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The Determinants of Charitable Donations in the Republic of Ireland

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Abstract

This thesis explores the variables that affect the probability of donating and the variables that affect the size of donation by Irish households. The datasets employed are the Irish Household Budget Surveys, 1994/1995 and 1999/2000, which are analysed using a tobit model and a double-hurdle model with an inverse hyperbolic sine transformation. Between 1994 and 2000, Ireland witnessed a remarkable and well-documented economic boom. This thesis provides insight into how the determinants of charitable donations change in an economy such as the Republic of Ireland's, which has undergone such rapid economic and cultural changes. To date there has been no prior econometric study of charitable donations carried out in the Republic of Ireland.

In the late 1990's, charitable donations by Irish households did not keep pace with the booming economy. Although donations have increased by 18 per cent from 1994 to 1999, GDP grew by around 93 per cent for the same period. The average charitable donation as a percentage of disposable income has decreased from 0.79 per cent in 1994/95 to 0.54 per cent in 1999/2000. This thesis attempts to provide some insight into the characteristics that lead to charitable giving and presents a snapshot of the most probable and generous donors in 1994/1995 and 1999/2000.

Results from this thesis have been presented to the International Society for Third Sector Research conference, Paris, France (27th - 29th April, 2005), the Irish Economic Association conference, Kilkenny, Ireland (6th – 8th May, 2005), the Irish Society of New Economists conference, Dublin, Ireland (18th July, 2005) and the National Council for Voluntary Organisations conference, Warwick, UK (31st August – 1st September, 2005).

Declaration

I certify that this thesis which I now submit for examination for the award of Master of Philosophy, is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

This thesis was prepared according to the regulations for postgraduate study by research of the Dublin Institute of Technology and has not been submitted in whole or in part for an award in any other Institute or University.

The work reported in the thesis conforms to the principles and requirements of the Institute's guidelines for ethics in research. The Institute has permission to keep, to lend or to copy this thesis in whole or in part, on condition that any such use of the material of the thesis be duly acknowledged.

Signature Jane) Carroll Date 17/1/06

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Chapter 1

Introduction

1.1 Aims of This Thesis

This thesis will use the Irish Household Budget Surveys (HBS) 1994/1995 and 1999/2000 (Central Statistics Office, 1996 and 2002) to find the most likely and generous donors to charitable organisations in the Republic of Ireland. Between these two survey periods, Ireland underwent many dramatic economic and social changes. These changes, which are outlined in Section 1.2, would have undoubtedly affected an Irish household's outlook and opinion on many facets of daily life, including charity and the amounts that they give. This thesis will explore if these changes influenced whether and how much an Irish household gives to charity.

To fully understand the factors that influence a household's level of charitable donations, some insight into the demand for donations is required. Section 1.3 will briefly outline any economic theories that attempt to explain why an individual would donate to charity. The scope of the nonprofit sector in the Republic of Ireland will be outlined in Section 1.4. This section will describe

the types of organisations to which the results of this thesis will be most relevant. Section 1.5 will outline any current government intervention and support regarding the taxation of charitable organisations and the tax treatment of private donations. The structure of this thesis will be outlined in Section 1.6.

1.2 Background and Motivation

The Irish economy was transformed over the 1990's. Prior to 1993, the economy was characterised by sluggish and under-performing growth rates and relatively high and fluctuating unemployment. The turning point came in 1993 and is generally considered the start of the 'Celtic Tiger' phase. In 1993, unemployment was around 16 per cent and real GDP growth was just over two per cent. Over the following seven years and up until 2000, the average annual real GDP growth was around eight per cent and annual employment growth was nearly five per cent. Unemployment in 2000 had reduced to around four per cent which is considered by many to be full employment (Kennedy, 2001a). Theories of the cause of this rapid economic turnaround are extensive. Contributing factors include the Republic of Ireland's access to the Single European Market, our inviting corporation tax regime resulting in a large multinational presence, increased female participation, co-ordinated social partnership agreements, rapidly increasing exports and a reversal of the trend of emigration toward immigration (ESRI, 2003).

By the end of the 1990's, the Republic of Ireland had converged and exceeded the performance of many of its European neighbours and over a relatively

short period of time became an affluent and prosperous nation. For the first time. Irish Households could expect to find employment and wages on a par with their wealthier European neighbours. The mass emigration of the 1980's reversed as past emigrants returned and non-nationals began to enter to country to avail of the expanding employment opportunities (Sexton, 2001). Between 1994 and 2000. the Irish population increased by 5.7 per cent which is amongst the highest increases in Europe.

The economic growth was accompanied by radical social and demographic change. Many of these changes are as a result of changed attitudes towards marriage and employment. Female participation between 1994 and 1999 increased by over 35 per cent while male participation increased by only 17 per cent.[1] The period is also characterised by a large increase in single parent households. The numbers of single parent households increased by 70 per cent between 1994 to 2000. During the same period, the numbers of households consisting of childless couples increased by 19 per cent while the number of households consisting of couples with children increased by only five per cent. It has been suggested that 'it is the housewife, not the mother, who is the vanishing species' in the Republic of Ireland (Kennedy, 2001b).

The Irish population continued to age over the late 1990's. In 1994, 25 per cent of the population were in the 0-14 age group while 22 per cent fell into this category in 2000. This is also reflected in the decline in the number of first and second level students. each showing 12 per cent and four per cent

[1] All figures are taken from The Irish Central Statistics Office publications including the Quarterly National Household Survey and the Census of Population.

decreases respectively. During this time there was a dramatic 35 per cent increase in the numbers of third level students (this is likely due to the introduction of free fees for third level education in 1996).

The average size of Irish households also experienced change. In 1994, the average size was 3.13 persons. This figure decreased slightly to 2.97 persons in 2000. Overall, there was a 13 per cent increase in the number of households in the Republic of Ireland. The largest increase was in the number of two person households who showed an 18 per cent increase. The number of single person households also increased by 15 per cent while the numbers of households with three or more inhabitants only increased by nine per cent. It appears that more Irish people chose to live in pairs or on their own over this period.

The rapid economic and social change has brought much debate on the changing values of Irish individuals. Although by the end of the 1990's, the economy was booming and healthier than ever, there is much concern that this prosperity has come at a high price. Contemporary Ireland is characterised by marriage breakdowns, stress in the workplace, high suicide rates and high levels of alcohol and drug abuse. Our increased connectivity with the wider economic world has come at a cost of our decreased connectivity with one another. 'People, place, roots…. are secondary considerations in the decision-making process and often totally ignored in our headlong rush to economic nirvana' (Bohan and Kennedy, 2001).

It has been suggested that many of the social problems of the late 1990's are a consequence of the collisions between traditional and the modern lifestyles (Keohane and Kuhling, 2004). The authors use an analogy of a car crash to describe the meeting of the old and new ways of life in the Republic of Ireland in the late 1990's. The resulting wreck is twisted and ugly with many groups and individuals excluded and thrown from the crash.

The Church is one such group that has gradually lost its status in the Republic of Ireland over the 1990's. The percentage of Irish citizens attending weekly religious service in the Republic of Ireland has dropped from around 78 per cent in 1991 to 64 per cent in 1999 (Eurobarometer, cited in O' Connell, 2001 p. 64). In addition to declining Church attendance, it appears that Irish individuals have also become less spiritual over the period. The amount of Irish people who believe in the very existence of God has decreased by ten per cent between 1991 and 1998 (O' Connell, 2001 p. 66). The Church, which has traditionally been the principal moral guide in Irish people's lives, has dwindled in importance (a decline which has undoubtedly been aided by recent scandals in the church and increased urbanisation of Irish households where there is less influence from local community and religious life (Hardiman and Whelan, 1998)). The decline in religious values has directly affected life in the Republic of Ireland. 'All indicators of behaviour in the most intimate and vital areas of life, including contraception, births outside marriage, abortion...indicate the detachment of behaviour or practice from Church teachings' (Kennedy, 2001b). The constitutional amendment in 1995

that permitted divorce is undoubtedly a reflection of declining Church importance.

The rise in Irish consumption over the period has been extraordinary and cannot be overemphasised. The majority of these increases have been in non-essentials. In 1992, there were 66,278 new cars registered in the Republic of Ireland. In 2000, this level had over trebled with 230,804 new cars registered (Central Statistics Office, 2003). The number of luxury cars almost trebled between 1993 and 1997 (Allen, 2000 cited in O' Connell, 2001 p122). In addition, Ireland showed the highest increase in expenditure in restaurants, cafes and hotels in the European Union between 1990 and 1997 (Eurostat yearbook, 2000 cited in O' Connell, 2001 p. 137). Similar results are found in relation to alcoholic expenditure, hairdressing and beauty care, housing, financial services and petrol. In addition, the volume of clothing and shoe sales between 1990 and 1997 increased by 83 per cent (Eurostat yearbook, 2000 cited in O' Connell, 2001 p.141).

In 1998, a major conference examined the social, cultural and moral impact of the Celtic Tiger on Irish society.[2] The conference emphasized the increase in materialism and the declining concern of Irish individuals for others. Irish citizens have been described as 'self-centered and selfish, giving very little to

[2] The conference, entitled "Are We Forgetting Something? - Our Society in the New Millennium" took place in Ennis, Co. Clare from October 29th – November 1st 1998. The official opening was performed by President Mary McAleese. Speakers included Dr. Mary Redmond, solicitor, founder of the Irish Hospice Foundation; Sr.Therese, Abbess Poor Clare Monastery; David Begg, chief executive of Concern World-Wide; David McWilliams, senior economist and strategist with Banque Nationale de Paris; Patrick Hedderman, Benedictine Monk; John Lonergan, Governor of Mountjoy Prison and Professor Joe Lee, Professor of Modern History UCC.

the needs of others' (Lonergan, 1999). All comment on the state of Irish culture at the end of the 1990's points towards a society of individuals who care more for their own personal progression and less about the well being of those around them. This is further emphasised by examining the levels of volunteering over the Celtic Tiger years. The percentage of Irish individuals who volunteered dropped from 39 per cent in 1992 to 33 per cent in 1998 (Ruddle and Mulvihill, 1999).

Towards the end of the 1990's, Ireland was described as a nation that had lost its identity. Our view of ourselves at the end of the century 'is firmly grounded in our economic miracle, in our second homes, three cars and four holidays, in our ability to mix with the big boys. We have no idea of what or who we are anymore' (Sheridan, 1999). As citizens 'we're happier refurbishing our homes than refurbishing our notion of homeland' (O'Toole, 1999). Ireland has been described as a 'soulless society...indifferent to the needs of the weak and inadequate' (Lonergan, 1999).

It is difficult to predict how these changes have affected an Irish citizen's outlook on charitable organisations. Although the rising income levels should have increased the level of donations over the period, the major social changes, in particular the rise in materialism, consumerism and the decline in the Church's influence, may all have lowered this increase.

There is no question that, as a nation, the Republic of Ireland became considerably wealthier over the 1990's. This increased wealth was

accompanied by raised expectations of living standards. The resulting elaborate spending frenzy has never been seen before in Irish history and may have left many households feeling worse off financially than they were prior to the boom. This thesis will explore how these changes have affected the overall level of donations and the types of donors in the Republic of Ireland.

1.3 Economic Motivation: Why Donate to Charity?

Dealing with this topic from an economic standpoint is plagued with problems. For a normal economic good, an integral determinant of demand is price. Intuitively, donating to charity appears to have no price. In fact, donating to charity lacks many of the usual components of a normal transaction. There is no exchange between buyer (the donor) and seller (the charity) and the buyer does not enter the transaction under the usual motivations (excess consumer surplus).

There are many theories, from both the disciplines of economics and sociology, which try to explain why people give. An economist starts with the assumption that individuals make choices based on self-interest. Self-interest is assumed to dominate all other motives and as rational human beings, we only make choices that will increase our own utility.[3] To increase utility, one must make choices that will increase consumption. How can true altruism, which by definition reduces personal consumption to increase another's, exist in an economist's world? How can an individual driven by self-interest, have any concern for the well being of others around him? Can economics explain

[3] Utility is the aggregate sum of satisfaction or benefit an individual gains from consuming a given amount of goods or services in an economy

that which appears to be 'self-destructive behaviour performed for the benefit of others'? (Wilson, 1975)

Gary Becker's 'Economic approach to human behaviour' offered some important insight into why people donate (Becker, 1976). This model of 'pure altruism' is based on the idea that the consumption of others is a determinant of personal utility. There are two individuals in Becker's model: the altruist and the egoist. While the egoist only gains utility from his own consumption, the altruist's utility derives from both personal consumption and the consumption of the egoist. Becker's model can be summarised as follows:

$$U_E = f(C_E) \tag{1.1}$$

$$U_A = f(C_A, C_E) \tag{1.2}$$

which states that the egoist's utility U_E, is a function of his/her personal consumption C_E only. Alternatively, the altruist's utility U_A, is a function of his/her personal consumption C_A and the consumption of the egoist. The altruist will divide his/her income between personal consumption and the egoist's consumption and will choose a mix that will maximise his/her own personal utility. How much the altruist gives to the egoist depends upon his/her and the egoist's personal income/wealth and the marginal rate of substitution between giving and personal consumption. Giving to another does make economic sense if it raises personal utility through the consumption of others.

Apart from the utility gained from the increased consumption of others, there is also utility gained through the very act of giving. This private benefit is described as the 'joy-of-giving' or 'warm glow' attached to the act of giving (Arrow, 1974; Steinberg, 1987). Giving to another, whether they be a family member, friend or complete stranger has a private benefit attached. This benefit differs from person to person depending on their personal beliefs and characteristics, but exists in most people regardless.

Models of giving which include the warm-glow have developed over the past twenty years. These models, which are known as models of 'impure altruism', break the utility function into three components. Becker's analysis is extended to include the private benefit or warm glow associated with giving:

$$U_A = f(C_A, C_B, W) \tag{1.3}$$

where W is the warm-glow received from giving. Authors such as James Andreoni (1989) suggest that the warm-glow effects may even be stronger than the pure altruistic and therefore makes private gifts imperfect substitutes for gifts from public sources.[4]

How much will an individual donate? Assume that a single (unit) charitable donation equals one euro towards the recipients of the charitable organisation's work. This is not an unreasonable assumption as donors care

[4] If individuals are mainly motivated by 'warm-glow' or 'joy-of-giving' preferences when donating to charity, an increase in government charitable expenditure will have little affect on the level of private donations.

about the people that their chosen charitable organisation helps and not the organisation itself. Under this assumption, the price of donating depends solely on the donor's perception/expectation of what happens to his/her money in the organisation after it is donated. The price of contributing one euro to the intended beneficiaries will be more than one euro once administration and fundraising costs are considered:

$$D - F - A = C \tag{1.4}$$

where D is the amount donated, F is the amount spent on fundraising per donation, A is the amount spent on administration per donation and C is the amount received by the donees (recipients). The price of a one euro charitable donation is a function of the percentage of each contribution spent on administration and fundraising (Weisbrod and Dominguez, 1986; Posnett and Sandler, 1989):

$$P = 1 + (f * P) + (a * P)$$

$$or \tag{1.5}$$

$$P = \frac{1}{1 - f - a}$$

where P is the price of donating 1 euro, f is the percentage of donations spent on fundraising and a is the percentage spent on administration.

The percentage of each donation that is spent on fundraising and administration is entirely attributable to donor perceptions and will be based

on the perceived trustworthiness and efficiency of the charity. If the donor expects that ten per cent of a charity's income is spent on fundraising and a further ten per cent is spent on administration, the price of a single unit charitable donation (one euro towards the recipients of the charitable organisation) is 1.25 euro (using Equation 1.5):

$$P = \frac{1}{1 - 0.1 - 0.1} \qquad P = 1.25$$

From the perspective of this model, a donor will consider this price when deciding how much to donate. If the donor perceives that the organisation spends a higher percentage of each donation on fundraising and administration then the price of donating will increase and the level of donations will decrease.

