodology for data collection and analysis is outlined. Following this, the models used in the analysis are discussed. Results are then presented and the chapter finishes with conclusions and a discussion.

8.1 Introduction

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 have 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. Unfortunately this has restricted our understanding of the issues that affect the behaviour and attitudes of landowners with respect to public access provision. These 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) examined the experience of Scottish landowners with public 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. These studies were not however concerned with measuring willingness to accept payments to provide access. This chapter aims to add to this body of work by exploring the determinants of willingness to accept payments for public access provision based on empirical evidence from the Republic of Ireland.

In this context the aims of this chapter 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, that is required to ensure landowners provide public access for recreational use.

8.2 Supply of public access

Policymakers in the Republic of Ireland recognise there is an undersupply of public access to the Irish countryside (O'Cuiv, 2004). As discussed in Chapter 2 the responsible Ministry (Community, Rural and Gaeltacht Affairs) set up the countryside recreational council "Comhairle Na Tuaithe" in 2004. Various proposals have been discussed in this forum, including legislation that would enable (1) a freedom to roam across the countryside (Keep Ireland Open, 2005), (2) freedom to roam on land 150 metres above sea level (favoured by the Irish Labour Party (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) proposes 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 per 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).

Two problems have emerged. 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 willingness 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 opportunity cost to agriculture, implementation cost of walkways across prevailing landscapes and values placed on privacy. Farmers that are located in very productive agricultural areas (on land that have 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 are likely to influence an individual's decision about access. One might anticipate therefore that

farmers would have very different expectations in terms of the level of compensation payments they would be required in order to allow the general public to walk on their land.

Public policy criteria demands 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 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.

There is 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 because the state has not been able to reach an agreement with the farming community over the issue of compensation. This represents an unsatisfactory situation and serves as no basis for an economically sustainable tourist industry based on recreational walking. This chapter aims to fill this gap in the literature.

Several factors are likely to influence the level of compensation expected by farmers to facilitate public access for walking. 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). The main costs of public access to landowners is firstly considered.

As discussed in Chapter 2, under Irish case law, occupiers of land have a duty of care to those entering their property, including trespassers. Farmers have consistently voiced concerns about potential liability should an individual crossing their land suffer an injury and take a legal action. Landowners have concerns that greater public access will lead to adverse outcomes such as: greater costs arising from higher insurance premiums; threats to livelihoods via being sued by the public, threats to crops and livestock; increased workloads that lead to no meaningful return; loss of privacy and reduced incomes from the sale of land that has been devalued as a result of public rights of way running through it (Cullis and Jones, 1992; Millward 1996; Mulder et al., 2006).

The cost of provision may be an additional constraint on the supply of public access. Landowners incur costs when converting land from one use to another; for example developing or maintaining a footpath or trail. If this cost is not recoverable either via a subsidy or by charging subsequent users of the access, then there is no incentive to provide the good. Denman (1978) found the most positive attitudes to publicly funded investment in access related facilities were found on holdings which experienced already high levels of contact with recreational users. This was thought to reflect either direct enjoyment from contact with the public or a wish to achieve more satisfactory reconciliation of access with other landowning activities.

Crabtree and Chalmers (1994) found that 85% of farms and 51% of large estates in Scotland indicated suffering no or very limited costs as a result of the impacts of public access. However, a small minority were acknowledged to face substantial costs.

Denman (1978) also noted that nuisance and damage from public access was very slight on two-thirds of the farms and estates surveyed. However, in a minority of cases, the level of additional costs or lost income resulting from access was very substantial. Crabtree and Chalmers (1994) noted that location appears to be paramount in cost determination. They report that proximity of a farm to a major urban centre is important. They also suggest that farms located in scenically attractive areas tend to be a focus for tourists and day trippers and finally that specific recreational facilities in close proximity to a farm holding tend to attract the public and may lead to collateral costs. Millward (1996) found that there is a strong sense amongst British farmers that increased public access will have an adverse rather than neutral or positive effect on their businesses. There is genuine concern that greater public access will lead to adverse outcomes such as: greater costs arising from higher insurance premiums, threats to livelihoods via being sued by the public, threats to crops and livestock, increased workloads that lead to no meaningful return such as risk management and reduced incomes from the sale of land that has been devalued as a result of public rights of way running through it.

Secondly, price influences a business' prospects of profitability. It's assumed that an individual engages in a business enterprise to maximise profits. The fact that private landowners seldom self-designate or volunteer public access (or a right of way) is a clear indication that increasing the supply of public access does not contribute to landowners' profitability and is therefore not a priority for landowners. Unless landowners are in a position to exclude recreation users and thereby charge for entry, then provision of public access for recreation has public good characteristics (non rival and non excludable) the benefits of which are not captured by landowners through a market mechanism. Public goods by their very nature can provide a benefit to many but

in the absence of incentives, regulation or government intervention will normally be under supplied.

The supply of countryside access is related to the rewards a landowner is able to derive from allowing public access to their lands. These rewards can either be intangible, such as a sense of community involvement or altruism, or more tangible rewards such as remuneration through schemes specifically designed to encourage landowners to increase public access to the countryside. When a price mechanism is introduced for increasing supply such as the Countryside Stewardship Scheme (in England) or its replacement, Environmental Stewardship, then some suppliers may be tempted to enter the market and thereby increase the supply of public access areas.

The Countryside Stewardship Scheme has had limited impact on the provision of new permissive footpaths, access bridleways and open access land (Mulder et al., 2006). One of the reasons is that the remuneration in the scheme is based on an 'income foregone' basis rather than an economic rent for the service provided. Using 'income foregone' means that the landowner is no better off in financial terms for increasing access which in turn is little incentive to promote public access. The revenue lost for say the reduction of animal or crop production is replaced by the subsidy for increased public access. In economic terms, when using 'income foregone' as a basis for compensating landowners financially, the marginal utility of increasing access in return for sacrificing some other form of production is zero. Therefore, the only incentive for landowners to increase access is if their own tastes and preferences are predisposed towards access rather than other areas of their business.

In contrast to the Countryside Stewardship Scheme, the Woodland Welcome scheme piloted in the South East of England by the Forestry Commission offered remuneration based on an economic rent for the services rather than income foregone, as well as practical help with signage (i.e. a defraying of costs that would otherwise have had to be met by landowners). Woodland Welcome proved to be so successful that the scheme received applications for nearly four times the amount of available funds. This suggests that market forces can be brought to bear on increasing the supply of public access to private land (Mulder et al., 2006).

Third, financial incentives in the form of agri-environment schemes have been used to compensate landowners for costs associated with improving public access. Landowners have in the past strongly resisted any compulsory measures which would interfere with property rights (Dempsey, 2007). Any improved public access scenario is most likely to be achieved on a voluntary basis and not by legislation or compulsion (O'Cuiv, 2007). Voluntary measures coupled to financial incentives and management agreements are an ideology accepted by landowners. Crabtree and Chalmers (1994) noted that the inability of landowners to derive income from public access can lead to an inefficiency on little utilized sites. This can lead to market failure and an under-supply of access. Hence, a public intervention to enhance provision may be appropriate.

There is a considerable literature indicating that farmers' production decisions have been driven by CAP subsidy signals (Walford, 2002; Topp and Mitchell, 2003; Breen et al., 2005; Berger et al., 2006). Agri-environment schemes funded under the second CAP Pillar were developed to achieve wider non-production environmental goals of the CAP. Large numbers of farmers have been recruited into these schemes. In 2007 a total of 59,198 farmers were involved in the Rural Environment Protection Scheme

(REPS) in the Republic of Ireland (Department of Agriculture, Food and Fisheries, 2007). This represents approximately 45% of farmers in the Republic of Ireland. This may have created an expectation among farmers of payment for the provision of public goods. There is some evidence that farmers are more willing to volunteer participation in optional agri-environmental schemes, where they feel they have greater control over its effects on farming operations than they do under compulsory measures (Walford, 2002).

Finally, farmer preferences play an important role in influencing public access provision. Simply because incentives are available to landowners does not necessarily mean that they will be induced to increase public access to their land. It is widely documented that land managers regularly encountered problems with public access such as dogs not being kept under control, vandalism, theft, arson, litter, gates being left open, 'prying', and the compromising of conservation work. Thus in order to increase access, landowners need to be favourably disposed towards increasing access in principle, sufficient to outweigh these potential problems (NFO System Three, 2001). Millward (1996) also noted that various studies in the US have investigated the reasons why landowners prohibit access to their land. Farmers stress the problems of property damage and livestock protection. Legal liability for injury to trespassers is also indicated as a serious concern for all property owners. These findings are replicated by Mulder et al., (2006) who found the majority (57%) of the farmers in their study stated that they would be unwilling to increase public access to their land, even if there was sufficient financial incentives. This suggests that access is not solely a financial or price issue. An analysis of the main problems that farmers in the study encountered showed that litter (84%), unauthorized access / trespass (84%) and dogs not being under control (78%) were reported by a large majority of farmers. These types of problems tend to be

caused by a lack of consideration and lack of awareness of how to behave in the countryside, rather than as acts of malice. The same argument is probably true of a set of similar problems which occurred less frequently such as gates being blocked by vehicles (57%), gates being left open (62%) and invasion of privacy (40%). There are some incidents reported by farmers that can only be explained as acts of malice such as the illegal dumping of waste (80%), vandalism (62%), people starting fires (28%) and unauthorized camping (14%).