If charitable donations are tax deductible, the price of donating becomes (Weisbrod and Dominguez, 1986: Posnett and Sandler, 1989):

$$P = (1 - t)\left(\frac{1}{1 - f - a}\right) \qquad (1.6)$$

where t is the individuals marginal tax rate. For example, if the individual's marginal tax rate were 50 per cent, the cost of getting one euro through to the charity's recipients would be around 62.5 cent (using Equation 1.6):

$$P = (1 - 0.5)\left(\frac{1}{1 - 0.1 - 0.1}\right) = 0.625$$

Tax deductibility makes donating to charity cheaper and will lead to a higher level of donations.

The work of charitable organisations undoubtedly has many positive externalities. The work of an organisation whose goal is to reduce homelessness has positive external effects in the form of safer streets while the work of organisations involved in medical research will spillover into other branches of medicine. The aggregate effect of charitable organisations makes our society a better place to live, for all of us to enjoy. In this context, the work of charitable organisations takes the form of a public good. It is non-rival (consumption from one person does not reduce the quantity that is consumed by others) and non-exclusive (no one can be excluded after the good is produced).

Who should finance an efficient and socially equitable level of charitable income? There is an incentive to free-ride with any public good, that is, not pay for the benefits received and let others pay for the public benefit. In this regard, it is likely that the free market will not supply a socially optimal level of charitable income. As Milton Friedman (1962: 190-91) states, "It is argued that private charity is insufficient because the benefits from it accrue to people other than those who make the gifts...We might all of us be willing to contribute to the relief of poverty, *provided* everyone else did. We might not be willing to contribute the same amount without such assurance". Individuals

can free-ride on the generosity of others and the private market may fail to produce an efficient outcome.

Although there are many convincing models of free-rider behaviour, in reality, individuals donate both time and money to charity regardless. Why widespread free-riding has not materialised can be attributed to attitudes and moral values. People may believe that free riding is morally wrong and feel an obligation to contribute as long as others do also (Sugden, 1984).

The 'warm glow' received from donating may explain part of the free-rider problem. When there is a private benefit attached to charitable donations the free-rider problem may not materialise. Some propose that this benefit is even strong enough to ensure an efficient level of private donations (Sugden, 1982). The level of government involvement may even oversupply the market (Roberts, 1984).

There are many studies that support the 'warm glow' argument. If the overall provision of the public good is the only concern to donors and private 'warm glow' benefits are not an issue, then an increase in government support should crowd-out donations from private sources. However, empirical studies have shown that there is little evidence of complete crowding-out. Adams and Schmitz (1978) and Steinberg (1984) found partial crowding-out while Posnett and Sandler (1989) and Reece (1979) found no evidence. Schiff (1985) explores the level of crowding-out in a number of forms of government support. It was found that only cash transfers to the needy crowd-out private

charitable donations. In addition, it has been found that government spending to public radio stations in the USA lowers the level of private donations (Kingma, 1989). While the degree of crowding-out (or lack of) differs somewhat from study to study, it is evident that in general the overall conclusion is a rejection of complete crowding-out and that individuals are part motivated by the joy-of-giving.

It should also be noted that the hypothesis of zero crowding-out cannot be rejected. Potential donors are unlikely to know the full extent of government support for charitable organisations. If they did, they may adjust their donations accordingly and donate considerably less.

1.4 The Nonprofit Sector in the Republic of Ireland

The definition of charitable donations in the HBS is donations to all non-educational (primary, secondary and boarding schools) and non-religious charitable organisations. In the Republic of Ireland, the range and scope of organisations that could potentially fall under this heading is extensive and a general understanding of the types of organisations to which donations are made in the HBS is required in order to make any useful recommendations to the sector.

The Johns Hopkins Comparative Nonprofit Sector project (CNP) provided valuable cross-national comparisons of the size and economic value of the non-profit sector (Salamon and Anheier, 1997). The project was applied to the Republic of Ireland using data from 1995 and has provided important

information on the significance and scale of the sector (Donoghue, Anheier and Salamon, 1999). As outlined in their study, there are two commonly used terms to describe the sector in the Republic of Ireland: the 'nonprofit sector' and the 'voluntary and community sector'. The 'nonprofit sector', as defined by the CNP, comprises organisations that are organised, private or non-governmental, non-profit distributing, self-governing and voluntary. In the Republic of Ireland, there are a number of nonprofit organisations that fall under this definition but are not generally perceived as organisations that are typical to the sector. Examples include schools, third level educational institutions and voluntary hospitals. The 'voluntary and community sector' excludes such organisations and comprises organisations involved in arts and culture, sports and recreation, education, research, nursing homes, mental and other health, social services, emergency and relief, income support and maintenance, community development, housing, employment and training, civic/advocacy, legal, foundations, international activities and religion. This definition (excluding religious and educational organisations) better describes the types of organisations to which donations are made in the HBS and any reference to 'charitable organisations' throughout this thesis refers to organisations within this grouping.

The voluntary and community sector, as outlined in the CNP (Donoghue, Anheier and Salamon, 1999), is among the largest industries in the Republic of Ireland employing 32,136 paid employees and 31,136 volunteers. The sector is more reliant on private donations by individuals (40 per cent of total income) than the overall non-profit sector (ten per cent of total income). The largest

proportion of private funding goes to groups involved in social services followed by organisations involved in health, international activities, culture/recreation, development/housing, civic/advocacy, environment and education/research. Groups within the sector have differing degrees of reliance on private sources of funding although it is evident that organisations involved in international activities, health, social services and civic/advocacy are among the most reliant. The results from this thesis will have more relevance to charitable organisations involved in such activities.

1.5 Government Intervention in the Sector

1.5.1 Policy Environment

In September 2000, the Irish Government released a long awaited White Paper on 'Supporting Voluntary Activity' which outlined proposed formal interaction between the State and the Voluntary and Community sector. Throughout the White Paper, the government repeatedly stressed the importance of the sector, not only to the people and communities to which it serves, but also to the progress of the economy and to social development in general. The White Paper outlined previous deficient and highly fragmented funding mechanisms and recommended streamlined and dedicated support structures facilitated by increased communication between relevant departments and charitable organisations. In addition, the White Paper recognised the underdeveloped legal and policy framework in which the sector operates and proposed legislation to govern and organise the sector. The paper recognised the importance of volunteering and proposes policies aimed at promoting, supporting and fostering such activities. An implementation and

advisory group, comprising six voluntary and community members and six statutory sector members, was established to implement and monitor the recommendations made throughout the paper. In general, the White Paper was overwhelmingly welcomed by the sector and was considered a timely and accurate depiction of the problems faced by charitable organisations. The government's recognition of the sector's importance in progressing the needs of the disadvantaged in society was greatly welcomed. The paper depicted an optimistic and positive future in which the sector and state worked in tandem to facilitate their common goals.

There have been varying degrees of satisfaction with regard to the implementation of the White Paper since 2001. In general, its progress has been considerably slower than anticipated and many of the commitments outlined in the paper have not materialized. In 2004, a report on the Government's implementation of the recommendations laid out in the White Paper was issued (Harvey, 2004). The report found that two key funding schemes were years late and delivered at a 53 per cent lower level of funding than had been committed. The White Paper outlined the need for voluntary activity units in key government departments to deal with the sector. After three years, only one such department had been set up. The report questioned the government's commitment, both at political and administrative levels and commented that the situation 'exposes the weak political position of the voluntary and community sector' (Harvey, 2004: 3). The relationship between the voluntary and statutory sides of the implementation and advisory group was said to be 'poor and untrusting' and lacked a 'sense of common purpose'

(Harvey, 2004: 3). Implementation was also slowed by the introduction of six new statutory members to the implementation and advisory group following the 2002 general election.

The opening address of the White Paper by the then Minister of Social, Community and Family Affairs Dermot Ahern stated that the government 'is strongly committed to building an inclusive society in which Community and Voluntary groups can play a vital role'. This commitment has been questioned in light of the number of key implementation problems of the White Paper. Internationally, the Republic of Ireland has trailed behind on the level of regulation within the sector. At present, there are very few restrictions when setting up a charity and no best practice accounting policies exist. Charitable organisations are not legally required to declare income or even declare whether or not this income is used for charitable purposes. Accountability is clearly an issue and the potential for corruption and fraud is evident. Although failures have arisen, it should be stressed however that progress on regulation of the sector has been very promising.

The Programme for Government (2002) and the Social Partnership Agreement 'Sustaining Progress' addressed this need for regulatory reform. In December 2003, a consultation paper entitled 'Establishing a Modern Statutory Framework for Charities' was launched by Minister of State at the Department of Community, Rural and Gaeltacht affairs Noel Ahern (Department of Community, Rural and Gaeltacht Affairs, 2003). The paper recommended establishing a statutory body which would determine charitable status and

maintain a register, regulate and monitor activities (including fundraising), provide guidance to trustees and directors of charities, monitor and investigate possible abuses, advise the Minister on charity regulation and issue codes of conduct and best practice guidelines. A charities regulation bill, providing many of the consultation paper's recommendations, is said to be due in 2006 (Humphreys, 2005).

1.5.2 Taxation of Charitable Organisations

There is currently much debate regarding the taxation of charitable organisations. The Revenue Commissioners are responsible for administering the relevant tax exemptions and determining whether or not charitable organisations qualify. Applicable organisations must be legally established (incorporated or unincorporated) within the Republic of Ireland and must be constituted and operated exclusively for charitable purposes (relief of poverty, advancement of education, advancement of religion or other purposes beneficial to the community) (Revenue Commissioners, 2003a). Such organisations are then exempt from income tax, corporation tax, capital gains tax, deposit interest retention tax, capital acquisitions tax, stamp duty and dividend withholding tax. Applicable organisations must submit annual financial statements to the Commissioners and organisations with income in excess of 50,000 euro must be audited.

There is no general exemption in respect of Value Added Tax (VAT) for charitable organisations (Revenue Commissioners, 1999). As charitable organisations do not charge VAT on their outputs, they cannot claim VAT on

their inputs. There are a number of specific 'reliefs' from VAT such as transport vehicles and appliances for disabled vehicles, radios for the blind, sea rescue equipment, humanitarian goods for export and donated medical and research equipment. With the exception of these items, charitable organisations cannot claim VAT on any operational expenses. In essence, the voluntary and community sector pays 21 per cent more than the commercial sector for goods and services[5].

Since the 6th of April 2001, private individuals have been able to claim tax relief on charitable donations (Revenue Commissioners, 2003b). The scheme applies to donations made to organisations that are deemed tax exempt. A minimum of 250 euro must be donated in an unlimited number of payments over the course of the year. There is no maximum donation if the donor has no relationship with the organisation. When there is a relationship, no more than ten per cent of the donor's income can be donated. The relief only applies to cash donations and not to the donation of property or investments. For 'Pay As You Earn' (PAYE) employees, a system of 'grossing-up' applies and, the Revenue Commissioners give to the charity the tax that would have been paid by the donor on the amount donated.[6] In essence therefore, the donor is gives in excess of 250 euro to the charity. The self-employed, on the other hand, can claim tax relief on donations as if it were a normal expense. The charity receives the donation and the donor saves on taxes. A similar system applies to corporate donations where a company can claim a deduction as if it were a trading expense.

[5] The current VAT rate in the Republic of Ireland is 21 per cent
[6] PAYE is the standard income tax applied to employees in the Republic of Ireland

1.6 Structure of this thesis

This thesis will find the most likely and generous donors to charitable organisations in the Republic of Ireland in both 1994/1995 and 1999/2000. The overall level of donations in both survey periods will be examined in light of the considerable economic and social changes over the 1990's. Chapter 2 provides a literature review of similar research and focuses primarily on econometric studies in the area. In Chapter 3, the Irish Household Budget Survey is described and the dependent and independent variables used in the empirical analysis are introduced. Chapter 4 describes the econometric methodology and presents the empirical results. Chapter 5 concludes the thesis and recommends ways in which charitable organisations can increase their numbers of donors and the size of donations by existing donors based on the findings of this thesis. Recommendations to increase the income of charitable organisations will also be provided.

Chapter 2

Literature Review

2.1 Introduction

In this chapter, previous econometric studies that have modelled the determinants of charitable donations are reviewed. The results from these studies provide a useful foundation for choice of econometric techniques and variables employed in this thesis. While the majority of studies focus primarily on the efficiency of the tax system with regard to the tax-deductibility of donations, detailed information on household characteristics and demographics are necessary to complete their analysis. Although there are no previous econometric studies carried out in the Republic of Ireland, a number of detailed surveys on charitable giving and volunteering have been conducted over the 1990's. These surveys are outlined in Section 2.2.

A large number of similar econometric studies have also been carried out internationally. The majority of these studies are from the USA, the UK, Canada, Singapore, the Netherlands and Russia. These studies are outlined in section 2.3 and focus on the dependent variables, independent variables and

econometric techniques employed. The effect of the tax-deductibility of charitable donations is also explored. Section 2.4 will conclude the chapter.

2.2 Previous Studies in the Republic of Ireland

Three detailed surveys on charitable giving have been conducted in the Republic of Ireland (Ruddle and O' Connor, 1993; Ruddle and Mulvihill, 1995, 1999). The most recent was conducted between February 1997 and January 1998 and examined the extent and nature of donating and volunteering in the Republic of Ireland. This study, the results of which are outlined below, employs a sample of 1181 randomly selected individuals.

The definition of the 'voluntary' sector employed in the survey is similar to that of the John Hopkins Comparative Nonprofit Sector Project (Salamon and Anheier, 1997). Charitable organisations should be organised, private, non-profit distributing, self-governing and voluntary. The fields of activity include culture and arts, sports and recreation, education and research, health, social services, environment, community development, civil and advocacy, philanthropy and volunteerism promotion, religion-related and international activities.

Donating is divided between planned and prompted. Ruddle and Mulvihill's findings illustrate that 87 per cent of respondents gave to charity in the month prior to interview. Eighty-six per cent of total donating was prompted while only eight per cent was planned. Ninety-four per cent of respondents who gave through planned means also gave through prompted, while 79 per cent of

respondents who gave through prompted means, did so more than once in the month prior to interview.

The primary channels of prompted donations were at the church gate (43 per cent), street collections (30 per cent) and raffle tickets/lines (29 per cent). The foremost method of planned donation was through standing orders, which accounted for six per cent of total donations.

The overall average monthly amount donated (planned and prompted) was £9.04 (11.48 euro). The average prompted donation was £8.31 (10.55 euro) while the average planned was £8.39 (10.65). Taking the sample as a whole (including those who donated nothing), the average monthly amount donated in 1997/1998 was £7.85 (9.97 euro). While this figure was lower than the average level in their 1994 survey (especially when adjusting for inflation), the difference between the two periods was not statistically significant (tested at a 95 per cent confidence level). The overall level of donations (prompted and planned) in the Republic of Ireland over the 1997/1998 period was estimated at between £210,917,000 (267,864,590 euro) and £270,073,000 (342,992,710 euro). This level was also not significantly different from the 1994 survey results. As highlighted by the authors, the fact that donations failed to increase during times when the economy was rapidly growing is worrying.

The largest amount of money raised was through the sale of raffle tickets. Although the average amount donated was low (£2.05 or 2.60 euro), the total amount of donations was high (14.33 per cent of total prompted donations).

There were a number of channels with very high mean levels of donation but with very low take up. The highest mean amount donated was through print media appeals (£9.49 or 12.05 euro) but the amount of donations was very low (0.73 per cent of total prompted donations). Further examples included Radio/TV appeals (mean of £9.22 or 11.71 euro, but only 0.32 per cent of total), postal appeals (£9.30 or 11.81 euro, but only one per cent) and charity events (£7.22 or 9.17 euro but only 2.19 per cent).

A number of socio-demographic variables were used by Ruddle and Mulvihill to explore patterns of donating in the Republic of Ireland. In order to test the statistical relationships between the variables and donating, a chi-square (Pearson) test for cross tabulations and Cramer's V were employed. The variables examined were gender, type of area lived in, age, gross household and personal incomes, perceived relative income, education, employment and occupational status, importance attributed to religion, political party preference and frequency of worry about money. Ruddle and Mulvihill's main results are outlined in Table 2.1.