If landowners are ideologically opposed, in the first instance, provision of financial incentives does not necessarily mean that landowners will be induced to increase public access to their land. The provision of public access also has the potential to reduce the 'private' benefits derived from land ownership. In some instances, negative externalities from public use have led to attempts either to reduce access or generate compensating income flows from access related activities (Crabtree and Chalmers, 1994). However, it must be acknowledged that some landowners may be willing to take part in schemes that improve public access on a free of charge non-profit basis for altruistic motives. Landowners may be driven by philanthropic reasons such as a sense of community involvement and regeneration of the local economy. A number of informal walks exist across the Republic of Ireland on this basis.

8.3 Data and survey design

The main data source employed in this analysis is a National Farm Survey (NFS) conducted by Teagasc in 2006. The NFS is collected annually as part of the Farm Accountancy Data Network requirements of the European Union (Farm Accountancy Data Network, 2005). The purpose of this study 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[30]. 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 construct a matched balanced dataset. The final dataset used in this analysis was 975 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.

[30] 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.

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. The full questionnaire is contained in Appendix F.

Those respondents who indicated that their participation was dependant on financial compensation were then presented with a contingent valuation willingness to accept question (WTA) to establish the minimum amount a landowner would be prepared to accept (€) per metre of walkway crossing their land to ensure participation. As highlighted in Chapter 2, 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 (Mountaineering Council of Ireland, 2003). 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. 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 WTA bids of 10 cent, 25 cent, 50 cent, €1, and €3 were chosen, assigned equally and randomly among landowners seeking compensation. 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 a bid to minimize strategic biases, 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.

8.4 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[31] $(j = 0)$, participation free of charge[32] $(j = 1)$ and participation only

[31] Landowners who are not willing to participate in a public access walking scheme are hereafter defined as "non providers".
[32] Landowners who are willing to take up a public access scheme for free are defined as "free providers".

with compensation[33] ($j = 2$). Assume that the utility that landowner i derives from the chosen alternative j (denoted U_{ij}) can be written as (Long, 1997):

$$U_{ij} = X_i \beta_j + \varepsilon_{ij} \qquad (17)$$

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

$$\Pr_{ij} = P(j \mid \mathrm{J}) = \Pr(X_i \beta_j + \varepsilon_{ij} > X_i \beta_k + \varepsilon_{ik}) \; \forall k \in \mathrm{J}, \; j \neq k \qquad (18)$$

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

$$\Pr(y_i = j) = \frac{\exp(\mathrm{x}_i \beta_j)}{1 + \Sigma_j^J \exp(\mathrm{x}_i \beta_j)} \qquad (19)$$

The probabilities shown in equation (12) 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

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

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 willingness to accept 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 (Boyle, 2003):

$$v(P^0,\ Q^0,\ y^0 + E\ ) = v(P^1,\ Q^1,\ y^1) \qquad (20)$$

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 research, 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 $P_i = \frac{1}{1+\exp\left(-\mathrm{x}_i\beta\right)}$ where $\mathrm{x}_i\beta$ is a linear combination of explanatory variables.

8.5 Results

Firstly this section conveys some summary statistics on the extent to which farmers maybe willing to participate in a possible scheme. Results of the models are then reported. Table 8-1 shows three groups: non participation; participate free of charge and participate with compensation. 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 8-1: Descriptive statistics for variables in multinomial logit model

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

Variable	Non-participation (Mean)	Free of charge (Mean)	Compensation (Mean)	Variable description
Forestry Premia	€167	€99	€328	Forestry premia received per thousand in euros
Single farm payment	€16,188	€15,120	€17,948	Family farm income received per thousand euros

In all 475 (49%) landowners in the sample indicated a willingness to participate in the proposed scenario (Table 8-1). 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 8-1). 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 south west or west regions indicated compensation would be required as shown by Table 8-1. 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 8-1). Descriptive statistics in Table 8-1 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-providers were associated with higher average number of household members 65 years of age or over at 0.56 compared to 0.46 for the remaining categories. As highlighted in Table 8-1 average revenue drawn down under 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 significantly higher than for those not willing to participate and those willing to engage for free. Table 8-1 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).

8.5.1 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 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 8-1. Farm size might be expected to influence participation, however, stepwise regression indicates that this variable in itself was not a significant indicator of participation in the multinomial logit model. Indeed farm size was found to be highly collinear with other variables in the equation including REPS payment, forest premium and single farm payment. For these reasons farm size was not included in the model.

The multinomial logit model requires that one potential outcome is 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 8-2 are those landowners who were not willing to participate, hence all coefficients should be interpreted as relative to this base category of non-participation. The base category for column (3) is landowners seeking compensation and is a comparison between this and those willing to

engage for free. A Wald test was performed to test whether the parameters of the model are all equal to zero. The Wald $\chi 2$ statistic shows that, taken jointly, the coefficients for this model specification are significant at the 1% level.

Table 8-2: Results of multinomial logit model examining landowner participation in a scheme for improved public access for walking.

	Free of Charge[34] **(1)**	**Compensation[35]** **(2)**	**Free of Charge[36]** **(3)**
Experience with walkers	1.23	0.74	0.49
	(5.65)***	(3.57)***	(2.40)**
Insurance	-0.48	-0.56	0.08
	(-2.50)**	(-3.47)***	(0.4)
No. household < 5 years	-0.88	0.09	-0.972
	(-3.48)***	(0.47)	(-3.34)***
No. household 65 years +	-0.41	-0.32	-0.09
	(-2.81)***	(-2.15)**	(-0.49)
Sheep farms on marginal soils	0.31	1.42	-1.108
	(0.48)	(2.23)**	(-1.68)*
West & South-West regions	-0.71	0.19	-0.904
	(2.93)***	(0.9)	(-3.41)***
Midland Region	-0.77	-0.64	-0.127
	(-2.02)**	(-2.00)**	(-0.32)
REPS Payments	-0.02	0.03	-0.055
	(-0.74)	(1.27)	(-1.76)*
Forestry Premium	-0.07	0.11	-0.181
	(-0.86)	(2.16)**	(-2.38)**
Single farm payment	0.00	0.03	-0.027
	(0.21)	(3.23)***	(-2.50)**
Constant	-1.47	-1.59	0.123
	(-4.55)***	(-4.40)***	(0.33)

[34] Base = Non participation
[35] Base = Non participation
[36] Base = Compensation

Log pseudolikelihood (-909.93)	
Wald chi2 (91.18)	
Pseudo R2 (0.09)	

(N=975) Z values 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 those willing to participate for free (5% level) and those desiring compensation (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 was seen to influence participation rates. Landowners willing to engage for free and for compensation had significantly (5% level) less household members in the 65 years and over age bracket. 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. Potential exposure of young children to members of the general public in close proximity to the farm household appears to have a negative impact on the decision to participate in public access provision.

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[37] 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.

As indicated in Table 8-2 landowners willing to participate for free were less likely to be located in the west[38] and south west[39] regions compared to landowners not willing to participate (1% level) or those seeking compensation (1% level). Outside of Dublin the west and south west regions are the strongest tourism generating regions in the Republic of Ireland (Failte Ireland, 2007b). 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.

[37] Midlands region includes the following counties: Laois, Longford, Offaly and Westmeath.
[38] West region includes the following counties: Galway, Mayo and Roscommon.
[39] South-west region includes the following counties: Cork and Kerry.

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. Those seeking compensation were significantly more likely to be drawing down greater revenues under a forestry scheme compared to the other two categories (5% level) and also significantly more likely to be drawing down more under 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).

8.5.2 Willingness to accept 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. The analysis therefore is restricted to the 274 landowners (28% of the sample) who indicated that compensation would be necessary to ensure their participation in the proposed scheme. These were the only respondents in the sample that were presented with a willingness to accept 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%) answered in the affirmative at the offered bid price and 119 landowners (43%) rejected the offer. In all 110 landowners (92%) 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 80.4% of those presented with the €1 metre bid as illustrates by Table 8-3. A total of 9 respondents (8%) were classed as protest bids and were excluded from the analysis as respondents indicate they did not agree with the payment method offered.

Table 8-3: Farmers response by WTA amount offered

Bid Amount	**Yes to bid**		**No to bid**	
(€ / hectare)	**No.**	**%**	**No.**	**%**
.10	10	17.2%	48	82.8%
.25	22	40%	33	60%
.50	32	53.3%	28	46.7%
1.00	41	80.4%	10	9.6%
3.00	50	100%	0	0%

Results of the WTA regression analysis are presented in Table 8-4. 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 shareholding. Finally, as before, the variable insurance indicates farm insurance costs per thousand euros. A Wald test was performed to test whether the parameters of the model are all equal to zero. The Wald

$\chi 2$ statistic shows that, taken jointly, the coefficients for this model specification are significant at the 1% level.

Table 8-4: Willingness to accept logistic regression results

Variable	Coefficient	Marginal effects
Price	4.13	0.38
	(5.85)***	
West region	1.06	0.08†
	(2.02)**	
In-commonage	2.75	0.12†
	(2.20)**	
Insurance	-0.52	-0.05
	(-1.96)**	
Constant	-1.87	
	(-4.89)***	
Log pseudolikelihood = -105.097		
Wald chi2(4) = 43.71		
Pseudo R2 = 0.41		

(N=265) Z values 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.**

Table 8-4 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 indicate 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 8-4 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 positive response to the WTA question by 0.38.

The mean willingness to accept is a function of estimated regression co-efficients and independent variable means as outlined in equation (16) and reproduced below. The mean willingness to accept is a function of estimated regression co-efficients and independent variable means.

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

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 8-4.

8.6 Conclusions and discussion

Two of the main aims of this chapter 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. Findings from this chapter refute the hypothesis that all farmers are not willing to engage with the supply of public access as three clear groups emerged from this analysis: non providers, providers for free 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 are 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

the Republic of 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.

Willing providers 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 payments, including the single farm payment, REPS and forestry schemes. Results suggest heterogeneity within the cohort as it appears to be comprised of two main sub-groups namely sheep farmers on marginal soils and landowners drawing down significant CAP subsidy payments. Sheep farmers on marginal soils located in the west or south west regions are generally associated with lower farm incomes. A number of landowners within the group of 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.

A third goal of this chapter was to investigate the level of compensation required to ensure that landowners provide public access for recreational use in agricultural landscapes. Findings suggest that it would probably not be cost effective for the

countryside council to meet the IFA demands on 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. 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 €920,000, an estimate that is significantly below that being proposed by the IFA.

This is not to say that landowners should not be compensated. There is some evidence from this thesis to indicate that schemes designed to enhance recreational access in the Republic of Ireland would fulfil the requirements of a cost/benefit test. Results from Chapter 6 indicate a mean 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[40] produces consumer surplus estimates of about €430,000 per annum. In Chapter 6 landowners along the route were not questioned about payments for access. However, if we were to assume that WTA estimates derived from this chapter were applicable to the lowland commonage walk in Chapter 6 then the price required by landowners in order to provide the 11 kilometre trail would be approximately €5,060 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 cost effective any possible scheme to enhance access should focus attention on addressing concerns held by the free providers and the willing providers. A total of

[40] Visitor numbers to the Connemara National Park.

21% of the sample indicated that they were willing to provide access at no charge. This intimates that a significant quantity of land resources across the Republic of Ireland could be made available for recreational walking purposes at no significant cost post establishment. 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 would do much to 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 alleviate concerns held by these two groups.

Willing providers (those seeking compensation) include sheep farmers on marginal soils located in the west or south west regions. This group tends to be on lower incomes and has lower opportunity costs to agriculture compared to the other two groups. Willing providers are also more likely to be located in areas that are very reliant on tourism due to being located in areas of outstanding natural beauty. Arguably, there is a good case to be made for including willing providers as key stakeholders in any future initiatives designed to enhance public access.

Logistically it will 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

catchments. 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”.

9 CONCLUSIONS AND RECOMMENDATIONS

This chapter summarises and highlights the most important findings of the thesis. Limitations of the study and potential future avenues of research are also discussed. Finally I draw conclusions and make recommendations based on the results of the research.

9.1 Important findings of the thesis

At the outset this thesis set out three main goals. The first goal was to evaluate public preferences for walking, specifically, do consumers want improved access to the Irish countryside for walking and do they place an economic value on the provision of this good. There were six objectives that related to this goal. The first was to review formal and informal legislation and rules governing the access situation in the Republic of Ireland and contrast this with other European and developed countries. A second was to study the current laws on public liability and the current opportunities for public access to the Irish countryside. It is clear from an examination of the literature in Chapter 2 that access to the Irish countryside for walking is not as readily available as in other countries. Across Europe and other developed nations public access to the countryside is generally provided through either rights of access or through a network of access areas. Public access to the countryside in the Republic of Ireland is largely confined to permissive access through public or private lands. Formal and informal public access is undeveloped and opportunities for recreational walking are limited. This is potentially a serious constraint on the development of recreation and nature based tourism in the Republic of Ireland.

Two further objectives relate to both the first and second goals and involved an assessment of non-market valuation techniques for investigating recreational supply and demand for walking. After a review of the non-market valuation literature in Chapters 4 and 5, a CVM stated preference instrument template familiar to respondents was considered the best option to establish basic levels of consumer (and producer) demand (and supply) for improved public access provisions due to its public good characteristics. CVM was chosen as revealed preference techniques are not well suited to investigate the demand for public goods that will be provided in the future and choice experiments might have introduced too high a degree of complexity to the public access debate at this stage.

The two final objectives (related to this goal) are to determine which trail attributes and facilities are important to respondents / establish whether respondents are willing-to-pay for an access agreement and trail facilities and to establish if respondents have a preference for lowland or upland commonage walks. Results from Chapter 6 indicated that over two-third of consumers surveyed indicated a preference for an improved / more formalised public access scenario as proposed in this study. A significant 54% on the lowlands and 44% on the uplands expressed a positive WTP for scenario implementation. Mean willingness to pay for way-marked way implementation (with a formal access agreement) was estimated at €12.22 for the lowland walk compared to €9.08 for the upland site. Aggregation on the lowland site over the relevant population suggested consumer surplus estimates in the order of €430,000 per annum for the proposed scenario. This result rejects the hypothesis that the general public are not willing to pay for improved access scenarios to the Irish countryside.

Findings from Chapter 6 indicated that walkers are not a homogenous group and results indicate that different cohorts have different demands and look for different things in a walking scenario. Consumers preferring the status quo to remain across both sites placed a significantly greater level of importance on nature based attributes and were strongly averse to a formal trail scenario with associated infrastructure. De-briefing questions suggested that the majority of this group preferred to walk in a more natural undeveloped environment. Those indicating a positive WTP for the more formal way-marked way scenario systematically placed a much higher level of importance on infrastructural attributes. However, an access agreement with landowners and measures to control soil erosion were the highest ranked attributes across all groups. Policy initiatives that deal with improving recreational access to farmland for walking must address both these issues.

The second goal of this thesis was to evaluate landowner preferences for enhanced access provision. Specifically, to examine if landowners are willing to engage with initiatives that promote improved public access for walking and if they want to be paid for such provision. There were two specific objectives related to this goal. The first was to consider the conditions necessary for landowners to provide public access for recreational walking on their land and to explore the characteristics and profile of landowners who are willing to provide public access for recreational walking. The second was to investigate the level of compensation, if any, that is required to ensure landowners provide public access for recreational use.

Results from Chapter 8 indicated that 49% of the farmers would engage with a proposed scheme to improve public access for walking either on a free of charge or compensation basis. This refutes the hypothesis that all landowners are not willing to

supply improved public access to the countryside for walking and is a significant finding of the thesis.

A total of 21% of landowners were willing to engage on a non profit free of charge basis. Landowners willing to engage for free were generally associated with higher levels of experience and 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 suggests that a significant quantity of land resources across the Republic of Ireland could be made available for recreational walking purposes at no significant cost. Additionally, 28% of landowners indicated that financial compensation would be required to ensure improved public access provision. Landowners seeking compensation had intermediate levels of experience with walkers, were more likely to be sheep farmers operating on marginal soils, were likely to be located in the west or south west regions, were drawing down higher levels of subsidies under CAP based schemes including the single farm payment, REPS and forestry schemes

Mean willingness to accept for the cohort of landowners seeking compensation was found to be €0.46 per metre of walkway. Based on this figure landowner (IFA) pricing proposals of €1,000 per holding and €5 per metre of walkway (at a cost to the exchequer of €6 million) would be inappropriate and would lead to significant levels of producer surplus and inefficiency in the supply of the public good.

The third goal of this thesis was to evaluate the economic value of traditional farm enterprises on marginal land of high recreational demand. There were three specific objectives related to this goal. The first was to provide an introduction and definition of the commonage resource in the Republic of Ireland. The commonage resource was

chosen as a case study for this research as it is associated with marginal land in remote areas with high recreational demand for walking.

The second objective was to explore the potential opportunity costs associated with recreation on commonage – namely the commercial value of sheep and cattle grazing and the third objective was to evaluate the importance of subsidy payments to the profitability of livestock grazing enterprises on commonage. Results from Chapter 7 indicated that stocking rates are three times higher on privately owned land compared to shared commonage and that the opportunity cost to traditional agricultural activity of opening up the commonage resource for recreational activity would be low. Over 80% of the farms in the sample had a gross margin under €20,000. In total, 96% of gross margin was found to be attributable to CAP payments; with area based payments twice as important as direct livestock subsidies. When all CAP subsidies are removed, gross margin returns were estimated to be to €23 per hectare for private land and €4 per hectare for commonage. Findings from this chapter indicate that returns to agriculture are low and heavily dependent on subsidies. This result rejects the hypothesis that agricultural values are significant and a constraint to the promotion of recreation in areas of high demand. Hence, it would not be economically efficient to continue to have areas exclusively dedicated to agriculture when associated recreational values are substantially higher as was shown by results in Chapter 6.