Table 2.1: Socio-economic variables affecting donating in the Republic of Ireland

Variable	**Outcome**
Gender	No significant difference between the average amount given by men and women. Women were, however, more likely than men to donate large sums of money.
Area of Residence	Higher proportions of people living in urban areas reported they gave nothing (17 per cent compared to eight per cent in towns and 12 per cent in rural areas). Respondents in rural and town areas gave significantly more than those in urban areas.
Age	20 per cent of the 18-24 age group reported they gave nothing to charity, compared with the sample average of 13 per cent. Those aged 18-24 and 70-90 gave significantly less than all other age groups.
Gross Household Income	There is a significant statistical relationship between amounts donated and gross household income.
Gross Personal Income	There is a significant statistical relationship between amounts donated and personal income.
Perception of Relative Income Size	At all income levels, those who considered their income to be relatively high gave more than those who considered it to be relatively low.
Educational Level	Those with Leaving Certificates gave more than those with Primary or Group level Certificates. Those with third-level education gave more than those with primary level education only.
Employment Status	People working full or part-time outside the home were more likely to give more. Students, the unemployed and the sick/disabled are more likely to give nothing.
Social Class	Upper middle class and farmers gave more than every other class. Lower middle class, skilled working class and other working class gave more than the lowest level of subsistence.
Importance of Religion	Respondents who considered religion unimportant were more than twice as likely to give nothing. Those who considered religion very important or fairly important gave more.
Political Preference	No association
Worry About Money	No association

Source: Ruddle and Mulvihill (1999)

The motivations for giving were also explored. The predominant motivation was 'supporting a good cause' (reported by 60 per cent of respondents), 'wanting to help out' (36 per cent), that 'friends or local people' were collecting (33 per cent) or that simply 'they were asked' (32 per cent). Different age groups had different motivations in deciding to give. Individuals aged less than 30 were more likely than others to quote 'friends or local people' while individuals aged less than 40 were more likely than others to

cite 'giving on impulse'. Those older than 59 were more likely to cite 'for spiritual or religious' reasons. 'Knowing the charity' was the main consideration when choosing which organisation to donate to (42 per cent quoted this as their deciding factor). Knowing the nature of the work of the charity and knowing the people collecting were also important deciding factors.

Respondents were asked who they believed should be responsible for the social problems in the Republic of Ireland. Fifty per cent believed that local government agencies should bear the responsibility while 43 per cent believed it was the duty of central government. Thirty-four per cent of respondents believed governments should bear responsibility through the funding of private voluntary organisations while 25 per cent of respondents believed charitable organisations or local community groups should bear the responsibility.

General attitudes towards donating and volunteering were also explored. A significantly higher percentage of respondents believed 'people should look after themselves and not rely on charity' in 1997/1998 (25 per cent) than in 1994 (18 per cent). In addition, a significantly higher proportion of respondents believed 'charity reinforces helplessness' in 1997/1998 (29 per cent) compared with 1994 (23 per cent). The majority of respondents (72 per cent) disagreed with the statement: 'I pay taxes, why should I give to charity too'. It is evident from this study that while Irish people believed that the government should be responsible for social need, they also believed that they

should do their part in supporting charitable organisations. Sixty-seven per cent of respondents believed that 'as a citizen I feel a moral obligation to give' while 50 per cent were 'tired of being asked for money'.

Differing attitudes were linked to significant differences in the levels of donations. Those who felt a 'moral obligation' to donate gave almost twice as much as others. The study also found that a moral obligation to give was related to the importance attached to religion and to perceived comparable income.

When respondents were asked whether they believe charitable organisations are honest, 52 per cent believed that they were, while a considerable 35 per cent were unsure. Two thirds of respondents believed charities were more trustworthy than political parties or business. When asked what an acceptable level of administrative cost per euro was, 26 per cent thought 1-10 cent. 28 per cent thought 11-20 cent and 23 per cent thought 21-30 cent. There was a significant difference between what respondents believed was an acceptable level of administration expense and what they actually thought was being spent. On average, respondents expected that around 50 cent per euro for Irish organisations and 40 cent per euro for International organisations was being spent on administration.

2.3 Previous International Studies

There are a large number of statistical studies focusing on charitable giving. The majority are from the USA (Taussig, 1967; Schwartz, 1970; Feldstein,

1975: Feldstein and Clotfelter, 1976: Feldstein and Taylor, 1976: Abrams and Schmitz, 1978; Reece, 1979; Roberts, 1984; Schiff, 1985; Edmundson, 1986; Weisbrod and Dominguez, 1986: Brown, 1987; Kingma, 1989; Lankford and Wyckoff, 1991: Auten and Joulfaian, 1996: Schervish and Havens, 1997) although studies have also come from the UK (Posnett and Sandler, 1989; Halfpenny, 1990; Jones and Posnett, 1991; Schlegelmilch, Diamantopoulos and Love, 1997; Pharoah and Tanner, 1997), Canada (Kitchen and Dalton, 1990: Kitchen, 1992; Yen, Boxall and Adamowicz, 1997), Singapore (Ming Wong, Chua and Vasoo, 1998; Chua and Ming Wong, 1999;), the Netherlands (Bekkers, 2002) and Russia (Brooks, 2002). While the focus of such studies varies considerably, it is evident that the efficiency of the tax deductibility of donations and the level of crowding-out from government support are prominent themes (see Chapter 1.3 for a review of studies focusing on the level of crowding-out in charitable donations). All these studies use information on household characteristics in their analysis.

2.3.1 Datasets and dependent variables employed

The measure of charitable donations varies considerably in previous research and unfortunately the types of organisations to which donations are made is seldom addressed. The majority of early studies, particularly from the USA, employ data from individual tax returns (Taussig, 1967; Feldstein, 1975; Feldstein and Clotfelter, 1976; Feldstein and Taylor, 1976; Boskin and Feldstein, 1977; Lankford and Wyckoff, 1991; Auten and Joulfaian, 1996, Chua and Ming Wong, 1999). As a result, the types of organisation deemed charitable depends on the definition used by the taxation authorities. The

dependent variable in such studies is commonly defined as contributions to 'philanthropic organisations' and no further explanation is offered. Feldstein and Taylor (1976) do suggest that organisations involved in higher education, research, health care, the visual/performing arts, welfare services, and community and religious activities receive the highest level of contributions.

A number of studies employ household/family budget surveys in their analysis (Reece, 1979; Kitchen and Dalton, 1990; Jones and Posnett, 1991; Kitchen, 1992; Pharoah and Tanner, 1997; Brooks, 2002). Reece (1979) was the first to raise any classification concerns in such studies. This analysis uses consumer expenditure data in which donations are divided into 'support' (cash contributions for support of persons not in the consumer unit), 'gifts' (gifts of cash, bonds or stock to persons not in the consumer unit), 'charity' (contributions to charities such as the United Fund, Red Cross etc., which are not deducted from pay), 'religious' (contributions to church and other religious organisations, excluding parochial school expenses), 'educational' (contributions to educational organisations), 'political' (political contributions) and 'deductions' (contributions to charities deducted from pay). Reece argues that many of these categories are questionable when exploring purely philanthropic behaviour. 'Support' is not considered because of the inclusion of alimony under this category. 'Gifts' are excluded because they may include intergenerational transfers within the family. Contributions to 'religious' organisations are additionally excluded because they may include payments for services. Political contributions are also excluded because such

expenditures are not directly related to the welfare of others. After excluding these questionable variables, only 'charity' and 'deductions' are explored.

A number of philanthropic surveys have been employed (Boskin and Feldstein, 1977; Schiff, 1985; Schervish and Havens, 1997; Bekkers, 2002). Schiff (1985) also addressed the definition problem. In his analysis, a charity is defined as a 'private organisation that produces collective output, where a collective good is one that provides a consumption externality' (Schiff, 1985: 535). He also explores donations to social welfare charities, defined as 'helping the poor and disadvantaged', and suggests that such organisations fit the usual view of charity (Schiff, 1985: 537).

Jones and Posnett (1991) and Pharoah and Tanner (1997) add nothing new to the definitional problem but do recognise the different means by which donations can be made. Each divide donations into either planned giving (gifts by standing orders or deductions from pay) or prompted giving (casual giving, for example, dropping money in a charity box). Pharoah and Tanner do not include expenditure in charity shops and catalogues, payment for attending charity events or the purchase of raffle tickets in their definition because such charitable donations yield (or potentially yield) something in return to the donor and are therefore not purely philanthropic.

In all previous research, religious organisations are deemed charitable. The majority of studies make no distinction between religious and other charitable donations and normally bundle the two categories under the one 'charity'

variable. It has been suggested that the aggregation of the two may be misguided, as there are significant differences in the determinants of each (Reece, 1979; Kitchen and Dalton, 1990; Kitchen, 1992). It has also been suggested that using an aggregate variable confuses the analysis and more precise measures should be approached (Kingma, 1989).

2.3.2 Econometric methodologies employed

In general, a common difficulty of previous charitable econometric studies has been the presence of zero observations in the dependent variable (individuals/households who did not donate). When the dependent variable is limited in such a way, standard Ordinary Least Squares (OLS) estimates are biased, even asymptotically (Kennedy, 1998). Simply omitting these zero observations also creates bias and inconsistency and would discard a great deal of valuable information. The econometric techniques employed to deal with this problem have progressed over the last forty years. In earlier studies (Taussig, 1967; Feldstein, 1975; Feldstein and Clotfelter, 1976; Feldstein and Taylor, 1976), the issue is not present as only information on individuals who itemise their tax returns for charitable purposes is employed. In essence, zero observations or non-donors are automatically excluded from the sample. Such studies can then use standard OLS econometric methods (this approach was also employed by Chua and Ming Wong (1999)).

Since earlier studies only focus on taxpayers who itemise their deductions, only the top half of the income distribution is analysed. This prevents accurate inference about the population. The issue is addressed by Boskin and Feldstein

(1977). Their study concentrates on households whose incomes fall between $1,000 and $30,000. Their dataset also contains a large proportion of zero observations and it is believed that most are either from individuals who actually did give to charity but forgot to mention it in the survey or from individuals that gave such a small amount that they regarded it as too small to mention. Three solutions are offered and tested: assign a value of $1 to those who reported nothing; assign the value of $10 to those who reported nothing; and add $10 to every individual's level of reported giving. Surprisingly, similar results were found for all three approaches. Clotfelter (1980) and Brown (1987) apply similar methods to deal with zero observations in their analysis.

Zero observations can be explicitly modelled by employing the standard tobit model as suggested by James Tobin in 1958. This approach is the most common econometric technique applied in the area (Reece, 1979; Schiff, 1985; Kingma, 1989; Kitchen and Dalton, 1990; Lankford and Wyckoff, 1991; Kitchen, 1992; Auten and Joulfaian, 1996; Brooks, 2002). In the model, a latent variable is estimated which is assumed to represent the utility associated with charitable giving. Negative desired expenditures are assumed to exist but are unobservable (see Chapter 4.2.1 for a detailed discussion of the tobit model).

The tobit model rests heavily on assumptions of normality and homoskedasticity in the error term and violation of either will lead in inconsistent parameter estimates. Prior to Lankford and Wyckoff (1991), these

specification concerns were never addressed in the literature. The authors develop a standard tobit model with a box-cox transformation parameter that nests a large number of other specifications. The box-cox transformation can be applied to an independent variable, a combination of independent variables, and/or to the dependent variable. The objective of doing so is to make the error term more homoskedastistic and closer to a normal distribution. Estimation of box-cox parameters is by maximum likelihood. The model employed in their analysis is a tobit model with a box-cox transformation of the latent dependent variable. This model is then compared to the standard tobit, an OLS lognormal model and an OLS translog model. Estimates of the box-cox parameter are statistically different from zero and provides support for the transformation. The authors find that the box-cox model is 'far superior' to the OLS and Tobit specifications employed in previous research.

A number of bivariate approaches have also been employed in the area. Jones and Posnett (1991) were the first to present separate estimates of the determinants of participation (whether an individual/household gives to charity) and expenditure (how much a household donates). The standard tobit model, as highlighted by the authors, assumes that the determinants of participation and expenditure are the same. This assumption is questionable and may have led to biased results in previous studies. In addition, the existence of zero observations may not necessarily mean that the household does not donate to charity. Irregular one-off gifts that fall outside the two-week diary period of the survey could be missed and some of the recorded zeros may result from infrequency of donation rather than from genuine non-

participation. It is suggested that the approaches employed in previous studies may be inappropriate when the source of the zero-observations is unknown. The authors employ both the standard tobit model used in the majority of previous studies and a type-II tobit (double-hurdle) model as suggested by Cragg (1971). This bivariate approach augments the demand equation with separate 'hurdles' for non-behavioural sources of zeros, such as misreporting or infrequency of donation. Their findings show that the determinants of participation and expenditure are quite different and suggest that the use of the standard tobit model is inappropriate. The double-hurdle model was also employed by Yen, Boxall and Adamowicz (1997). The focus of their analysis, although not as broad as other studies, is donations for environmental conservation in Canada. Additional bivariate econometric techniques include the Heckman procedure employed by Pharoah and Tanner (1997) and the two-stage least squares technique applied by Brooks (2002).

Finally, a common adjustment in the majority of previous studies is the use of logarithm of the dependent variable and independent variables. This approach is taken by Feldstein (1975), Feldstein and Taylor (1976), Boskin and Feldstein (1977), Kitchen and Dalton (1990), Jones and Posnett (1991), Lankford and Wyckoff (1991), Kitchen (1992), Auten and Joulfaian (1996), Chua and Ming Wong (1999) and Brooks (2002). This adjustment improves the predictability of the models significantly.

2.3.3 Significant independent variables

The list of variables found to be significant in previous research is extensive. Age and income are common variables in the majority of studies. In general, older households with more income are more charitable. The one exception to this is from a study by Schlegelmilch, Diamantopoulos and Love (1997) who find that older households in the UK are less likely to donate.

Marital status is regularly explored in previous studies. It is found in a number of studies that households occupied by a married couple donate more to charity (Feldstein and Taylor, 1976; Brown, 1987; Lankford and Wyckoff, 1991). It has also been found in the Netherlands that married households are more likely to donate (Bekkers, 2002). Gender is included in a number of studies (Schiff, 1985; Jones and Posnett, 1991; Kitchen, 1992; Pharoah and Tanner, 1997; Brooks, 2002). Whilst the majority of these studies find no significant relationship, Pharoah and Tanner (1997) find that more females in a household increases the probability of donating. In addition, Brooks (2002) finds that females donate more.

The presence of dependent children is explored by Kitchen (1992), Auten and Joulfaian (1996) and Pharoah and Tanner (1997). Only Pharaoh and Tanner find a significant positive effect on the probability of donating. Bekkers (2002) and Brooks (2002) find that family size has a negative effect on charitable giving while Lankford and Wyckoff (1991) find that it has a positive effect. Auten and Joulfaian (1996) find that lifelong charitable giving of parents is positively affected by the income of children once they have begun their

careers. In their study, parents whose children are successful are more inclined to give more to charity.

The education level of the head of household has been found to have a positive effect on charitable giving: on whether a household donates (Jones and Posnett, 1991; Schlegelmilch, Diamantopoulos and Love, 1997; Pharoah and Tanner, 1997) and how much a household donates (Kingma, 1989; Pharoah and Tanner, 1997; Chua and Ming Wong, 1999). Brooks (2002) found no significant relationship while Bekkers (2002) found that lower educated individuals are more likely to donate.

Employment status has also been found to have a significant effect on donating to charity. Brooks (2002) finds that the employed are the most generous donors in Russia. In the UK, both Jones and Posnett (1991) and Pharoah and Tanner (1997) find that the self-employed are less likely to donate to charity. Pharoah and Tanner (1997) also find that those out of work (unemployed or retired) give more to charity than the employed.

The geographical location of the household appears to have a significant effect on charitable giving. Auten and Joulfaian (1996) and Brooks (2002) find that households who live in rural areas give less than households who live in urban areas. Schiff (1985) also finds that living in large cities positively affects donating. In the UK, Pharoah and Tanner (1997) find that those living in Scotland are the most likely and generous donors and those living in the southeast are the least likely donors. Jones and Posnett (1991) find similar

results for the UK although they find that those who live in Northern Ireland are the most likely donors. Kitchen and Dalton (1990) and Kitchen (1992) also find significant differences in the patterns of donating across different regions in Canada.

Reece (1979) uses information on geographical location in a diverse way. It is assumed that households are mostly concerned about the consumption levels of those households geographically close to it (this idea stems from the idea that the consumption of those around you is a determinant of personal utility). The lower income quintile for the households within the surrounding area of respondents is calculated and is intended to represent the level of consumption of potential recipients. The average public assistance of individuals within the respondents surrounding area is also included. However, no significant relationship for either is found. Schervish and Havens (1997) find that the length of time that a respondent lives in the community has a positive effect on charitable giving.

Schlegelmilch, Diamantopoulos and Love (1997) and Schervish and Havens (1997) find that individuals who feel religion is important to them and individuals who volunteer are more likely to donate to charity. Halfpenny (1990) and Bekkers (2002) find a similar positive relationship between religion and charitable giving.

The effect of a household's wealth is explored by a number of authors. Both Kitchen and Dalton (1990) and Kitchen (1992) find that the value of the

household's home and the value of investments have a significant positive effect on donating. The effect of owning a house was explored by Jones and Posnett (1991) and Auten and Joulfaian (1996). However, only Jones and Posnett could find a significant positive relationship.

2.3.4 The effect of deductibility

As already mentioned, the majority of econometric studies dealing with charitable contributions focus primarily on the efficiency of the tax system with regard to the deductibility of contributions. When contributions are deductible for tax purposes, the price of giving is less than the price of other consumption expenditures (see also Chapter 1.3 for extended discussion). The 'price' of donation in such circumstance is $(1-t_m)$, where t_m is the marginal tax rate. To evaluate the efficiency of the deductibility system, the sensitivity of charitable donations to changes in price elasticity and income elasticity are needed to investigate whether the additional contributions received by charities due to the deductibility provision, are larger than the tax revenue forgone. When the price elasticity is less than minus one, the deductibility provision is creating the intended incentives and charitable organisations receive more in additional funds than the government looses in forgone revenue.

The earliest such study is from Taussig (1967). In his analysis, the presence of deductibility does not appear to create the desired incentives across all individuals. Although donating is highly income elastic, it is only influenced by the price effect among individuals with very high incomes who face a

much lower price of giving. Overall, the deductibility of contributions does little to stimulate charitable giving. From Taussig's results it would be more efficient to remove the deductibility mechanism and stimulate higher giving through the income effect via a tax cut. Removing the deductibility mechanism would lower donations among higher income earners but the increase gained through taxes could be reallocated to charitable organisations to offset the decline. Schwartz (1970) has similar conclusions.

Taussig's (1967) results are highly criticised by Feldstein (1975). Taussig himself saw the limitations of his results and believed that while they were suggestive, their reliability was questionable. Feldstein suggests that inappropriate measures of price and income are applied. Taussig's (1967) measure of income net of an individuals own charitable contribution to calculate the marginal tax rate means that an individual that gives more has a higher price. This created a positive association between price and charitable donations and biased the elasticity of contributions with respect to price towards zero. Additionally, income is measured net of taxes when it should be measured net of the taxes that would have been paid had no contribution been made. Feldstein's (1975) results differ significantly from Taussig's (1967) and suggest that charitable donations are increased substantially by the provision of tax-deductibility. In his analysis, a price coefficient of -1.238 is calculated which implies that charitable contributions react strongly to the presence of tax-deductibility. Feldstein (1975) strongly advocated the continuation of the USA's tax-deductible environment for charitable contributions. He illustrates that removing the deductibility provision would raise tax revenues by $3.3

billion but would also lower contributions by $3.8 billion. Charities would lose more in contributions than the government would gain in additional tax revenues.

In the USA, Feldstein and Clotfelter (1976), Feldstein and Taylor (1976), Weisbrod and Dominguez (1986), Lankford and Wyckoff (1991) and Auten and Joulfaian (1996) all come to similar conclusions as Feldstein. In these studies, price elasticities range from around –1 to –2.5. Schiff (1985) finds very high price elasticities especially for social welfare charities while Reece (1979) finds that health and welfare organisations and religious organisations benefit most. Feldstein (1975) demonstrates that removing the deductibility provision would raise the price and reduce donations by individuals in the $10,000 - $15,000 income class by around $216 per year. Boskin and Feldstein (1977) estimates a tax price elasticity of -2.54, which is substantially larger than previous studies and implies that charitable donations are extremely sensitive to tax changes. It additionally implies that for each dollar of tax revenue lost due to deductibility, the charitable causes gain around $2.54. In conclusion, charitable donations in the USA appear to be highly elastic to the price of donating and any tax incentives to encourage giving induce a substantial increase in the flow of funds to charitable organisations.

In the UK, the effect of deductibility is explored by Posnett and Sandler (1989) and Jones and Posnett (1991). In these studies, only covenanted donations are tax-deductible. Unfortunately, this form of donating only accounts for 11.3 per cent of total donations. When the donor meets the

required conditions, the usual price of giving, $(1-t_m)$, applies. For all other types of charitable donations and for non-taxpayers the price equals one. Jones and Posnett find price elasticities of –0.21 for their tobit model and –0.123 for their double-hurdle model. Although this implies that donations are inelastic to price, the authors state that their estimates are likely to be highly unreliable due to the small proportion of covenanted donations in the sample.

The presence of deductibility has the desired effects in Canada. Kitchen and Dalton (1990) find that donations are elastic to price. Kitchen (1990) finds similar results for all charitable donations but not for religious donations and, as such, conclude that changing the tax system will have virtually no impact on religious contributions in Canada. On the other hand, changing the tax level will affect the overall level of non-religious charitable donations considerably.

Charitable donations in Singapore are also tax deductible. Research by Ming Wong, Chua and Vasoo (1998) and Chua and Ming Wong (1999) find price elasticities to be very high with any reduction in the price of giving increasing private donations by more than the loss in government revenue. The authors also suggest that reducing the tax price would increase the level of volunteering as donating money and giving time are complementary goods in Singapore.

Research in Russia was carried out by Brooks (2002). The determinants of charitable giving in Russia are likely to be very different from that of western economies. In a country where the State has traditionally provided the

majority of goods and services and where little organised religion exist, there may be little culture of 'giving back'. Most charitable contributions are tax deductible and the usual tax price of giving, $(1-t_m)$, is employed. Tax evasion is a major problem in Russia and in 1996, only 70 per cent of the predicted tax revenues were ever collected. It is thought that the price variable may therefore be unreliable. Additionally, most Russians never claim tax deductions for their legitimate charitable contributions. Although Brook's results show that deductibility does positively affect charitable contributions in Russia, the high levels of tax corruption and avoidance casts doubt on the reliability of this result. Due to these reservations, the reliability of the results are called into question.

2.4 Conclusion

This chapter has outlined the results and methodologies of previous statistical studies in the area of charitable donations. Section 2.2 outlined the findings of the most recent charitable survey conducted in the Republic of Ireland. This survey outlined the trends, motivations and attitudes towards charitable donations. It was found that income, age, employment status, social status, area of residence and the importance attached to religion all effect donating trends. This study, although an invaluable contribution to the area in Ireland, is based on descriptive rather than econometric techniques and therefore leaves room for a more sophisticated statistical analysis. Prior to the analysis of this thesis, no econometric study of charitable donations has been carried out in the Republic of Ireland.

Previous international econometric studies were outlined in Section 2.3. The datasets employed include tax return data, household budget surveys and specific philanthropic surveys. The definition of charitable donations varies considerably. The majority of early studies use an aggregate donations variable while a number of studies divide charitable donations into a number of sub-categories. When sub-grouped, it is found that the determinants of each can differ significantly.

The list of variables that were found to be significant in previous research is extensive. Most studies found that income, age, education, wealth and the importance of religion all positively affect charitable giving. The effects of family size, marital status, area of residence, gender, employment status and dependent children vary from study to study. These variables are explored in subsequent chapters and compared to the empirical findings of these studies.

A large range of econometric techniques have been employed. Zero observations in the dependent variable are present in most studies. The tobit model was first employed in 1979 to address this issue and has since been the most commonly employed technique in the prior research. Bivariate approaches include the double-hurdle model, the Heckman procedure and the two-stage least square techniques. The double-hurdle model is comparable to the standard tobit and in all circumstances, outperformed the tobit specification. Based on the findings of previous studies, this thesis will employ a tobit model and a double-hurdle model to investigate the determinants of charitable donations in the Republic of Ireland.

In the majority of studies, charitable donations are tax deducible. For the donor, this implies that donating to charity is cheaper than a normal transaction or that the 'price' of donating is less than that for other economic transactions. The effect of the deductibility of donations is explored by examining income and price elasticities. With the exception of the two earliest studies, all studies have found that the presence of deductibility increases the level of donations to charitable organisations by more than the tax revenue forgone. As mentioned in Chapter 1.5.2, charitable donations in the Republic of Ireland only became tax deductible in 2001. As this thesis only analyses 1994/1995 and 1999/2000 data, the effect of deductibility in the Republic of Ireland can only be explored with the use of future surveys.

Chapter 3

The Household Budget Survey

3.1 Introduction

This chapter describes the data that are employed in the econometric analysis of Chapter 4. Section 3.2 reviews the datasets, the Household Budget Survey (HBS) 1994/1995 and 1999/2000. Section 3.3 reviews the different categories of charitable donations in the HBS and discusses the final variable chosen (the dependent variable). Section 3.4 reviews the variables that may influence a household's level of charitable donations (the independent variables) and explores the average level of charitable donations of different types of households. The household characteristics that are explored in this thesis are:

- The household's composition
- The household's level of disposable income
- The size of town in which the household is located
- The household's wealth

- The employment status of head of household
- The education level of head of household
- The economic category of head of household
- The social status of head of household
- The social class of head of household
- Whether the household contributes to a religious organisation
- Whether the household buys newspapers, magazines and books
- Whether individuals in the household smoke
- Whether individuals in the household attends cinema, theatre and dancing

It should be stressed that this chapter is purely observational in nature. Due to the inter-correlations that undoubtedly exist between independent variables, the findings from Section 3.4, although suggestive, should not be interpreted as independent relationships between dependent and independent variables. The independent statistical relationships between variables are explored in the empirical analysis in Chapter 4. The findings from this section provide a foundation on which the empirical analysis of this thesis will build. Section 3.5 concludes the chapter.

3.2 The Household Budget Survey

The datasets employed in this thesis are the Irish Household Budget Surveys (HBS) 1994/1995 and 1999/2000 which are published by the Irish Central Statistics Office. The survey is a random sample of all private households in the Republic of Ireland and consisted of 7,877 households in 1994/1995 and 7,644 in 1999/2000. The survey has been carried out six times since 1951 and covers both urban and rural households. The main purpose of the HBS is to determine expenditure patterns of Irish households in order to identify which items should be included in the Consumer Price Index. (Central Statistics Office, 1999)

Households in the survey are required to maintain a detailed diary of expenditure over a two-week period and the figures in the dataset are weekly averages of the two weeks. In addition, detailed information on income, household characteristics/demographics and a large range of household facilities/appliances can be obtained from the HBS.

3.3 The Dependent Variable

There are five different categories of charitable donations in the HBS: Church contributions, primary school contributions, secondary school contributions, boarding school contributions and all other charitable contributions. This research will focus on the 'other' category of charitable donations only.

A considerable amount of charitable activity flows through the Catholic Church in the Republic of Ireland, such as collections for Trócaire and St. Vincent de Paul.[1] Although this research wishes to capture donations to such organisations, the 'Church' contributions variable within the HBS does not account for these donations, but only accounts for contributions for church dues, payments for candles, payments to priests for baptisms and weddings, and any other contributions towards church upkeep. Contributions to organisations with religious affiliations such as Trócaire will be captured in the 'Other' category of donations.

In addition, it can be argued that church contributions are not entirely philanthropic. Households are likely to give to the church to which they are member thus the donating household receives part of the benefit from his/her donation. This argument can similarly be applied to educational contributions, as someone who donates to a school is likely to be doing so because a son/daughter/relative will benefit from the donation. It is for these reasons that church and educational donations will not be analysed.

Table 3.1 presents the correlations between the three categories of charitable donations in the HBS. Since the correlations are positive the various types of charitable donations are complementary. These correlations, although small, are significant in all cases.

[1] Both Trocaire (www.trócaire.ie) and St. Vincent de Paul (www.svp.ie) are among the largest charitable organisations in the Republic of Ireland.

Table 3.1: Correlations between charitable categories, 1994/1995 and 1999/2000

1994/1995:

	'Other'	Religious	Educational
'Other'	1.0000		
Religious	0.1943***	1.0000	
Educational	0.0125***	0.0409***	1.0000

1999/2000:

	'Other'	Religious	Educational
'Other'	1.0000		
Religious	0.0899***	1.0000	
Educational	0.0021***	0.0732**	1.0000

Where *** implies correlation is significant at a 1% level. ** at a 5% level and * at a 10 % level. Significance levels are calculated using the Spearman rank correlation coefficient.

The 'Other' category will capture donations to all *non-educational and non-religious* charitable organisations. This category will cover charitable contributions to a wide range of charitable causes, for example, 'Concern', 'St. Vincent De Paul', Cancer Research or sponsorship of children in third world nations. It also includes payments for sponsorship cards, for example, if someone

is doing a walk for charity. These payments occur in the expenditure diaries and are recorded on an expenditure-incurred basis.[2]

The difficulties of acquiring accurate reporting in relation to a household's charitable donations are obvious. Individuals are likely to overestimate charitable donations just as they would underestimate alcohol spending. It is hoped that by using the HBS, in which charitable donations are only one of over six hundred separate expenditure variables and where the goal of the survey is unrelated to charitable giving, the potential for overestimation will be lowered.

In 1999/2000, the average weekly household charitable donation over all households was 1.20 euro. This was an 18 per cent increase from the 1994/1995 average of 1.01 euro (all 1994/1995 figures have been adjusted to 1999/2000 prices throughout this thesis to account for inflation).[3] However, in 1999/2000, only 23.1 per cent of households made a charitable donation compared to 25.8 per cent in 1994/1995. The average household donation of those households that contributed to charity was 5.13 euro in 1999/2000 and 3.84 euro in 1994/1995 (a 33 per cent increase). It is evident that although fewer households contributed to charity in 1999/2000 than in 1994/1995, those households that contributed to charity in 1999/2000 gave more. In addition, it is evident that the level of donating in the Republic of Ireland depends on the time of year in which the

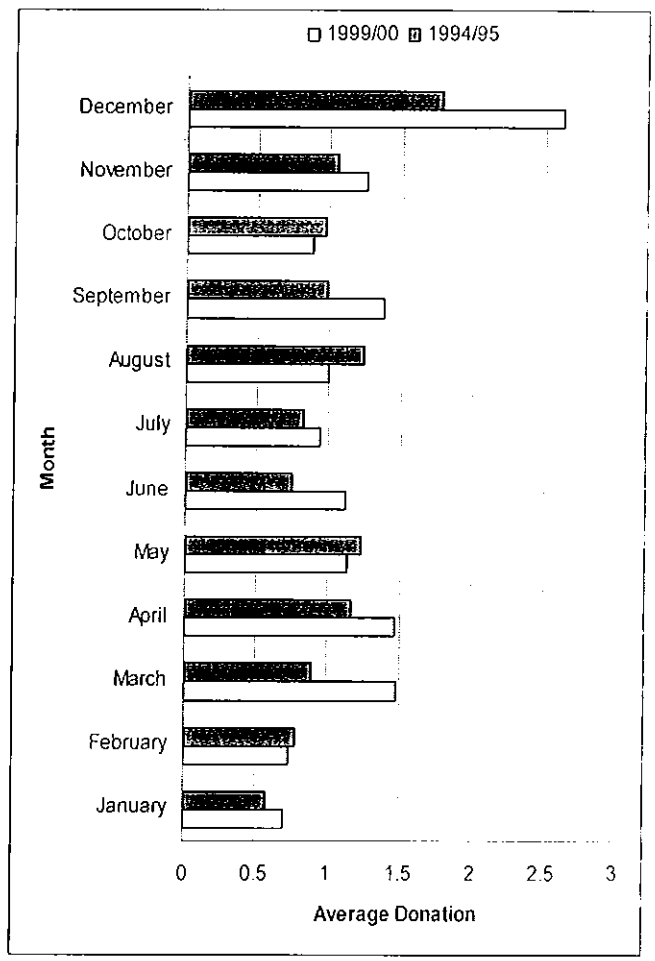
[2] It is possible that this variable is not entirely philanthropic. For example, an individual may give to a health charity (e.g. cancer research) or a rescue charity (e.g. the lifeboat service) because he or she believes that they may need the charity's assistance in the future.
[3] The 1994/1995 dataset also had to be converted from Irish pounds to euro to allow for comparability

household is interviewed (See Table 3.2 and Figure 3.1). In both 1994/1995 and 1999/2000, the highest average level of donations is in December and the lowest is in January across all households.