9.2 Limitations of the results

In Chapter 6 a numbers of issues arose with the consumer WTP analysis. A two-thirds majority across the lowland (68.6%) and upland (65.6%) sites favoured the proposed way-marked way scenario over the status quo. It must however be acknowledged that there is no evidence that those favouring the status quo will not pay for highly rated

features such as an access agreement with landowners or measures to control erosion. This is because they were never asked this. They are however strongly averse to a formal trail scenario with associated infrastructure. Clearly there are individuals who favour a less formal walking experience. This research is unable to clarify the precise demands of these respondents as the status quo group were not asked about possible alternatives to a formal trail scenario. Further research is required to establish the recreational demands of the status group. This would help clarify whether the status quo group is simply not willing to pay or, alternatively, whether they are willing to pay for access in a more remote setting which provides wilderness, adventure and challenge and is free of congestion from other recreationalists. Indeed, following the work of Clinch and Murphy (2001) this group may well be WTP to avoid the implementation of the prescribed scenario. The status quo group were not asked if they are WTP to avoid scenario implementation. This may lead to an overestimate of consumer surplus in this research. However, given that a significant proportion of the sample are infrequent overseas visitors, it is unlikely that this group would be willing to pay to avoid the scenario implementation. Indeed, focus group analysis indicated that those favouring the status quo on the lowland site indicated that the proposed scenario could potentially damage the natural environment and the development of a way marked way could lead to overcrowding on the walk. Focus group analysis of the upland site indicated that those favouring the status quo were concerned that formalisation into a way marked way may attract inexperienced and unprepared individuals to undertake the walk and this has safety implications. Additionally, it is more of a challenge without map boards and signage. However, it should be noted that those who preferred the status quo across both sites indicated that on the whole they did not have a strong objection to the walk being formalised into a way-marked way as security of access with the landowners is

highly desirable and some infrastructure such as signs and stiles would improve safety on the walks.

It must also be acknowledged that due to the nature of hill walking and the issues related to the variability of the Irish weather, it was only possible to collect a sample of 242 on the upland commonage case study site. Hence, the analysis on the upland site in Chapter 6 is restricted to a limited sample.

Due to issues of data protection it was not feasible to secure a full listing of commonage farmers in the Republic of Ireland. Hence, the results of Chapter 7 were not strictly generated by a random sample of the population but were based on an area based cluster sample from counties Galway and Mayo. A listing of commonage farmers in these counties was secured from Teagasc advisors and from researchers dealing with farmers claiming under the Duchas destocking scheme. However, a total of 278 commonage farmers were surveyed, which represents 2.4% of commonage farmers in the Republic of Ireland.

Results in Chapter 7 examining return to commonage from agricultural activity focused on gross margin analysis. During the pilot phase it was attempted to collect fixed costs so that net margins could be derived. However, due to the nature and type of farming in commonage areas, the quality of information provided by respondents on these costs was sparse, hence analysis was restricted to gross margins.

The analysis in Chapter 8 identified that 21% of landowners were willing to provide improved public access for recreational walking on a free of charge basis. There is some evidence in the literature that this group maybe acting out of altruist motives.

However, it must be acknowledged that a question was not included in the NFS survey to capture the exact reasons why landowners would engage with this activity for free.

Finally, consumer estimates derived in Chapter 6 relate to walking across commonage landscapes while producer estimates in Chapter 8 relate to provision of improved public access to farmland in general across the Republic of Ireland. For direct policy analysis purposes it would have been desirable to have producer estimates directly for commonage land.

9.3 Future research

As discussed in the previous section those favouring the status quo on the case study sites in Chapter 6 may have a positive WTP for a scenario with highly rated features such as an access agreement with landowners and measures to control erosion. Indeed, respondents who expressed a positive WTP for the proposed scenario in this study may have disliked some element of the scenario but indicated a positive response based on the overall package on offer. Further research to identify the exact menu of walking attributes desired by the various different groups of walkers would be of considerable value. Given the heterogeneity found in this sample a choice experiment framework may now be appropriate to establish consumer preferences and WTP for various walk types and walking related attributes. Results from this thesis indicate the way-marked way template with access agreement and a full trail structure is not preferred by all. In a choice experiment individuals are given a hypothetical setting and asked to choose their preferred alternative among several alternatives in a choice set. They are usually asked to perform a sequence of such choices. Each alternative is described by a number of attributes or characteristics. A monetary value is included as one of the attributes, along with other attributes of importance, when describing the profile of the alternatives

presented. Thus, when individuals make their choice, they implicitly make trade-offs between the level of the attributes in the different alternatives presented in a choice set. Therefore, it is possible to examine how preference for an access agreement or a formal trail can influence consumer WTP for a specific walk. This can be applied to a whole range of walking related attributes including preferences for facilities on a walk or the length and difficulty of a walk. This would provide additional information for recreational trail planning and greater detail on the demands of different consumer groups. It should also be noted that results from WTP analysis in Chapter 6 were based on an on-site survey of two case study walks. A significant quantity of the sample were overseas tourists visiting Ireland. It would be beneficial to undertake WTP analysis exclusively of Irish residents for improved public access provision including an analysis of different walk types. This could be achieved through a CVM or choice experiment survey administered to a representative sample of the Irish population. Using Geography Information Systems (GIS) based software it could then be possible to spatially project where demand for walking trails is highest across the Republic of Ireland. In addition, the results can be used to see if spatially, the individuals who are willing to pay for walking trails match the locations where farmers are willing to provide improved access on a free of charge and on a payment basis.

Using an amalgamation of GIS and combinatorial optimisation (micro simulation) it may be possible to link results from the NFS based landowner public access participation model in Chapter 8 to statistically match the Irish Census of Agriculture (or Census of population) to indicate spatially where these different groups of landowners are clustered based on farm and socio-demographic characteristics. Statistically matching these datasets could also produce regional and national total WTA estimates, for those landowners seeking compensation. The main advantage of

the spatial micro simulation approach for environmental benefit value aggregation is that it allows one to account for the heterogeneity in the target population. The Spatial Microsimulation model for the Irish Local Economy (SMILE) is a spatial dynamic microsimulation which has been developed by researchers in the Teagasc Rural Economy Research Centre (Hynes et al., 2008a; Hynes et al., 2008b) and could be used in this instance.

Finally, results from Chapter 8 indicate that 21% of farmers are willing to engage with improved public access provision on a free of charge basis under certain conditions. It would be beneficial to follow up with a qualitative analysis of the motivations behind this decision.

9.4 Final comments and recommendations

The mission statement for this thesis was to study factors that influence the supply and demand of public access to farmland for walking in the Republic of Ireland. This thesis addressed a comprehensive range of questions on these issues.

There is a considerable body of evidence to suggest that walking activity and related expenditure can generate significant revenue at both the national and local levels. Walking was by far the biggest tourism activity engaged in by overseas visitors in 2006 with 355,000 overseas individuals visiting the Republic of Ireland engaged in some form of walking activity (Failte Ireland, 2007a). This is nearly twice as many as engaged in golf (169,000), the next most popular outdoor activity. Total expenditure by overseas visitors engaging in walking / hiking activities in the Republic of Ireland was estimated at €228 in 2006 (Failte Ireland, 2007a). This equates to average expenditure of €681 per overseas visitor. In 2007, a total of 7.9 million trips were taken within the

Republic of Ireland by Irish residents, with an associated expenditure of €1.6 billion. A total of 21% of all domestic holidaymakers indicated engaging in hiking or walking activities while on holiday (Failte Ireland, 2008). Fitzpatricks (2005) estimated the direct economic expenditure by Irish trail users on items such as food, drink, accommodation and trail equipment was found to be €307 million annually.

It's evident that the demand for recreational walking has increased significantly in the Republic of Ireland and this trend is expected to continue. It is also clear that access to the Irish countryside for walking is not as readily available as in other countries. This is potentially a serious constraint on the development of recreation and nature based tourism in the Republic of Ireland as our main competitors (across Europe) generally have no such constraints. Special interest activity tourism is recognised and targeted as a key development area by the Irish Tourism authorities (Tourism Policy Review Group, 2003).

The Republic of Ireland's best and most highly regarded walks are located in mostly rural regions of low population densities where local economies have been in stagnation due to the decline in agriculture. It is clear that the Republic of Ireland is not maximising its potential in the recreational walking market. A right to roam or everyman's right of access does not exist and designated recreation areas are scarce. Informal solutions such as the national way-marked ways offer good opportunities for distance walkers but do not traverse some of our best walking landscapes. Walks that frequently appear in guide books and websites are not covered by a formal landowner access agreement and could be deemed off limits by landowners with relevant property rights. In a modern economy this is no basis for promotion and development of a mainstream multimillion euro tourism sector.

On the demand side results from this research indicate that there is a significant support for more formalised walking scenarios in the Irish countryside than exists at present. Approximately two-thirds of those surveyed across the two case study sites indicated a preference for a more formal scenario. While there is heterogeneity in the sample it's clear there is significant demand for trails with full infrastructure, particularly on the lowland. Walks of this nature are likely to attract significant volume of casual walkers and would require appropriate accompanying infrastructure such as car parking. This poses challenges for policymakers trying to develop these walks. Results also suggest that there is demand for walks with limited infrastructure. There is a significant cohort that do not favour walking on a trail and would prefer if infrastructure were restricted to an access agreement with the landowners and measures to control erosion. This is particularly relevant in the uplands. It is acknowledged that more research is required to establish more exact demands of the various groups; however the trends outlined above are clearly evident from this research.