Table 3.2: Average charitable donation for each month, 1994/1995 and 1999/2000

Month	*1994/1995*	*1999/2000*
January	0.576	0.699
February	0.785	0.739
March	0.890	1.480
April	1.170	1.472
May	1.233	1.134
June	0.751	1.121
July	0.832	0.939
August	1.250	0.992
September	0.990	1.380
October	0.975	0.878
November	1.056	1.262
December	1.773	2.623
N	*7877*	*7644*
Total Mean	*1.01*	*1.20*

Figure 3.1: Average charitable donation for each month, 1994/1995 and 1999/2000



3.4 The Independent Variables Employed

This section outlines each of the independent variables used in the econometric analysis of this thesis. The choice of independent variables is the result of findings from previous research and also from new hypotheses that will be explained throughout each sub-section. The average level of donations of each of the independent variables is explored. Although this will suggest the relationship between each of the independent variables and the dependent variable, the true relationship cannot be confidently identified until econometrically analysed in Chapter 4. It is expected, as stated previously, that many of the independent variables are highly inter-correlated.

3.4.1 Household composition

There are many different types of households in the HBS varying from households comprising single workers to large families (See Table 3.3 for exact categories used in the HBS). It is evident, that there is an increase in the average level of donations from 1994/1995 to 1999/2000 across all household compositions with the one exception of married couples with no children who on average donated more than all other categories in 1994/1995 but the least on average in 1999/2000 (See Table 3.3). In general, however, households comprising married couples have a higher average level of donation than those comprising single individuals in both time periods.

Table 3.3: Average charitable donation for different household compositions, 1994/1999 and 1999/2000

Household Composition	*1994/1995*	*1999/2000*
Single adult age 14-64	0.825	1.000
Single adult age 65+	0.656	0.972
Single adult with children	0.481	1.449
Married couple, no children	1.253	0.885
Married couple, 1 child	0.867	1.107
Married couple, 2 children	0.729	1.087
Married couple, 3 children	1.010	1.687
Married couple, 4 or more children	0.889	1.468
N	*7877*	*7644*
Total Mean	*1.01*	*1.20*

Previous studies have found that households with children are more likely to give. The effect of the presence of dependent children, regardless of marital status, on the average household donation is illustrated in Table 3.4. In general, it appears that households with no children have a higher average level of donations. The addition of one or two dependent children to a household lowers the average amount that households donate in both time periods.

Table 3.4: Average charitable donation depending on the number of dependent children, 1994/1995 and 1999/2000

Dependent Children	*1994/1995*	*1999/2000*
No children	1.104	1.299
1 child	0.903	1.064
2 children	0.898	1.058
3 children	1.090	1.182
4 children	0.948	1.190
5 children	0.828	0.791
6 children	0.485	0.597
N	*7877*	*7644*
Mean	*1.01*	*1.20*

Table 3.5 illustrates the different levels of average household donations depending on the marital status of the head of household regardless of the presence of children. In 1994/1995 and 1999/2000, married households have a higher average level of donations.

Table 3.5: Average charitable donation depending on marital status of head of household, 1994/1995 and 1999/2000.

Marital Status of Head of Household	*1994/1995*	*1999/2000*
Single	0.725	1.209
Married	1.099	1.255
Divorced	-	0.152
Widow	0.933	0.911

3.4.2 Age of head of household

The majority of studies outlined in Chapter 2 found that people give more as they get older. Table 3.6 outlines the average donation of different head of household age categories. Some explanations of why people give more when they are older may be due to greater social awareness and maturity gained from being older or higher levels of wealth. In general, the average household donation increases as the head of household gets older. Interestingly, the 55—64 age group is giving less in 1999/2000 than they are in 1994/1995 while the 65—74 age group is giving substantially more in 1999/2000 than they are in 1994/1995.

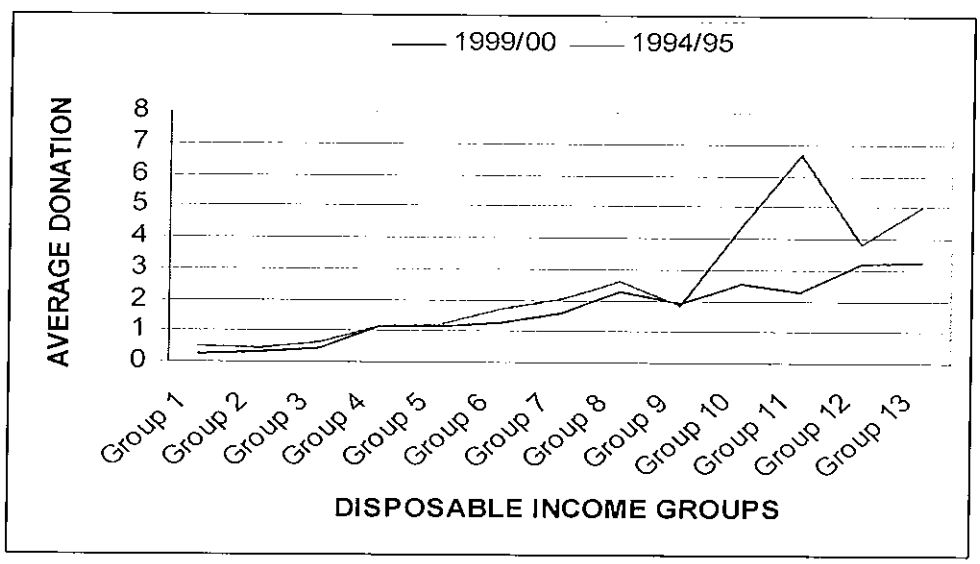
Table 3.6: Average charitable donations for different head of household age groups, 1994/1995 and 1999/2000

Age of head of household	*1994/1995*	*1999/2000*
Between 15 and 24	0.185	0.273
Between 25 and 34	0.545	0.560
Between 35 and 44	0.940	1.135
Between 45 and 54	1.102	1.409
Between 55 and 64	1.626	1.336
Between 65 and 74	0.952	1.704
Over 75	1.165	1.009
N	*7877*	*7644*
Total Mean	*1.01*	*1.20*

3.4.3 Disposable income

In line with all previous research, it is expected that higher levels of donating are associated with higher levels of donating. Disposable weekly income is comprised of wages and salaries, pensions, allowances, investment income, property income, annuities, trusts, covenants, benefits, grants, state transfer payments and income in kind, minus any direct taxation.[4] Table 3.7 and Figure 3.2 illustrate the average household charitable donations across different income groups. In general, the average charitable donation increases with higher levels of income in both time periods.

Figure 3.2: Average charitable donation for disposable income groups 1994/1995 and 1999/2000



[4] Disposable income is also divided by the number of equivalent adults (head of household equals one, other adults over fourteen years of age equals 0.7 and children under fourteen equals 0.5) which comes from a Eurostat definition and is available in the HBS. The adjustment leads to an income level that accounts for the amount of people in the household.

Table 3.7: Average charitable donation for each income group, 1994/1995 and 1999/2000

Disposable Income group	*1994/1995*	*1999/2000*
Group1 (Less than 50 euro)	0.528	0.245
Group2 (Between 50 and 100 euro)	0.448	0.344
Group3 (Between 100 and 150 euro)	0.617	0.454
Group4 (Between 150 and 200 euro)	1.133	1.116
Group5 (Between 200 and 250 euro)	1.201	1.165
Group6 (Between 250 and 300 euro)	1.694	1.279
Group7 (Between 300 and 350 euro)	2.054	1.598
Group8 (Between 350 and 400 euro)	2.610	2.262
Group9 (Between 400 and 450 euro)	1.843	1.884
Group10 (Between 450 and 500 euro)	4.352	2.537
Group11 (Between 500 and 550 euro)	6.694	2.264
Group12 (Between 550 and 600 euro)	3.780	3.173
Group13 (Over 600 euro)	5.041	3.263
N	*7877*	*7644*
Mean	*1.01*	*1.20*

The average household charitable donation as a percentage of disposable income is a more accurate measure of each group's generosity to charitable organisations (See Table 3.8). Overall, the average household donation as a percentage of disposable income has decreased from 0.79 per cent in 1994/1995 to 0.54 per cent in 1999/2000. With the exceptions of groups eight and nine, all other groups show a decline in the percentage of income donated to charity between 1994/1995 and 1999/2000. Although, households are giving more in monetary value, as a

percentage of their income they are giving less. For both periods, the highest level of donations as a percentage of disposable income (the most relatively generous group) is the group with the lowest income level.

Table 3.8: Percentage of disposable income given to charity for different disposable income groups, 1994/1995 and 1999/2000

Income Group	*1994/1995*	*1999/2000*
Group 1 (Less than 50 euro)	2.11%	0.98%
Group 2 (Between 50 and 100 euro)	0.59%	0.46%
Group 3 (Between 100 and 150 euro)	0.49%	0.36%
Group 4 (Between 150 and 200 euro)	0.65%	0.63%
Group 5 (Between 200 and 250 euro)	0.53%	0.52%
Group 6 (Between 250 and 300 euro)	0.61%	0.46%
Group 7 (Between 300 and 350 euro)	0.63%	0.49%
Group 8 (Between 350 and 400 euro)	0.69%	0.70%
Group 9 (Between 400 and 450 euro)	0.43%	0.44%
Group 10 (Between 450 and 500 euro)	0.91%	0.53%
Group 11 (Between 500 and 550 euro)	1.27%	0.43%
Group 12 (Between 550 and 600 euro)	0.66%	0.55%
Group 13 (Over 600 euro)	0.72%	0.47%
N	*7877*	*7644*
Mean	*1.01*	*1.20*

3.4.4 Gender of head of household

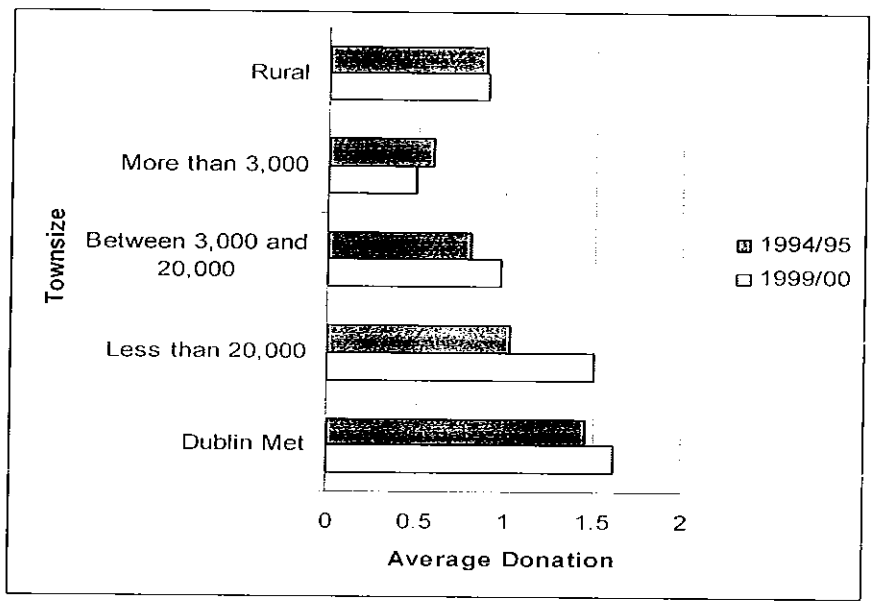
There are mixed results in the literature about the effects of gender on charitable giving. Whilst the majority of studies find no relationship, Brooks (2002) finds that females donate more and Pharoah & Tanner (1997) find that more females in a household increases the probability of donating. In the HBS, the average donation of females is 0.79 euro in 1994/1995 and 0.92 euro in 1999/2000. The average donation of males is 1.09 euro in 1994/1995 and 1.32 euro in 1999/2000. Although this implies that males are more charitable, the difference in the level of donating may be inter-linked with a number of other variables. Lower average levels of donating by females could be due to lower income levels. For example, average weekly disposable income for households headed by females in 1999/2000 is 217 euro compared to 244 euro for households headed by males. The independent effect of gender of head of household expenditure will be explored in detail in Chapter 4.

3.4.5 Town-size

There are five different town-size classifications used in the HBS: Dublin Metropolitan area, large towns (towns with more than 20,000 inhabitants), medium sized towns (towns with between 3,000 and 20,000 inhabitants), small towns (towns with less than 3,000 inhabitants) and rural areas. It is evident from the HBS that the average level of donations of Dublin households is highest in both survey periods (Figure 3.3). Only small towns have a lower average level of donations in 1999/2000 than in 1994/1995. Additionally, there is a substantial

increase in the average household donation of large towns between 1994/1995 and 1999/2000.

Figure 3.3: Average charitable donations town-sizes, 1994/1995 and 1999/2000.



3.4.6 Household wealth

It is expected that the wealthier a household is, the more it will donate. Household tenure, house size (measured by number of rooms), and the presence of loans and investments/savings are employed as measures of wealth.

Household Tenure

Households are divided into four categories of household tenure within the HBS: householders own their house outright; with a mortgage; with a tenant purchase

scheme: rent their accommodation.[5] The average charitable donation for each category is given in Table 3.9. Householders who own their house outright donate the most on average and householders who rent donate considerably less on average than all other categories in both 1994/1995 and 1999/2000. Households that qualify for the tenant purchase scheme do so because of their low income levels, which may explain why their donation levels are lower than the other categories in both time periods.

Table 3.9: Average charitable donation for household tenures, 1994/1995 and 1999/2000

Household Tenure	*1994/1995*	*1999/2000*
House owned outright	1.165	1.409
House owned (Mortgage)	1.153	1.360
House owned (Tenant Purchase Scheme)	0.757	0.606
Rented accommodation	0.484	0.398
N	*7877*	*7644*
Mean	*1.01*	*1.20*

Household Size

Household size is measured by dividing the number of rooms by the number of equivalent adults (as with the adjustment made to disposable income). Aside from a few exceptions, the average household charitable donation increases as

[5] In the Republic of Ireland, a tenant purchase scheme applies to a tenant of a local authority house (for at least one year) who can apply to the local authority from which he/she rents to purchase the house either outright or by way of shared ownership

household size increases in both 1994/1995 and 1999/2000 (See Table 3.10). The most notable exception is the dip in the average household donation when the number of rooms increases from three to four. This may be due to the fact that at four rooms, a number of relatively small houses enter the sample and households with less than four rooms would include average sized apartments.

Table 3.10: Average charitable donation for the number of Rooms 1994/1995 and 1999/2000

Number of Rooms	*1994/1995*	*1999/2000*
One	0.049	0.059
Two	0.447	0.278
Three	0.452	1.034
Four	0.453	0.523
Five	0.663	0.658
Six	1.013	1.352
Seven	1.619	1.719
Eight	2.734	2.055
Nine	3.106	5.39
Ten	3.518	2.054
N	*7877*	*7644*
Mean	*1.01*	*1.20*

The Presence of investments/savings

Household investments (including savings) are divided into the following categories in the HBS: stocks, government loans, building society accounts,

commercial bank accounts, trustee accounts and post office accounts. In general, households with investments/savings contribute larger amounts to charitable organisations. In 1999/2000, the average donation of households with no investments was 0.86 euro, compared with 1.80 euro for households with investments. The corresponding figures for 1994/1995 are 0.75 euro and 1.67 euro.

Household Debt

Data on the presence of loans is available from the HBS. Loans are either from the households' bank, credit union or employer. There are conflicting theories explaining the interrelationship between household debt and the level of household charitable donations. On one hand, the presence of loans may create a financial burden that would reduce a household's perceived wealth. Households with loans would therefore be expected to contribute less to charity than households without loans. Alternatively, the presence of loans may indicate a high level of financial awareness and collateral. Households with loans may therefore be wealthier and contribute more to charity than a household without loans. In 1999/2000, there is no considerable difference in the average donation of households with and without debt. In 1994/1995, however, the average donation of households without debt is 0.89 euro compared to 1.20 euro for households with debt. This difference may be linked to the increased level of borrowing over the 1990's. In 1994/1995, 38 per cent of households had some form of loan. By 1999/2000, this figure had increased to 45 per cent. It is possible that the presence

of loans may be a less appropriate measure of wealth in 1999/2000 than it is in 1994/1995.

3.4.7 Employment status of head of household

The HBS divides the head of household into seven employment status categories (See Table 3.11). The average household donation varies considerably across these categories. Households with a retired head of household have the highest level of charitable donations on average in 1999/2000 and the second highest in 1994/1995. It is also evident that heads of households in employment give more than households whose head is unemployed, in education or unable to work. This may be driven by the lower income levels associated with the latter employment statuses.

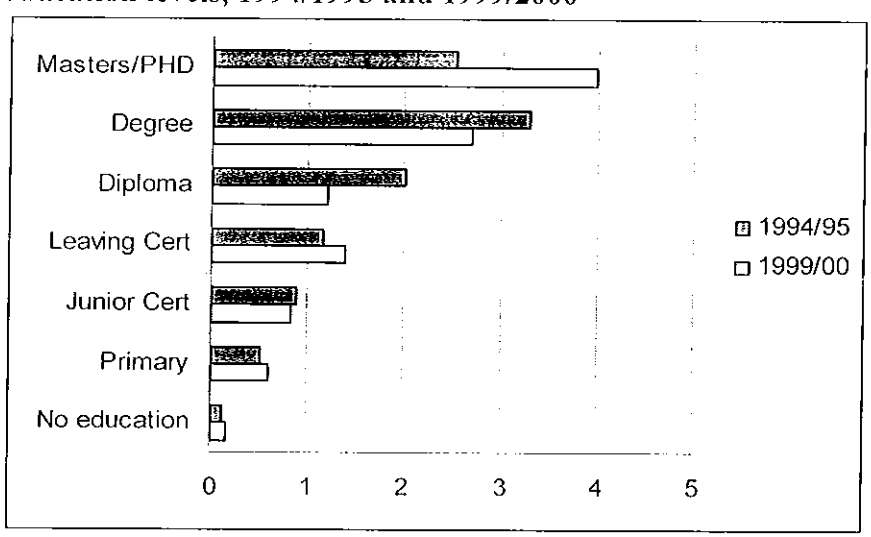
Table 3.11: Average charitable donations for employment status of head of household, 1994/1995 and 1999/2000

Employment Status	*1994/1995*	*1999/2000*
Employee	1.258	1.377
Self-employed	1.200	1.175
Unemployed	0.483	0.295
Engaged in home duties	0.419	0.695
Retired	1.248	1.629
Engaged in full-time education	0.121	0.292
Permanent incapacity to work	0.425	0.503
N	*7877*	*7644*
Mean	*1.01*	*1.20*

3.4.8 Education level of head of household

It is expected that higher levels of education are associated with higher levels of social awareness and consequently higher levels of charitable donations. Kingma (1989), Jones & Posnett (1991), Schlegelmilch, Diamantopoulos & Love (1997), Pharoah & Tanner (1997) and Chua & Ming Wong (1999) all find a positive relationship between education and charitable giving. In the HBS, heads of households are divided into seven separate categories of educational attainment (See Figure 3.4). Aside from a few exceptions, higher levels of education are associated with higher average levels of charitable donations in both surveys. In 1999/2000, households where the head of household had a Masters/PhD have the highest average donation. It is also apparent that the average donation of households where head of household has a Degree and Diploma declined by 18 per cent and 40 per cent respectively between 1994/1995 and 1999/2000.

Figure 3.4: Average charitable donations for head of household education levels, 1994/1995 and 1999/2000



3.4.9 Economic category of head of household

The HBS classifies the head of household by six economic categories (See Table 3.12). The average household charitable donation varies considerably across these economic categories. In both surveys, non-manual workers and the self-employed have the highest average level of donating while agricultural workers have the lowest. Although there appears to be a large increase in the average level of donating by agricultural workers between surveys, there are so few agricultural workers surveyed in HBS that no confident inferences can be made.[6] A decline in the average level of donating by farmers and manual workers between survey periods is also observed. The decline in farm donations may be linked with the relative worsening economic position of this group over the 1990's. While the average disposable income (again adjusted for the number of equivalent adults) for farmers increased by 26 per cent between survey periods the average income for the total sample increased by 37 per cent.[7]

[6] In 1994/1995, 1.1 per cent of the sample were agricultural workers and 0.7 per cent in 1999/2000

[7] Figures are calculated from the HBS

Table 3.12: Average charitable donation for economic categories of head of household, 1994/1995 and 1999/2000

Economic Category of Head of Household	*1994/1995*	*1999/2000*
Manual workers in industry and services	0.852	0.747
Non-manual workers	1.341	1.557
Self-employed in industry and service	1.410	1.434
Farmers	1.088	0.899
Agricultural workers	0.093	0.667
Non-economically active	0.793	1.136
N	*7877*	*7644*
Mean	*1.01*	*1.20*

3.4.10 Social status and social class of head of household

There are several social status and social class categories in the HBS. In the majority of social classes and statuses, the average level of household charitable donations has increased between 1994/1995 to 1999/2000 (See Figures 3.5 and 3.6). It is evident that the average donation of the large farm category has increased while it has fallen for the smaller farm category between surveys (Figure 3.6). This reduction in donations from smaller farmers may be driving the overall decrease in the average level of donations from total farmers (See Section 3.4.9).

Figure 3.5: Average charitable donation head of household social statuses, 1994/1995 and 1999/2000

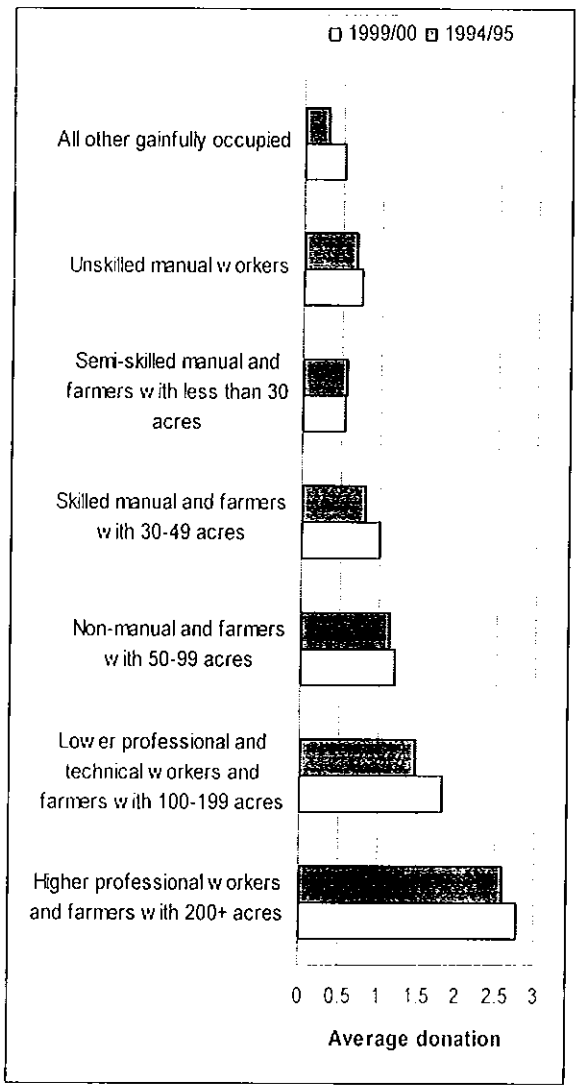
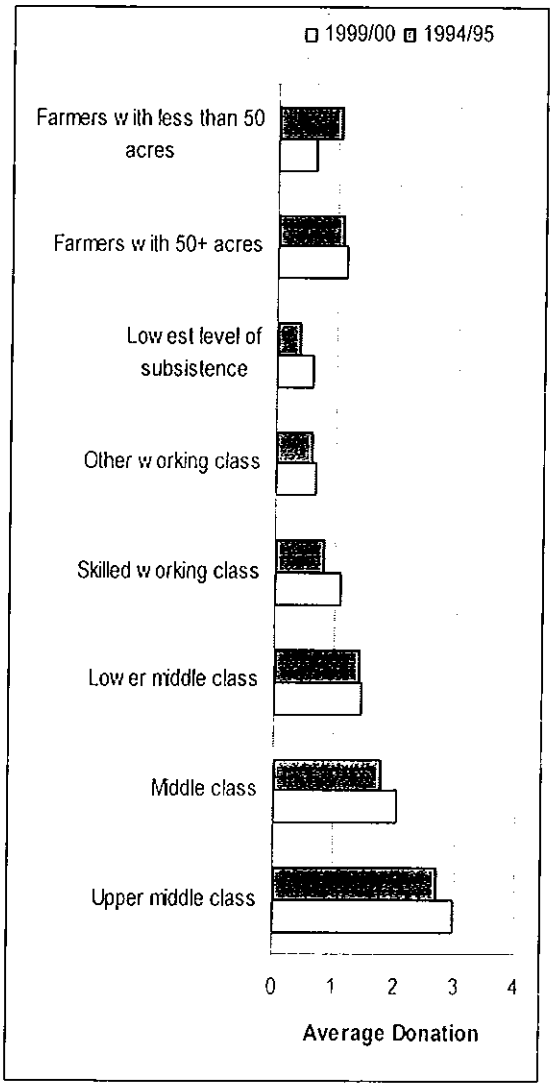


Figure 3.6: Average charitable donation for head of household, social classes 1994/1995 and 1999/2000



3.4.11 Religion

The relationship between the importance of religion and the level of charitable donations is well documented in previous research. Halfpenny (1990), Schlegelmilch, Diamantopoulos & Love (1997), Schervish & Havens (1997), Bekkers (2002) and Independent Sector (2002) all find that individuals who feel religion is important to them are more charitable. The higher an individuals regard

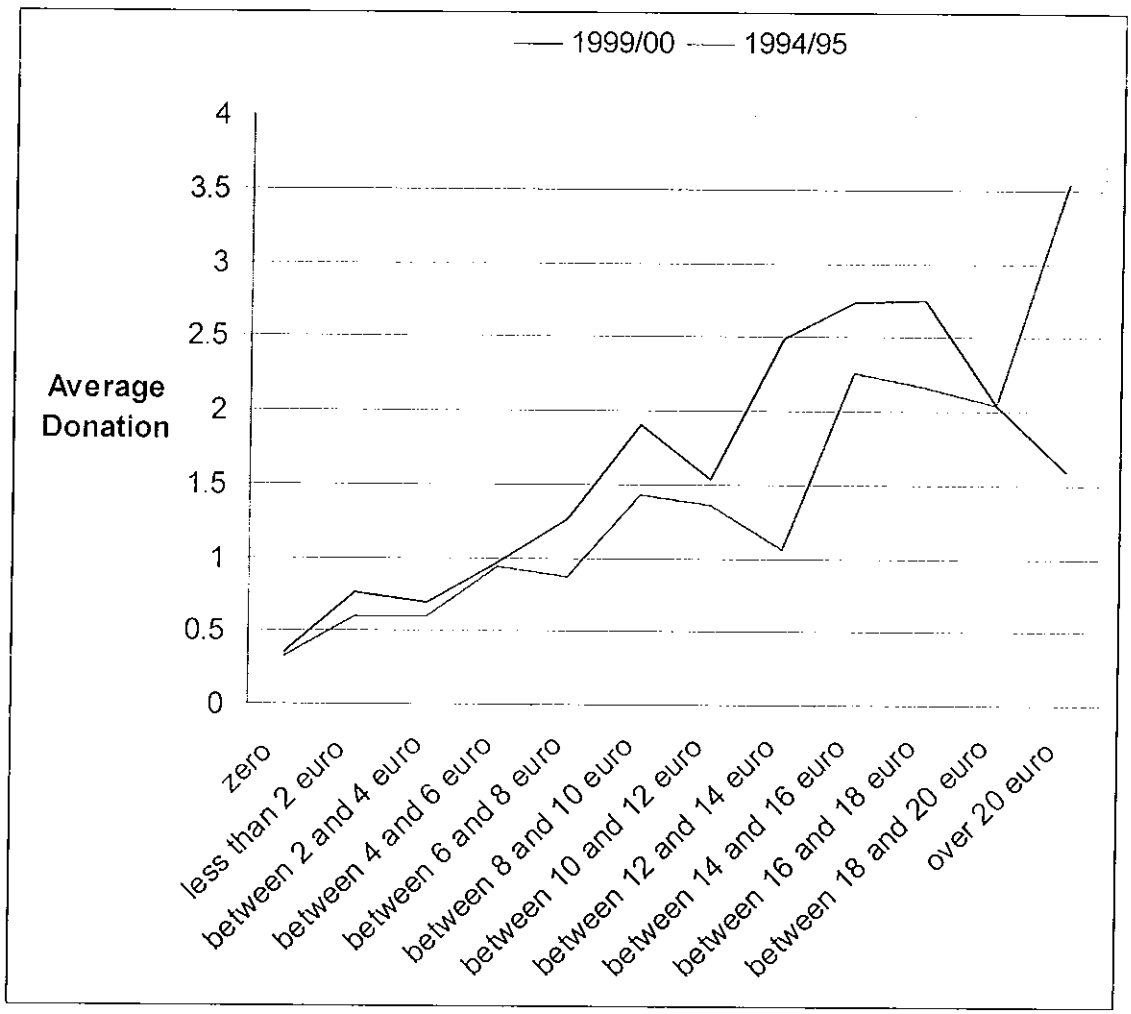
for religion, the more morally aware and caring he or she is expected to be. This should then manifest itself in a higher level of charitable donations. Unfortunately, the HBS does not record religious affiliations. The variable used to approximate the importance of religion to a household is their voluntary church contributions. However, the assumption must be made that households who donate to religious organisations are in fact religious themselves or that religion is important to them. The average charitable donation of households who also donate to their church is 1.32 euro and 1.63 euro in 1994/1995 and 1999/2000 respectively compared to 0.48 euro and 0.56 euro for households that give nothing to their church.

3.4.12 Reading expenditure

It is expected that those who read more than average are more highly educated and will have a higher awareness of social conditions and problems. It is therefore expected that the more a household spends on reading material, the higher its contributions to charitable organisations. Another reason why regular readers might give more is that individuals who read newspapers and magazines are more regularly influenced by the advertisements and appeals of charitable organisations. Data on expenditure on books, newspapers and magazines is attained from the HBS and is used as a measure of how much the household members read. In general, average charitable donations increase with higher levels of reading expenditure (See Figure 3.7). In 1999/2000, the average donation of households who spent nothing on reading is 0.35 euro compared to

1.29 euro for households that did. The corresponding figures for 1994/1995 are 0.38 and 1.10 euro.