Results from this thesis indicate that consumers are WTP significant sums for improved access to the Irish countryside and dispels the view that the general public will not pay for improved access scenarios. As a starting point policymakers should 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 walks 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, for policy intervention, as there is established consumer demand for these walks and the relevant landowners have some

experience of dealing with walkers. This represents a good starting point in the process of improving public access to the Irish countryside for walking.

On the supply side it's apparent that wider policy initiatives that deal with improving public access on a national scale will have to have the support of landowners. Policymakers could potentially tackle the issue by means of legislation (Owens et al., 2007). The legislative approach is not favoured by the mainstream political establishment (O'Cuiv, 2007). Landowners are vociferously opposed to any solution that involved diminution of property rights (Dempsey, 2007). It is accepted by policymakers that any solution will be on a voluntary and consensus basis.

There is however a number of conditions necessary for landowners to agree to a nationwide rollout of improved public access provision for recreational walking. Results indicate that over half of farmers nationally are not willing to engage. This is a legitimate position and much be respected. Clearly this group has little interest in access provision and would prefer instead to be left alone to continue the business of farming. However, on a positive note 49% of landowners indicated a willingness to supply improved public access for walking. This finding firmly rejects the hypothesis that all landowners are ideologically opposed to this activity and provides a significant scope for developing public access opportunities across the Republic of Ireland.

A major focus on this thesis was whether financial compensation is necessary for landowners to supply improved public access. Significantly just over one-fifth of landowners will engage for free. This suggests that a significant quantity for land could be opened up for recreational walking at no significant cost to the exchequer. Community level organisations with landowners' representation such as Leader or local

partnership groups are in a strong position to identify landowners' located in areas of high recreational demand who may be willing to engage for free. This essentially represents a bottom up approach to trail development. Government driven rural tourism incentives, such as grants for tourist accommodation and facilities development, would also provide an inducement for landowners to engage. These are two avenues policymakers should pursue to provide incentives for the provision of improved public access for walking across the Republic of Ireland.

However, the logistics of finding landowners willing to engage for free in a coherent spatial pattern may be a constraint as trail implementation would require spatially contiguous willing landowners. Schemes designed to enhance public access cover extensive areas. The geographical nature and scale of a potential scheme to enhance access, requires cooperation, or at the very least coordination, by multiple landowners. Results indicate that landowners seeking compensation (28%) may be in a strong position to deliver this public good. This cohort has a greater propensity to be sheep farmers on marginal soils located in the two regions with significant walking landscapes and potential, namely the west and south west. The thesis established that farmers in commonage areas in the west of Ireland have low opportunity costs to agriculture from recreation. This is no doubt applicable to sheep farmers on marginal land. As the results of the National Farm Survey 2007 indicated, this group has the second lowest average farm income across all farm system at €10,682 in 2007 (Connolly, 2008). Any scheme that does not recruit this cohort (sheep farmers on marginal soils) would constrain access to areas where consumer demand is highest.

Public access initiatives must be targeted to deliver in areas of most demand and should be targeted at farmland that produces satisfactory welfare benefits to users. Hence, as a

starting point policymakers should target existing informal walks with established recreational demand located in marginal areas. Any compensation based scheme would have to be universally applied to all landowners willing to provide public access. This thesis estimates mean willingness to accept at €0.46 per metre for those landowners seeking compensation. Landowners have proposed (through their main organisation) creating 2,000km of linear and looped walks throughout the Republic of Ireland at a price of €1,000 per landowner and €5 per metre of walkway. Using €0.46 per metre as a proxy for price then 2,000km of linear and looped walks could be created across the Republic of Ireland at a total cost of €920,000. Results from WTP analysis for one lowland case study walk of 11 kilometres in this thesis suggested aggregated consumer surplus estimates of close to €430,000. The cost benefit implications of this simple comparison are clearly evident.

It is a recommendation of this thesis that policymaker should expand and tailor the existing walkways management pilot scheme to have a broader national application beyond existing way-marked ways which particular emphasis on well regarded informal walks across the Republic of Ireland. Alternatively, Irish policymakers could potentially link a public access scheme to wider initiatives currently being debated in relation to future reforms of the CAP. With the CAP health check proposing to transfer funds from the guaranteed budget of Pillar 1 to rural development measures in Pillar 2 through increased modulation, delivery of public goods through agriculture is now at the forefront of the policy agenda. The EU Commission have tabled proposals under the CAP Health Check review for compulsory modulation, to increase from the current 5% to 13% in 2012 (Waite and O'Donovan, 2008). Exchequer support linked to the production of public goods continues therefore to be eminently more agreeable to policymakers and taxpayers than the situation that existed theretofore. 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, not the catchment. 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.

It is evident from findings in this thesis that a number of operational issues need to be addressed before landowner will engage with public access provision either on a free or charge or compensation basis. These issues focus around public liability, cost of development and interference with agricultural activity. Any enhanced public access scenario should strongly indemnify landowners against public liability concerns. It is a recommendation of this thesis that legislators enact "an enter at your own risk" or 'volenti non fit injura' situation. This would dissipate liability concerns and negate this constraint. Failing this, full indemnification by a publicly funded insurance policy similar to what applies on the way-marked ways is a minimum requirement.

Interference with agricultural activity is a less straight forward issue to address. A countryside code has been agreed by the relevant stakeholders in Comhairle na Tuaithe, but implementation is ubiquitous and hence difficult to guarantee. Information campaigns targeted at potential consumers could potentially lead to greater compliance with this code.

If landowners incur costs from a change in land use by developing or maintaining a footpath or trail then these costs must be recoverable. Depending on the level of

infrastructure this could be significant. If this cost is not recoverable either via a subsidy or by charging subsequent users for access, then there is no incentive to provide the good. Capital costs incurred in walkway development must be fully recoverable by landowners.

Public policy dictates that a policy intervention should seek to maximise social surplus and benefits should outweigh costs in any such intervention. Results from this thesis suggest it would be economically efficient to develop improved public access scenarios to the Irish countryside as demand is considerable and has significant associated economic values. It is apparent that these values far outweigh opportunity cost to agriculture and costs of provision. Hence, policymakers have a definitive economic rationale for promoting the development of such scenarios.

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APPENDIX A

APPENDIX B

APPENDIX C

WILLINGNESS TO PAY QUESTIONNAIRE

National University of Ireland, Galway
Ollscoil na hÉireann, Gaillimh

COMMONAGE WALKING QUESTIONNAIRE

We are from the Department of Economics at the National University of Ireland, Galway and are conducting a survey on walking in County Galway. The aim of the survey is to find out what the public think of different walks which cross commonage land that might be developed and promoted in this area.

The information you provide will help us plan walking routes for your future needs and the needs of future generations. You will be initially asked some general questions about your visit to the area and the things that make a walk attractive for you.

You will then be asked about a walking route that could be developed in this region. Finally you will be asked some questions about your own background. The information collected will be used strictly for the purposes of this research and will remain strictly anonymous. There are no wrong or right answers so please express what you honestly feel and believe.

The survey will last approximately 10 minutes and thanks for your cooperation.

Interviewer name (Block CAPITALS) _____

Walk Name: _____

Date: 2005. ___ month __ day

Start: ___hour ___ minute

End: ___ hour ___ minute

SECTION A – WALKING IN THE AREA

Questions in this section are about your visit to this area.

Q1. Was walking the main reason you visited this location?

Yes 1 No 0

Q2. Is this your first visit to this site?

Yes 1 **(Skip to Q.4)** No 0

Q3. Which of the following best describes how frequently you visit this site?

Every couple of years	1
Once or twice a year	2
4-8 times a year	3
Once a month	4
Once a week	5
More than once a week	6
Other_____	7

Q4. How did you get here?

Own car	1
Hired Transport	2
Public Transport	3
Bicycle	4
On foot	5
Other_____	6

Q5. How many miles (or kilometres) did you travel today to access this site?

_____ Miles or
_____Kilometres

Q6. Are you from?

Ireland	1
Outside Ireland - Specify (_____)	2

(If Overseas, skip to Q. 9)

Q7. What is your main town of permanent residence?

_____

Q8. Do you live permanently in this part of <u>County Galway</u>?

Yes 1 **(If Yes, skip to Q. 13)** No 0

Q.9 Is this your first visit to this area?

Yes 1 **(If Yes, skip to Q. 11)** No 0

Q10. How frequently have you been coming to this area?

Every couple of years	1
Once or twice a year	2
4-8 times a year	3
Once a month	4
Once a week	5
More than once a week	6
Other_____	7

Q11. Excluding Galway city, how many nights in total <u>will</u> you spend in this rural part of County Galway?

_____ Nights **(If 0, skip to Q.13)**

Q12. What types of accommodation will you use while in the area?

	Yes	**No**	**Nights**
Hotels	1	0	_____
Guest House / B & B	1	0	_____
Caravan / Camping	1	0	_____
Self-catering	1	0	_____
Friends / Relatives	1	0	_____
Hostel	1	0	_____
Other specify(_____)	1	0	_____
None		99	

Q13. Approximately, how much <u>will</u> you personally spend on food and drink today?

€_____

SECTION B - WALKING PREFERENCES

Questions in this section are about your WALKING PREFERENCES IN GENERAL

Q14. In general how often do you undertake a walk (anywhere) of the following duration?

	Often	Occasionally	Never
A walk of 6 hours or greater	1	2	3
A walk of between 3-6 hours	1	2	3
A walk of between 2-3 hours	1	2	3
A walk of less than or about 1 hour	1	2	3

Q15. In general how often do you undertake a walk (anywhere) of the following height intensity?

	Often	Occasionally	Never
A walk of over 600 metres / 1,968 feet	1	2	3
A walk of over 400 metres / 1,312 feet	1	2	3
A walk of over 200 metres / 656 feet	1	2	3

Q16. How would you rate walking compared to your other recreational activities (such as mountain biking, swimming, golfing etc)?

It is my most important outdoor activity	1
It is my second most important outdoor activity	2
It is my third most important outdoor activity	3
It is only one of my many outdoor activities	4

Q17. Are you a member of a walking club or organisation?

Yes 1 No 0 **(If No, skip to Q.19)**

Q18. For how many years have you been a member of a walking club or organisation?

_____ Years

Q19. In the past 12 months how often, if ever, have you used a way-marked way?

Never	1
On occasion	2
Frequently	3

Q20. In the past 12 months how many days have you walked?

_____ Days

Q21. In the past 12 months how many trips away from your home have you made specifically to go Walking?

_____ Trips

Q22. When you go walking would you normally take any of the following (please tick more than 1 item if applicable)?

	Yes	**No**
Map	1	0
Route Guide Book / Brochure	1	0
Compass	1	0

Q23. In the past 12 months have you purchased any of the following in order to go walking? If yes, please indicate approximate expenditure

	Yes	**No**	**Appox. €**
Footwear	1	0	_____
Clothing	1	0	_____
Other equipment	1	0	_____

Q24. When you undertake a walk is it normally?

Alone	1
With another person	2
In a group	3
Other_____	4

Q.25 When you walk is it normally for any of the following reasons?

	Yes	No
Health	1	0
Recreation	1	0
Social	1	0
Other (_____)	1	0

SECTION C - WALKING ATTRIBUTE DEMANDS

Questions in this section are about WALKING ATTRIBUTES IN GENERAL –You will be given a list of features associated with walking and asked how important they are to you.

On a scale of 1 to 5 (1*denotes MOST important and 5*denotes Unimportant). How important are the presence of the following elements for your enjoyment of a walk in the countryside?

	MOST important	**VERY important**	**SOME-WHAT important**	**NEITHER important nor Unimportant**	**UNIMPORTANT**	**Don't know**
26. That a walk includes a mountain or hill is:	1	2	3	4	5	99
27. That a walk includes a flat area or valley is:	1	2	3	4	5	99
28. That a walk includes forest is:	1	2	3	4	5	99
29. That a walk includes a lake or coast is:	1	2	3	4	5	99
30. That a walk includes an information point with a route description is:	1	2	3	4	5	99
31. That a walk includes a route map/guide or leaflet provided is:	1	2	3	4	5	99
32. That a walk is a established clearly defined trail is:	1	2	3	4	5	99
33. That a walk has signposting is:	1	2	3	4	5	99
34. That a walk is in the form of a loop is:	1	2	3	4	5	99
35. That a walk has stiles and footbridges if required is:	1	2	3	4	5	99
36. That a walk has measurers to control erosion if required is:	1	2	3	4	5	99

	MOST important	VERY important	SOME-WHAT important	Neither important nor Unimportant	UNIMPORTANT	Don't know
37. That a walk has car parking is:	1	2	3	4	5	99
38. That a walk has access clearly agreed with landowners is:	1	2	3	4	5	99
39. That a walk has wild animals is:	1	2	3	4	5	99
40. That a walk has birds is:	1	2	3	4	5	99
41. That a walk has livestock (cattle / sheep / horses) is:	1	2	3	4	5	99
42. That a walk has wild flowers:	1	2	3	4	5	99
43. That a walk has historical / archaeological features is:	1	2	3	4	5	99

SECTION D – HYPOTHETICAL SCENARIO (See A3 Show card)

The National Park to Lettergesh walk is located between Connemara National Park and Lettergesh beach.

The walk crosses commonage land which is OWNED by local landowners. Although this route has been used by walkers for many years and is fairly well documented it is NOT covered by AN OFFICIAL ACCESS AGREEMENT and the trail is NOT maintained. Access to the route in informal and DEPENDENT on the goodwill of the landowners. This could be withdrawn at any time thereby legally preventing walkers from using the route.

NUI, Galway is investigating the feasibility of formally developing this route as an official WAY-MARKED WAY. As a way-marked way the National Park to Lettergesh route would be covered by an OFFICIAL ACCESS AGREEMENT made between the Irish Sports Council, the local authority and the landowners concerned. This agreement would provide public access to walk for a period of FIVE years. The agreement would also ensure that the walk is maintained and that sign posts, stiles and map boards would be provided.

There are two options:

Option 1: **Maintain the status quo with informal ACCESS and no trail maintenance on the National Park to Lettergesh walk.**

Option 2: **Develop the National Park to Lettergesh walk as an official WAY-MARKED WAY with trail maintenance FOR FIVE years.**

Refer to the showcards and explain the features of each site.

Q.44 Which option do you prefer?

OPTION 1. I prefer the National Park to Lettergesh walk with informal ACCESS and no trail maintenance agreement:

Yes **1** **No** **0**

Because:……

(IF YES TO OPTION 1, SKIP TO Q.48)

OPTION 2. I prefer the National Park to Lettergesh walk as an official WAY-MARKED WAY with trail maintenance for FIVE years

Yes **1** **No** **0**

Because:……

This official WAY-MARKED WAY and trail maintenance for FIVE years for the National Park to Lettergesh walk will impose additional costs on the Irish Sports Council, local authority and local landowners compared to the status quo of informal access.

This cost would have to be paid for by the general public through increased **annual taxation** so it is important to find out how much if anything YOU would be willing to pay to have the National Park to Lettergesh walk developed as an official WAY-MARKED WAY instead of the informal agreement.

Before answering the following questions please bear in mind your total annual budget, the amount you can allocate to recreational pursuits and finally how much of this you can afford to spend on the National Park to Lettergesh walk

Remember that developing the National Park to Lettergesh walk as an official WAY-MARKED WAY does NOT mean that it becomes a permanent right of way as the agreement only lasts for FIVE years. Remember also that this agreement just covers the National Park to Lettergesh walk and it does NOT include other walks in the Connemara National Park OR other walks in Ireland.

Also bear in mind that paying too much for this trail may mean that you cannot afford other worthwhile recreation schemes – for example there are other trails that might be developed.

Q45. Are you willing to pay something toward the extra cost in order to have the National Park to Lettergesh walk developed and maintained as an official WAY-MARKED WAY for five years rather than the status quo of informal access?

Yes 1 **No 0**

Q.46 Are you willing to pay €2 in INCREASED ANNUAL TAXATION to ensure that the National Park to Lettergesh walk is established and maintained as a way-marked way for a period of FIVE years?

Yes 1 (If Yes, skip to Q.48) **No 0**

Q47. If you answered No to Question 46, which one of the following best describes why you were not be willing to pay the stated amount:

The price is too much	1
I do not like this type of walk	2
I pay too much tax already	3
I can't afford to pay	4
The government should pay from existing revenues	5
I do not walk enough to justify it	6
Other (briefly explain)_____	7

SECTION E – ABOUT YOU

Q48. Are you?

Male	1	Female	2

Q49. Do you have any children?

Yes	1	No	0

Q50. How old are you?

Under 20 years	1
20 to 29 years	2
30 to 39 years	3
40 to 49 years	4
50 years or over	5

Q51. Which of the following best describes your level of education?

Post-graduate Degree	1
Graduate (Bachelors)	2
Certificate / Diploma	3
On the job training	4
Secondary level	5
Primary level	6
No formal education	7
Other (_____)	8

Q.52 What is your present occupation?

_____

Q.53 What is <u>your</u> annual income from <u>all</u> sources, <u>before</u> tax?

Euro		**Sterling**	**Dollars**
Less than €10,000	**1**	(<£7,000)	(<$12,000)
€10,001 – €20,000	**2**	(£7,001-£14,000)	($12,001 -$24,000)
€20,001 – €30,000	**3**	(£14,001-£21,000)	($24,001-$36,000)
€30,001 – €40,000	**4**	(£21,001-£28,000)	($36,001-$48,000)
€40,001 – €50,000	**5**	(£28,000-£35,000)	($48,001-$60,000)
€50,001 - €60,000	**6**	(£35,001-£42,000)	($60,000-$72,000)
€60,001 - €70,000	**7**	(£42,001-£49,000)	($72,001-84,000)
€70,001 - €80,000	**8**	(£49,001-£56,000)	($84,001-$96,000)
Greater than €80,000	**9**	(>£56,000)	(>$96,000)

Q54. Do you think this survey is biased in any way?

Yes 1 No 0 **(Skip to Q.58)**

Q.55 If yes, please specify

Q.56 Do you have any other comments regarding the survey?