Figure 3.7: Average charitable donations depending on household reading expenditure, 1994/1995 and 1999/2000

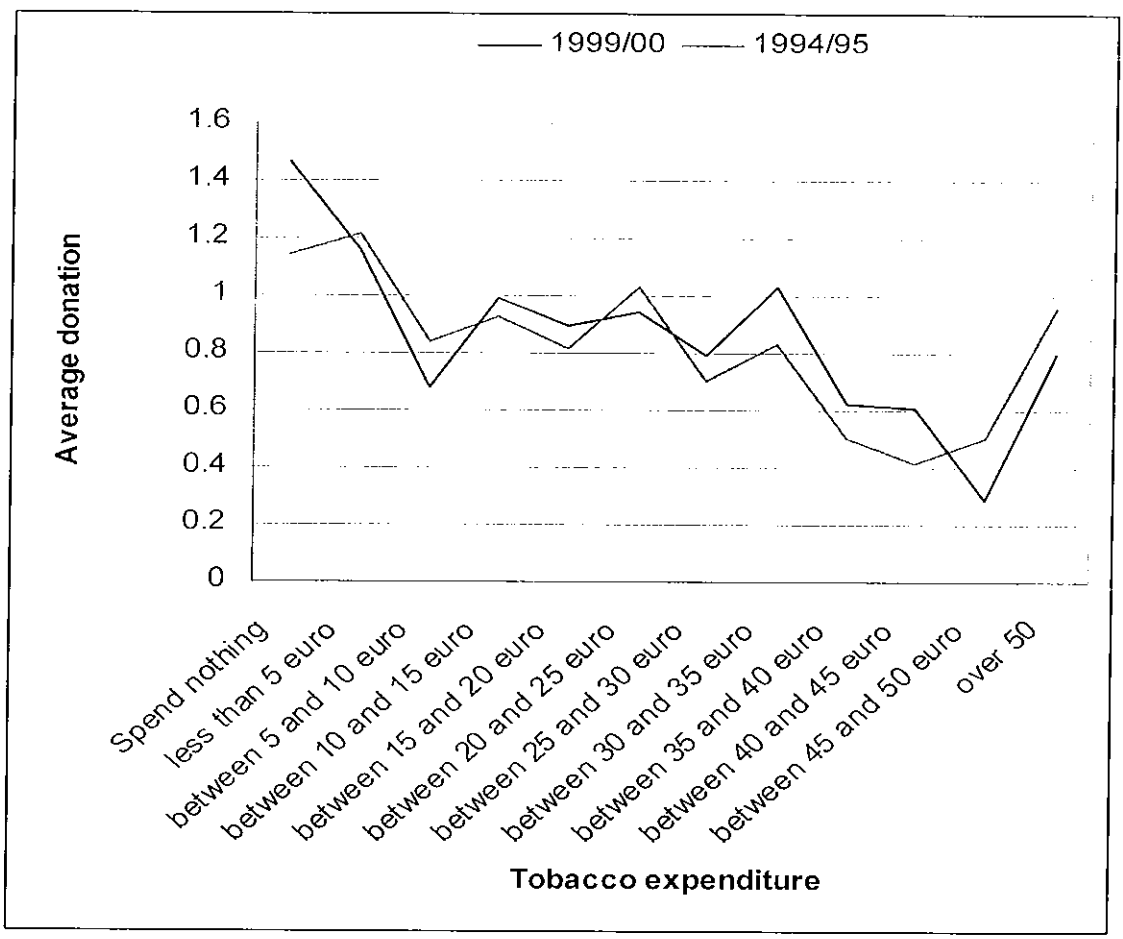


3.4.13 Tobacco expenditure

This section explores the relationship between tobacco expenditure and average household charitable donations. Smoking is a non-essential expenditure item and therefore it is hypothesised that higher levels of expenditure are associated with

more self-oriented individuals who are less charitable. Research using the Family Expenditure Survey in the UK has found that smokers are less charitable than non-smokers (Banks & Tanner, 1997). For both survey periods, a downward trend is apparent in the average level of donations as tobacco expenditure increases (See Figure 3.8). In 1999/2000, the average charitable donation of households that record expenditure on cigarettes and tobacco is 0.88 euro compared to 1.47 euro for households that spend nothing on cigarettes and tobacco. However, this difference may be driven by differences in income, social class etc. The independent effect of smoking expenditure will be explored in detail in Chapter 4.

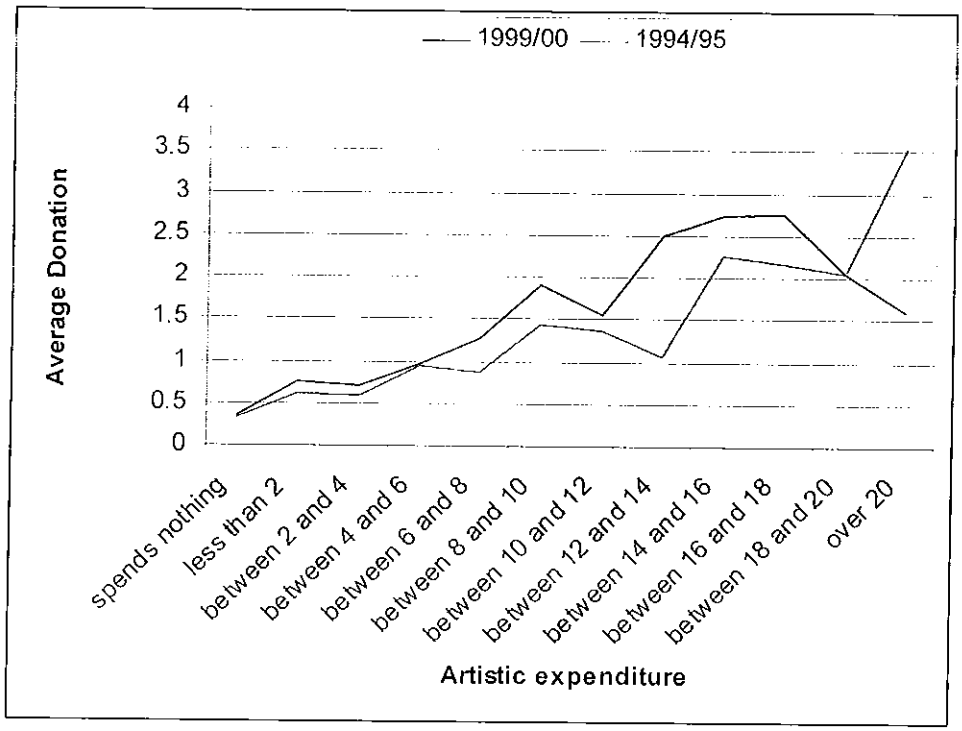
Figure 3.8: Average charitable donations depending on household tobacco expenditure, 1994/1995 and 1999/2000



3.4.14 Artistic expenditure

Individuals that spend more on artistic productions are expected to be more involved and knowledgeable about their community and thus in tune with its needs. It is hypothesised that this should lead to a higher average level of charitable donations. The measure of artistic expenditure is calculated from the HBS and comprises of weekly expenditure on cinema, theatre and dancing. Figure 3.9 displays the average level of charitable donations depending on the level of household artistic expenditure. In general, the average charitable donation increases with higher levels of household artistic expenditure. The average charitable donation for households that recorded artistic expenditure for 1999/2000 and 1994/1995 is 1.34 euro and 1.13 euro respectively. In contrast, for households that spend nothing, the figures are 0.80 euro and 0.74 euro respectively for the same periods. Again, this association may be driven by many inter-correlations with other variables. It is likely that households with higher disposable income also have higher levels of artistic expenditure also. The individual effect of artistic expenditure will be examined in Chapter 4.

Figure 3.9: Average charitable donations depending on household artistic expenditure, 1994/1995 and 1999/2000



3.5 Conclusion

This chapter has described the Irish Household Budget Survey (HBS) 1994/1995 and 1999/2000. The HBS is a random sample of all private households in the Republic of Ireland and comprises of 7,877 households in 1994/1995 and 7,644 households in 1999/2000. Although the survey is conducted for the purposes of updating the Consumer Price Index, detailed information on household income and demographics makes it a potentially useful dataset for many disciplines.

The HBS captures donations to religious organisations, educational organisations and all other charitable contributions. As described in Section 3.3, only the 'other'

- The higher the education of the head of household the more the household donates
- Households with higher levels of reading and artistic expenditure have higher average levels of charitable donations
- The more a household spends on tobacco, the less it will give to charity

The findings from Section 3.4, although suggestive, are likely to be highly inter-correlated. Therefore, the independent effect of each independent variable on charitable donations cannot be confidently stated until econometrically analysed in the next chapter.

Chapter 4

Econometric Methodology and Model Results

4.1 Introduction

This chapter outlines the econometric methodology and results of this thesis. In the Republic of Ireland, 77 per cent of households reported that they made no charitable donation during the two week survey period in the 1999/2000 HBS as did 74 per cent in the 1994/1995 HBS. Analysing household expenditure data in which a large proportion of households report that they spend nothing complicates the econometric model considerably. When the dependent variable is limited in such a way, standard Ordinary Least Squares (OLS) estimates are biased, even asymptotically (Kennedy, 1998). Simply omitting these zero observations and only analysing households that donate also creates bias and inconsistency and would discard a great deal of valuable information.

There are a number of econometric procedures available to accommodate data with many zero observations. Examples include the tobit model, the double-hurdle model and the infrequency of purchase model. The three models differ primarily in their assumptions of the source of zero observations. The tobit model assumes that zero observations are standard economic corner solutions, that is, households do not donate to charity because they are constrained by income and relative prices. If it is expected that zero observations are due partly to non-participation for non-economic reasons, then the 'market participation' or double hurdle model should be used. Alternatively, if it is expected that zero observations are due to misreporting or that the survey is too short to capture the expenditure, then an 'infrequency of purchase' model or 'p-tobit' model should be used.

As described in Chapter 2, the most common econometric technique applied in the area of charitable donations is the standard tobit model. This model has been used by Reece (1979), Schiff (1985), Kingma (1989), Kitchen & Dalton (1990), Lankford & Wyckoff (1991), Kitchen (1992), Auten & Joulfaian (1996) and Brooks (2002). The double-hurdle model has been applied by Jones & Posnett (1991) and Yen, Boxall & Adamowicz (1997). In this thesis, both the tobit and double-hurdle models are considered.

Section 4.2 outlines the methodology and specification of the standard tobit model. Specification tests, most notably tests for non-normality and heteroskedasticity, are explored. Remedies for misspecification are then applied

followed by an interpretation of the most appropriate tobit specification for both survey periods. Following an exploration of the tobit model, Section 4.3 describes and interprets the double-hurdle model. Any specification adjustments applied to the tobit model are similarly applied to the double-hurdle model. The chapter is concluded with a comparison of both approaches followed by the computation of marginal effects for the most appropriate specification.

4.2 The Tobit Model

4.2.1 Model description

The tobit model was created by James Tobin (Tobin, 1958) in his analysis of household expenditure on durable goods. The model has since been applied to a large number of empirical applications using censored data. In the model, a latent variable y_{i1}^{*} is assumed to represent a household's utility associated with charitable giving. However, y_{i1}^{*} is unobserved as the data only provide information on the actual level of giving, y_i, which includes a number of zero observations or corner solutions. It is assumed in the model that observed expenditure equals desired expenditure for positive values of y_{i1}^{*} but equals zero otherwise. Negative desired expenditures are assumed to exist but are unobservable.

The model is described as follows:

$$y_{i1}^{*} = x_i'\beta + u_i, \quad i = 1.2.....n, \quad u_i \sim N(0,\sigma^2)$$

$$y_i = y_i^{*} \text{ if } y_i^{*} > 0$$

$$y_i = 0 \quad \text{if } y_i^{*} \le 0 \qquad \textbf{(4.1)}$$

where x_i is a vector of independent variables corresponding to the ith household, u is an independently distributed error term assumed to be normally distributed with zero mean and constant variance σ^2 and β is a vector of unknown coefficients.

The model is estimated by maximum likelihood. The contribution to the likelihood function is either the probability mass of a zero observation or the conditional density of y_i given that it is positive multiplied by the probability mass of observing $y_i > 0$ (Verbeek, 2000). Given that the model assumes a normally distributed error term, the log-likelihood function is:

$$\log L_1(\beta,\sigma^2) = \sum_{i\in I_0} \log\left[1 - \Phi\left(\frac{x_i'\beta}{\sigma}\right)\right] + \sum_{i\in I_1} \log\left[\frac{1}{\sqrt{2\pi\sigma^2}} \exp\left\{-\frac{1}{2}\frac{(y_i - x_i'\beta)^2}{\sigma^2}\right\}\right] \qquad \textbf{(4.2)}$$

where $\Phi(.)$ is the standard normal cumulative distribution function and index sets I_0 and I_1 correspond to the zero and positive observations respectively.

Maximising this equation with respect to β and σ^2 leads to consistent and asymptotically efficient estimators for β and σ^2.

4.2.2 Specification concerns

The likelihood function in the tobit model rests heavily on the assumptions of normality and homoskedasticity in the error term. When either assumption is violated, maximum likelihood estimation produces inconsistent parameter estimates. To test for non-normality, a conditional moments based test is used. This test was derived by Pagan & Vella (1989), who built on work by Newey (1985) and Tauchen (1985).

To accommodate non-normality an Inverse Hyperbolic Sine (IHS) transformation of the dependent variable which is continuously defined over positive, zero and negative values is employed (Reynolds & Shonkwiler, 1991). The form of the transformation is:

$$I(y_i) = \gamma^{-1} \log(\gamma y_i + (\gamma^2 y_i^2 + 1)^{1/2}) \qquad \textbf{(4.3)}$$

where γ is an unknown parameter that controls for kurtosis and is estimated from the data. The IHS transformation has previously been employed by Gao, Wailes

& Cramer (1995), Jensen & Yen (1996), Yen, Boxall & Adamowicz (1997), Yen & Jones (1997) and Newman, Henchion & Matthews (2003).[1]

The presence of heteroskedasticity can also lead to inconsistent parameter estimates. To accommodate a heteroskedastic error term, multiplicative heteroskedasticity is assumed and integrated into the model by assuming that the variance of the error term is a function of a set of continuous exogenous variables in z_i, a subset of X_i.

$$\sigma_i = \exp\{z_i' h\} \tag{4.4}$$

where h is a conformable parameter vector (Yen & Jones, 1997). Assuming multiplicative heteroskedasticity guarantees that the variance will be positive (Melenberg & Van Soest, 1996).

4.2.3 Final specification

The independent variables explored in specifying the model of charitable giving in the Republic of Ireland are outlined in Appendix A, Table 4.1. All independent variables are initially included and subsequently dropped if individually insignificant. The models are estimated by maximum likelihood using the Maxlik

[1] An alternative transformation of the dependent variable to accommodate non-normality is the box-cox transformation. This transformation has been used by Lankford & Wyckoff (1991) in their research on charitable giving and more recently by Martínez-Espiñeira (2004). Drawbacks include an inherent non-normality unless the Box-Cox parameter equals zero. In addition, the transformation cannot be used on random variables that take on negative values (Jensen & Yen, 1996).

procedure in Gauss version 3.5. Results from the standard tobit model for both 1994/95 and 1999/2000 are given in Appendix A. Table 4.2.

Heteroskedastistic tobit models are also estimated for both 1994/95 and 1999/2000. Results for both survey years are presented in Appendix A. Table 4.3. Likelihood ratio tests are used to explore whether the heteroskedastic tobit model is a more appropriate specification than the standard tobit (see Appendix B, Table 4.9). Unlike the 1999/2000 survey, the heteroskedastistic model outperforms the standard tobit model for 1994/1995.

The results for the normality tests in both survey years are outlined in Appendix B. Table 4.10. In both cases, the assumption of normality is rejected which raises questions about the consistency of the standard tobit parameters in Table 4.2.

To accommodate non-normality, the IHS transformation is applied to both tobit models and results are outlined in Appendix A, Table 4.4. In both surveys, the IHS parameter is significant confirming that the error terms in the untransformed models are non-normal and therefore misspecified. Likelihood ratio tests are used to validate the application of the IHS transformation (See Appendix B. Table 4.11), The heteroskedastic tobit with an IHS transformation is found to be the most appropriate specification for the 1994/1995 dataset. However, the tobit with the IHS transformation but without any adjustment for heteroskedasticity is found to be the most suitable specification for the 1999/2000 dataset.