APPENDIX D

Premia payment application to commonage

Disadvantaged Area Compensatory Allowance Scheme Payment Rates

Less Severely Handicapped Lowland and Coastal Areas with Specific Handicaps:
€76.18 per forage hectare to a maximum of 45 hectares
More Severely Handicapped Lowland:
€88.88 per forage hectare to a maximum of 45 hectares
Mountain Type Grazings in Less or More Severely Handicapped Areas:
€101.58 per hectare on first 10 forage hectares
€88.88 per hectare on remaining forage hectares up to 45 hectares

Rural Environment Protection Scheme

In REPS 2 (1999/2000) farmers who participated in the scheme were compensated on a per hectare basis (€151per ha) up to a maximum of 40 hectares. Those in targeted areas of high environmental sensitivity received higher payments, €242 per hectare for the first 40 hectares, €24 per hectare for the each additional hectare up to 80 hectares and €18 per hectare for each additional hectare up to 120 hectares. Commonage was designated a target area. This extra compensation was in recognition of the fact that their compliance with higher environmental standards is compulsory.

Duchas Scheme:

If de-stocking is required, payments will be made on the loss of calculated gross margin per ewe de-stocked, using Teagasc data for the year in question. In 2006 this was €27 for each de-stocked ewe. The maximum stocking rate for which compensation is allowable is 5 ewes/hectare. However, in most other cases the amount payable will be calculated for the plan, as a combination of the income foregone and/or the costs of carrying out the plan. Costs can be demonstrated by receipts, but standard rates may be used. Teagasc Management Data, Department of Agriculture Farm Investment Scheme, and commercial farm relief fees may also be used. Payment for losses will also require receipts or similar proof.

Livestock Premia	Basic rates
EU Suckler Cow Premium	€224.15
EU Special Beef Premium	€150 (9 / 21 months)

Bull Premium	€210
Extensification Premium	€80 / €40 (Stocking rate dependant)
Slaughter Premium	€80
Ewe Premium	€21 / €29

(Department of Agriculture, Food and Rural Development, 2000)

APPENDIX E

COMMONAGE FARMER SURVEY

Background

With the Fischler CAP reform agreement due to be implemented in Ireland from 2005 onward, the structure of agriculture in Ireland will no doubt undergo significant change. In this context the Environmental and Natural Resource Economics Research Unit, Economics Department, National University of Ireland, Galway in association with **Teagasc** are undertaking research to look at the whole area of farming on commonage land. The study intends to capture shareholder opinion of different aspects of commonage including management, regulation and agricultural systems. This information will ultimately go towards informing policy makers of shareholder views on the future of agriculture on commonage.

To achieve this goal it is intended to undertake a substantial survey of commonage farmers in the West of Ireland. For the research to be valid your co-operation is essential and would be appreciated. You can be assured that any information given by respondents will be treated in the strictest confidence and will not be used by any other agency or for any other purpose.

We would therefore be most grateful if you could spare the time to answer the questions below.

Number: _____

Enumerator: _____

Commonage name: .....

Date: 2004. ____ month _____ day

Start: ____hour _____minute
End: ____hour _____ minute

A. GENERAL INFORMATION

Q1. How many years have you been farming in this area? ☐

Q2. Are you an active commonage shareholder, i.e do you actually farm the land for grazing or cropping? Yes 1 No 0

B. FARM AND COMMONAGE CHARACTERISTICS

Q3. Could you please tell us the appropriate area in hectares covered by the following land types as described below? (1 hectare = 2.4 acres)

Land Type	Rough grazing	Improved Grazing	Peat Cutting	Crops	Forest	Home garden	TOTAL
Commonage (Total size)**							
Commonage (your share)*							
Commonage (rented in)							
Commonage (leased out)							
Private land (non commonage)							
Rented in (non commonage)							
Lease out (non commonage)							

* this denotes the size of **your share** in the commonage you are part of (in hectares)
** this specifies the TOTAL AREA occupied by the commonage you are part of (in hectares)

C. COMMONAGE PRODUCTION & DIVERSITY

Q4. Did you apply any manure, fertiliser and / or chemicals to the commonage in the last year ?

Yes 1 No 0

IF NO PLEASE GO STRAIGHT TO Q.6

Q5. How much manure, fertiliser and / or chemicals did you apply ?

Fertiliser (F) (kg) Type Quantity	Manure(tonnes)	Herbicide(H)/Insecticide(I)/Fungicide(U) (No. applications)

Q6. In a given year how do your livestock alternate between your commonage and private land in terms of numbers and duration?

	Number of Head			
Livestock type	Total Numbers	Breed	Period on Commonage (months)	Period on Private Land (months)
Dairy Enterprise				
Dairy Cows				
Replacement heifers (1-2 yrs)				
Replacement heifers (0-1 yrs)				
Breeding Bull				
Suckler / Beef Enterprise:				
Suckler Cows				
Replacement Heifers **1-2 years**				
Other Heifers - non replacements **1-2 years**				
Heifers **0-1 years**				
Other Heifers **2 years +** (Non-suckler cows)				
Breeding Bull				
Male **0-1 Years**				

Male **1-2 Years**				
Male **2 Years +** (excl. breeding bull)				
Sheep Enterprise:	Total Numbers	Breed	Period on Commonage (months)	Period on Private Land (months)
Ewes				
Hoggets				
Rams				
Lambs				
Other Enterprises				
Horses				
Goats				
Deer				
Pig				
Chickens				
Ducks				
Geese				
Other				

Q7. Could you tell us the number of premia applied for in each of the following categories in 2003 ?

Livestock Type	**Premia received in 2003**	**Premia Leased out**	**Premia Leased in**
Suckler Cow Premia			
Special Beef Premia Males 9months old			
Special Beef Premia Males 21months old			
Bull Premia			
Ewe Premia			

Q8. Did you qualify for the extensification premia in 2003?

Yes 1 No 0

IF, NO GO STRAIGHT TO Q. 10

Q9. If yes, which payment level did you qualify for?

€80/head (1.4 livestock units/hectare) ❑
€40/head (1.8 livestock units/hectare) ❑

Q 10. What payment did you receive under the Disadvantaged area payment scheme in 2003?

Q11. Could you please estimate your total farm costs for the following categories in the last year ?

Expenditure Category	Total
Vet & Medicine	
Artificial insemination / bull costs	
Ram Costs (for sheep farmers)	

Concentrate Feed costs	Cattle Sheep
Purchased hay, silage or straw	Cattle Sheep
Seed (Reseeding)	
Artificial Fertiliser, manure, compost	
Lime	
Petrol, Diesel and oil	
Herbicide, fungicide, insecticide (Spraying costs)	
Contractors	
Manual labour (including sheep shearing)	
Machinery maintenance and supplies	
Building maintenance and supplies	
Fencing costs	
Drainage	
Other	

D. COMMONAGE CONSUMPTION AND SALES

Q.12 In the last year how many livestock did you sell and purchase in the following categories?

Stock Category	Number of head Sold	Average Price/head	Place of Sale	Purchases (number)	Average Purchase Price
	Sales			**Purchases**	
Dairy Enterprise					
Dairy Cows					
Replacement Heifers (1-2 years)					
Male (0-1 years)					
Female (0-1 years)					
Suckler / Beef Enterprise:					
Suckler Cows					
Breeding Bull					
Males (0-1yrs)					
Female (0-1 yrs)					
Males (1-2 yrs)					
Female (1-2 yrs)					
Males (2yrs+)					
Female (2yrs+) (Non-suckler cow)					
Sheep Enterprise:					
Ewes					
Hoggets					
Rams					
Lambs Ewe					
Lambs Weather					
Other Enterprises:					
Horses					

Stock Category	Number of head Sold	Average Price/head	Place of Sale	Purchases (number)	Average Purchase Price
Goats					
Other					
Other					
Other					

Q. 13. Did you receive any slaughter premia on cattle sold in 2003?Yes 1 No 0

IF, NO GO STRAIGHT TO Q. 15

Q. 14. If yes, on how many animals did you qualify?

Q. 15. Did you keep and animals for your own consumption in 2003? Yes 1 No 0

IF, NO GO STRAIGHT TO Q. 17

Q. 16 If, Yes please describe

Q. 17 Did you gift any livestock to a family member or a third party in 2003?

Yes 1 No 0

IF, NO GO STRAIGHT TO Q. 19

Q. 18 If, Yes please describe

E. COMMONAGE GRAZINGS

Q19. How many shares **and** shareholders are there in the commonage?

Q20. How many people actively use these shares?

Q21. Do you know if shareholders exchange or let commonage shares to one another?

Yes 1 No 0

IF NO GO STRAIGHT TO Q. 23

Q22. If YES, please describe how this works and give reasons for this.

Q23. Do any of the following activities take place on the commonage ?

Tourism Activities:
- Golf ❑
- Camping ❑
- Caravanning ❑

Leisure / recreation Activities:
- Hill-walking / Mountaineering ❑
- Fishing ❑
- Shooting ❑
- Field Sports (_____) ❑
- Horse related activities (hunting, etc) ❑
- Other (_____) ❑

Conservation
- Is it a Designated Area (e.g.- SAC/NHA/SPA) ❑

Peat Cutting ❑

F. THE COMMONAGE GRAZINGS COMMITTEE

Q24. Do you know if there is a grazings committee or a farming group (such as a *tenant band* or *collop* system) which jointly manages any part of your commonage.

Yes 1 No 0

IF NO, PLEASE GO STRAIGHT TO Q.32

Q25. Are you a member of this grazings group or committee?

Yes 1 No 0

Q26. If YES can you briefly explain why you joined the group?

Q27. What % of total shareholders are part of the grazings commitee?

76 – 100% of shareholders	4
51 – 75% of shareholders	3
26 – 50% of shareholders	2
up to 25% of shareholders	1

Q28. How was the committee formed?

All those willing	❑
Those selected by election	❑
All active shareholders	❑
Hereditary	❑
Other (please specify_____)	❑

Q29. Is the structure and composition of the committee representative of the shareholders?

Yes 1 No 0

IF YES, GO STRAIGHT TO Q.31

Q30. If NO can you briefly explain?

Q31. How often does the committee meet on average, either formally or informally?

Please Circle:

More than once a month	4
Every 1-3 months	3
Every 4-6 months	2
Once a year	1

G. THE COMMONAGE GRAZINGS CARETAKER

Q32. Do you know if there is a designated grazings caretaker responsible for your commonage ?

Yes 1 No 0

If NO, PLEASE GO STRAIGHT TO Q. 37

Q33. Are you the grazings caretaker?

Yes 1 No 0

Q34. Do you know whether the grazings caretaker receives any additional remuneration (or other benefits, for example a larger share of commonage rights) for this role?

Yes 1 No 0

If NO, PLEASE GO STRAIGHT TO Q. 36

Q35. If YES, can you briefly outline ?

Q36. Could you please briefly explain the responsibilities of the grazings caretaker?

AFTER Q.36 GO STRAIGHT TO QUESTION 38

Q37. Do you feel it would be beneficial to create an official post of grazings caretaker to oversee tasks of commonage grazings regulation and maintenance?

Yes 1 No 0

H. JOINT MANAGEMENT & COOPERATION BY SHAREHOLDERS

Q 38. Do you act alone or engage with other shareholders in any of the following activities on the commonage ?

	Alone	With other
- Gathering of Stock	❑	❑
- Stock Management (Dosing etc)	❑	❑
- Erection of Fencing (incl gates)	❑	❑
- Drainage	❑	❑
- Stonewall erection or upkeep	❑	❑
- Peat cutting	❑	❑
- Other (_____)	❑	❑

IF NO CO-OPERATION GO STRAIGHT TO Q.41

Q39. How often do you co-operate on such commonage related activities? Please circle:

Every day	5
Every few weeks	4
Every few months	3
Once or twice a year	2
Every two years	1

Q40. How is the cost of the aforementioned maintenance or improvement measures distributed? Please tick one box for the most appropriate option:

By all (100%) shareholders collectively	5
By over 75% of shareholders	4
By between 25 – 75% of shareholders	3
All less than 25% of shareholders	2
By a single shareholder (individually)	1

I. COSTS IMPOSED BY OTHER SHAREHOLDERS

Q41. In your opinion does commonage provide a fair means of distributing grazing benefits among shareholders?

Yes 1 No 0

Q42. Based on your own experience, historical practices on the commonage have resulted in which of the following outcomes regarding the land and environment?

Complete destruction ❑
Severe damage and erosion (up to 50%) ❑
Some damage and erosion (up to 25%) ❑
Perfect maintenance ❑
Other (please specify……) ❑

Q43. Please explain the causes of damage and erosion if any

Q44. Have shareholders from your commonage or from adjoining commonages imposed any costs on you in any of the following ways?

	Shareholders Own Commonage		Shareholders Adjoining Commonages	
Overgrazing the commonage	Yes 1	No 0	Yes 1	No 0
Structural Damage (land erosion, fencing etc)	Yes 1	No 0	Yes 1	No 0
Damage due to Peat Cutting	Yes 1	No 0	Yes 1	No 0
Other (specify_____)	Yes 1	No 0	Yes 1	No 0

Q45. In your opinion which of the following represents the best option for the future management of the commonage in order to protect against environmental damage while providing equality for all involved. ***Please rank giving a 1 for your most preferred option and 4-5 as your least preferred option***.

Keep the system as it is ❑
Commonage division between shareholders with private legal title/ownership ❑
REPS participation by all shareholders ❑
Establish shareholder committee system with legal power to enforce commonage management decisions ❑
Other (please specify i.e. band / collop system if exists…..……) ❑

J USE OF REPS/DUCHAS SCHEMES

Q46.Which one of the following options applies to you with respect to your shares in the commonage (please tick):

Are you a participant in REPS **(IF YES, GO TO Q. 47)** ❑
When launched do you intend joining the Duchas National Compensation Scheme ❑
(SKIP TO Q.52)
Opted out of using commonage shares **(SKIP TO Q.52)** ❑
Other **(SKIP TO Q.52)** ❑

i) RURAL ENVIRONMENTAL PROTECTION SCHEME (REPS)

Q47. Are you part of a REPS designation area e.g. – SAC/NHA/SPA

Yes 1 No 0

Q48. What was your REPS payment in 2003 ?

Q49. Have you changed your stocking rates as a consequence of joining REPS?

Yes 1 No 0

Q50. If yes please briefly explain:

Q51. What is the fee for your REPS planner ?

ii) EFFECTS OF FORMAL REGULATION ON INFORMAL GROUPS

Q52. Has participation in any of the following schemes affected stocking rate decisions? i.e. - have the schemes increased, decreased or left stocking rates unchanged.

	Increase	Decrease	Unchanged
Ewe Premia Scheme (if sheep)	❑	❑	❑
Suckler Premia Scheme (if suckler cows)	❑	❑	❑
Commonage Framework Plans	❑	❑	❑

iii) FORMAL FARMING COMMITEES OR MARKETING GROUPS

Q53. Are you a member of a farm organisation (for example IFA)?

Yes 1 No 0

IF NO, GO STRAIGHT TO Q.55

Q54. If YES, do hold any special position in this organisation ?

K HOUSEHOLD CHARACTERISTICS

Q55. Could you please provide the following information on all those living permanently in your household? (A household is defined as a group of people who live under the same roof and share the same budget.)

Family Status	Age	Education level*	Farm Participation **	Ave. Farm labour hours / week	Off- farm employment / occupation
1. Male					
2. Female					
3. Daughter 1.					
4. Daughter 2.					
5. Son 1.					
6. Son 2.					
7. Grandfather					
8. Grandmother					
9. Grandson					
10. Granddaughter					
11. Other					
12. Other					
13. Other					
13. Other					

***** 1. Primary level 2. Secondary level 3.Third Level (College or university).** 1. Full-time farmer 2. Part-time farmer 3. Non-participation

Q.56 In which of the following categories does your total household gross (pre-tax) income lie? Please include all sources of income including farm, off-farm employment, tourism activities and state transfers and any other cash income e.g. private pension etc.

1	< 15.000 €
2	15.000 – 30.000 €
3	30.000 – 45.000 €
4	45.000 – 60.000 €
5	> 60.000 €

Q57. What percentage of this income can be attributed to each of the following categories ?

(Where offered please make note of the exact income figures)

Source of income	Approximate amount % of total gross household income
Farm	%
Off-farm Employment	%
Tourist Activities (Rental accommodation, B&B, golf etc)	%
State Transfers (pensions, child benefit etc)	%
Other (Specify_____)	%

Thank you for your cooperation and patience.

APPENDIX F

NATIONAL FARM SURVEY - AUTUMN SURVEY 2007

Q1: Public Access for Walking

Q1a: At present or in the past have the public used your land for recreational walking. Excluding right of ways *Often = 1; Occasionally = 2; Never = 3* ☐

Q1b: If a 5-Year Walking Scheme was introduced with the following conditions:
A specified walking route; a countryside code; no permanent right of way establishment; indemnification against insurance claims; re-imbursement of set up/maintenance costs and some infrastructure costs (stiles etc.).

What would be your attitude **code reply**

Would not participate in such a scheme = 1 (ask Q1c and terminate Q1)
Would participate in scheme on free-of-charge basis = 2 (terminate Q1)
Would participate only if given financial compensation = 3 (ask Q1d) ☐

Q1c: If code 1 – Give main reason for not participating in Scheme (terminate Q1)
Insurance = 1; Nuisance = 2; Other = 3 (specify) _____ ☐

Q1d: If such a 5-Year Scheme was introduced with a guaranteed payment,

would you be willing to accept a minimum of € ☐ . ☐☐ (See Notes)

per annum for each metre of walkway on your farm to participate.

Yes = 1; No = 2 ☐

Q1e: If no to Q1d what is the main reason (choose one only) you would not participate?
*Price per metre is too low = 1; Prefer different payment method = 2; Prefer a scheme run by farmers = 3; Other = 4 (specify)*_____ ☐

Q1f: Which method of payment would you **most** prefer for participating in such a scheme? *A government agri-environment Scheme (e.g. REPS) = 1; Payment via on-site charge e.g. car parking fee = 2; Other = 3 (specify)*_____ ☐