4.2.4 Interpretation of results

The coefficients calculated from the tobit model are not comparable to a standard OLS regression model. To fully understand the strength of the relationship between each of the independent variables on the probability and the level of charitable donations, marginal effects for each need to be calculated as outlined by McDonald and Moffitt, (1980). At present, the direction and significance of each of the variables are explored. As with any econometric model, the results are independent of one another (*ceteris paribus*). Any apparent trends are noted although these trends cannot be confidently confirmed until marginal effects are explored. Section 4.4 will present the marginal effects for the most suitable overall model.

The amounts that Irish households donate to charity significantly depend upon the time of year in which they are interviewed. In 1999/2000, households gave more in December than in any other month. A similar but less persuasive effect is found in the 1994/1995 survey. Although compared to December, all month coefficients are negative, not all of these coefficients are statistically significant. It appears that households in 1994/1995 gave more evenly across the year than households in 1999/2000.

It was expected that married households and households with dependent children would donate more to charity. In 1994/1995, households with a married head of household donated significantly more to charity than households headed by a

single person. This marriage variable is not statistically significant in 1999/2000. This change may be linked to the changing characteristics of the average Irish family over the 1990's (see also Chapter 1.2). In addition, it appears that the presence of dependent children does not affect how much households give in 1994/1995 although there is a significant positive relationship in 1999/2000. It is also evident that the gender of head of household has no significant effect on how much the household gives to charity in either 1994/1995 or 1999/2000.

In line with previous research, it was expected that the household's level of disposable income has a significant positive effect on their level of donations. This effect is found to be significant in 1999/2000 but not so in 1994/1995. In 1999/2000, income has a strong and positive effect on how much a household gives to charity. Although income is not significant in 1994/1995, it would not be appropriate to exclude income from the model as the variable is significant prior to the heteroskedasticity adjustment. Excluding income would run the risk of omitted variable bias and is therefore included in the model. The effects of age are also as anticipated. In both survey periods, the older the head of household, the more the household donates.

The majority of the expenditure variables are statistically significant. Households with positive levels of artistic and reading expenditure donate significantly more to charity. In both 1994/1995 and 1999/2000, significant positive effects are found. It was expected that charitable giving would be negatively associated with

positive levels of tobacco expenditure. The presence of at least one smoker in the household has a significant negative effect in 1999/2000 only.

The majority of the education variables are statistically significant in both survey periods. Heads of households with a junior certificate, leaving certificate, a diploma, a degree and a masters/PhD give significantly more to charity than heads of households with either primary education or no education.

There is a considerable amount of variation in the level of donations of different economic categories in 1994/1995 compared to 1999/2000. In 1999/2000, only the self-employed heads of households give significantly less to charity than any of the other economic categories (this variable has a positive effect in 1994/1995). In 1994/1995, farmers appear to give the most to charity followed by non-manual workers, manual workers, the self-employed and the non-economically active (compared to agricultural workers, fishermen and foresters). In 1999/2000, it is evident that the differences in donation levels of various economic categories no longer exist.

The presence of investments/savings, loans and the household's tenure are used as a measure of the household's wealth. In both survey periods, households with investments/savings and loans donate significantly more to charity than households without. In 1994/1995, there is no significant difference in the donating patterns of those who own their house outright, via a mortgage or via a

tenant purchase scheme, however, households that rent their accommodation donate significantly less. Similar effects are found in 1999/2000.

It was expected that households who donate to their church are also more likely to donate to charity. This relationship is significant in both 1994/1995 and 1999/2000. It appears that households that donate to their church are also generous donors to charity.

The size of the town in which the household resides has a significant effect on the amount that the household donates to charity. In 1994/1995, households that reside in rural areas and small towns (less than 3000 inhabitants) give significantly less. Households that reside in the Dublin Metropolitan area and in large towns (over 20,000 inhabitants) give the most to charity. Households in medium sized towns (between 3,000 and 20,000) are also more charitable than households in small towns and rural areas, although, not as generous as households in the Dublin metropolitan area and large town areas. Similar effects are found in 1999/2000 with the exception of households in large towns who no longer give more than households in rural areas and small towns.

4.3 The Double-Hurdle Model

4.3.1 Model Description

Although the tobit model is an extremely valuable econometric tool for censored data, there are a number of potential shortcomings in its underlying assumptions. The tobit model assumes that the same stochastic process determines both the value of continuous observations on the dependent variable and the discrete switch at zero (Blundell & Meghir, 1987). This is a very restrictive assumption. It is quite reasonable to assume that the factors that affect whether or not a household gives to charity are significantly different from the factors that affect how much it gives.

In addition, the tobit model assumes that all zero observations are in fact standard corner solutions and that households spend nothing because they are restrained by relative prices and their income. This is again a very restrictive assumption as it is expected that some households would not give to charity because they do not believe it is their responsibility to take care of the disadvantaged in society. Ruddle & Mulvihill (1999) found that the majority of Irish households believe that local and central government agencies are primarily responsible for social need (see Chapter 2.2). It is also possible that certain types of households do not give to charity because they believe that their donation is unlikely to make any

real difference.[2] It is for these reasons a bivariate double-hurdle model as suggested by Cragg (1971) is employed.

The double-hurdle model generalises the standard tobit model by introducing an additional hurdle which must be passed for positive observations to be observed. Generalisations of the tobit model fall primarily under two categories depending upon the assumptions made about the source of zero observations. If it is expected that zero observations are due to misreporting or that the survey is too short to capture a donation, then an 'infrequency of purchase' model or 'p-tobit' model should be employed. The p-tobit model has been used by Deaton & Irish (1984), Blundell & Meghir (1987), Gould (1992), Blisard & Blaycock (1993) and Kimhi (1999). [3] Generally, the p-tobit assumes that zero observations are partly due to corner solutions and partly due to consumption out of storage: an assumption not applicable to the area of charitable donations.

If it is expected that zero observations are due partly to non-participation for non-economic reasons, then the 'market participation' model should be used. Market participation models assume that zero observations are either corner solutions or consumers who never use the product (in our case, households that never give to charity). In contemporary papers, this market participation model has been commonly called the 'double-hurdle' or 'Cragg' model. In the double-hurdle

[2] This point is further stressed by considering public good theory where the collective work of charities resembles a standard public good (see Chapter 1.3). It is therefore possible that households would 'free-ride' on the supply of this good and not donate.
[3] The infrequency of purchase model has not been considered in the area of charitable donations.

model, coefficients in each hurdle are allowed to differ, and a change in a variable that is in both hurdles can affect the probability of participation differently to the way it affects expenditure. Recent applications of the double-hurdle model include Jones (1992) for tobacco consumption, Gould (1992) for cheese consumption, Blisard & Blaycock (1993) for butter, Gao, Wailes & Cramer (1995) for rice, Jenson & Yen (1996) for food expenditures, Yen & Jones (1997) for cheese, Kimhi (1999) for tobacco, Newman, Henchion & Matthews (2003) for prepared meals and Martínez-Espineira (2004) for wildlife evaluation. For charitable donations, the double-hurdle model has been applied by Jones & Posnett (1991) and Yen, Boxall & Adamowicz (1997).[4]

In the standard tobit model, a latent variable y_{i1}^{*} is assumed to represent a household's utility associated with consumption. It is assumed that observed expenditure equals desired expenditure for positive values of y_{i1}^{*}, but equals zero otherwise. In the double-hurdle model a second latent variable, or hurdle, associated with the decision to consume is added. Positive levels of expenditure are only observed if both hurdles are passed. In summary, the results of the double-hurdle model explain the factors that affect participation (whether or not a household donates) and the factors that affect expenditure (how much a household donates).

[4] The study by Yen, Boxall & Adamowicz focuses on donations for wildlife conservation and not charitable donations in general

Formally, the model is as follows:

$$y_{i2}^{*} = w_i'\alpha + v_i \qquad \text{(Participation equation)} \qquad \textbf{(4.5)}$$

$$y_{i1}^{*} = x_i'\beta + u_i \qquad \text{(Expenditure equation)} \qquad \textbf{(4.6)}$$

$$y_i = x_i'\beta + u_i \qquad \text{if } y_{i1}^{*} > 0 \text{ and } y_{i2}^{*} > 0$$

$$y_i = 0 \qquad \text{otherwise} \qquad \textbf{(4.7)}$$

$$v_i \sim N(0,1) \quad \text{and} \quad u_i \sim N(0, \sigma^2)$$

where y_{i2}^{*} is the latent variable describing the household's decision to give to charity, y_{i1}^{*} is the latent variable describing the level of donations, y_i is actual level of charitable donations, w_i is a vector of variables explaining whether a household gives to charity, x_i is a vector of variables explaining how much the household gives, and v_i and u_i are the error terms.

4.3.2 Specification concerns

As with the original Cragg model, independence between the two error terms is assumed for the double-hurdle model. Assuming independence is a common feature of the majority of empirical work using this model, but if incorrect, will lead to inconsistent parameter results (Blundell & Meghir, 1987). Independence

was assumed by Atkinson, Gomulka & Stern (1984), Blundell & Meghir (1987), Blisard & Blaycock (1993) and Newman, Henchion & Matthews (2003). Jones (1992), Yen & Jones (1997), Kimhi (1999) and Martínez-Espiñeira (2004) all modelled dependence but failed to improve on the independent model. An exception to the trend is from Gould (1992), who found that assuming dependence significantly improved the model. The likelihood function for the double-hurdle model with independence is written as (Cragg, 1971):

$$L(\alpha,\beta,\sigma^2)=\prod_0\left[1-\Phi(w_i'\alpha)\Phi\left(\frac{x_i'\beta}{\sigma}\right)\right]\prod_1\left[\Phi(w_i'\alpha)\sigma^{-1}\phi\left(\frac{y_i-x_i'\beta}{\sigma}\right)\right] \qquad \textbf{(2.8)}$$

As in the tobit model, the double-hurdle model rests heavily on a number of assumptions about the error term. When either assumption of normality or homoskedasticity is violated, maximum likelihood estimation produces inconsistent parameter estimates. As with the tobit model, an Inverse Hyperbolic Sine (IHS) transformation of the dependent variable is applied (see Equation 4.3). Multiplicative heteroskedasticity can again be integrated into the model by assuming that the variance of the error term is a function of a set of exogenous variables in z_i, a subset of X_i (see Equation 2.4).

With above specification adjustments, the double-hurdle log-likelihood function is written as follows (Newman. Henchion and Matthews. 2003):

$$L(\alpha.\beta.h.\gamma) = \prod_0 \left[1 - \Phi(w_i'\alpha)\Phi\left(\frac{x_i'\beta}{\sigma_i}\right)\right] \prod_1 \left[(1+\gamma^2 y_i^2)^{-1/2}\Phi(w_i'\alpha)\sigma_i^{-1}\phi\left(\frac{I(y_i)-x_i'\beta}{\sigma_i}\right)\right]$$

(2.9)

4.3.3 Final Specification

Any necessary specification adjustments applied to the tobit model are assumed to be necessary for the double-hurdle model. For 1994/1995, an IHS heteroskedastistic double-hurdle model is estimated while an IHS double-hurdle model is estimated for 1999/2000. The models are estimated by maximum likelihood using the Maxlik procedure in Gauss version 3.5.

Variables for the participation component of the double-hurdle model are chosen by preliminary probit analysis. Probit models for both survey years are presented in Appendix A, Table 4.5. All significant probit variables are included in the double-hurdle model and subsequently dropped if insignificant. All independent variables are initially included in the expenditure component and also subsequently eliminated if individually insignificant.

To investigate whether the bivariate approach is superior to the univariate approach. likelihood ratio tests are calculated against comparable tobit models for both survey periods (see Appendix B, Table 4.12). The results confirm that the

double-hurdle model is superior to the tobit for this analysis and will give a clearer and more accurate understanding of the variables that affect charitable giving. Results for the double-hurdle models in both survey periods are presented in Appendix A, Table 4.6. Coefficients from the double-hurdle model, as with the tobit model, are interpreted on individual significance and direction only. The magnitudes of these effects are calculated in Section 4.4.

4.3.4 Interpretation of results

Many of the significant variables from the tobit analysis are no longer significant in the expenditure component of the double-hurdle model. This implies that many variables previously deemed to affect the level of donations are more associated with participation. Artistic and reading expenditure, the presence of loans and investments/savings, household tenure and town-size are only significant in the participation component of the double-hurdle model. The double-hurdle analysis confirms that these variables affect the decision to donate and not the level of donation as previously outlined in the tobit analysis. In addition, the double-hurdle model has a different group of significant variables. Marital status is no longer significant in 1994/95 and dependent children and income, which are insignificant in the tobit model in 1994/95, are now statistically significant determinants of charitable donations.

The time of year has no significant effect on whether or not a household donates to charity but has a significant effect on how much the household gives. In

1999/2000, households who were interviewed in December give significantly more than households who were interviewed in any other month. January and February appear to be the times of year where households give the least (although this cannot be confirmed until marginal effects are calculated). In 1994/1995, this effect is present but less persuasive; while households give the most in December, not all month coefficients are significant implying that households give more evenly across the year compared to 1999/2000.

In both survey periods, households with a greater number of dependent children are more likely to donate to charity but the presence of children has no significant effect on the amounts that households donate. This result is similar to that found by Pharoah & Tanner (1997) in the UK. It is also evident that being married, single or divorced has no significant effect on the probability of being a donor or the size of donation. This is contrary to the results found by Feldstein & Taylor (1976), Brown (1987) and Lankford & Wyckoff (1991) who found that households with married head of households are more charitable. As with the tobit analysis in Section 4.2, it is evident that the gender of the head of household has no significant effect on whether or how much the household gives to charity in either 1994/1995 or 1999/2000. This is a common result in previous studies.

In line with all previous research, it was expected that the higher the household's level of disposable income, the more it would give to charity. This effect is found

to be significant in both periods. Higher levels of income lead to both a higher probability of donating and larger levels of donations.

The majority of studies outlined in Chapter 2.3 found that older heads of households give more to charity. This effect is also present in the Republic of Ireland. The older the head of household, the more likely he or she will be a donor in both survey periods. It is also evident that the older the head of household, the more the household donates to charity.

As hypothesised, household artistic and reading expenditure positively affects charitable giving in the Republic of Ireland. Households that spend on such items are significantly more likely to donate to charity than households that do not. This effect is found in both periods, however no significant effect is found on the size of donation.

As with the UK (Banks & Tanner, 1997), it was expected that smokers would give less to charity. Smoking has a significant negative effect on the amount donated in 1999/2000 only. In this period, smokers are not less likely to donate to charity, but are likely to donate smaller amounts to charity than non-smokers.

In previous research, the education level of the head of household has been found to have a positive effect on charitable giving: on whether a household donates (Jones & Posnett, 1991; Schlegelmilch, Diamantopoulos & Love, 1997; Pharoah

& Tanner, 1997) and on how much a household donates (Kingma, 1989; Pharoah & Tanner, 1997; Chua & Ming Wong, 1999). In the Republic of Ireland, the education level of head of household significantly affects whether a household donates in both survey periods. Households with a leaving certificate, a diploma, a degree, and a masters/PhD, are more likely to donate to charity than households with no education, primary education or the junior certificate. This effect is evident in both survey periods. In addition, households with higher education also give larger amounts.[5]

There are significant differences in the donating patterns across the economic categories of head of household. In 1999/2000, only the self-employed are less likely to donate to charity and no other category shows any significant difference in the amounts donated. This result is similar to that found by Jones & Posnett (1991) and Pharoah & Tanner (1997) in the UK. In contrast to the 1999/2000 results, households in 1994/95 show significant variation in the level of donations across different economic categories. Compared to agricultural workers, fishermen and foresters, all other economic categories donate significantly more. Also of interest is that the non-economically active are not among the donors who give the least. In addition, it is found that heads of households in full-time education are considerably more likely to donate in 1999/2000 only but not significantly likely to give more.

[5] It is likely that the education level of head of household is linked with the household's income (higher educated households have a higher levels of household income). It is also likely that age and the presence of smokers are linked to income also. Employing disposable income and adjusting this figure for the number of equivalent adults have reduced this potential source of multicollinearity.

Both Kitchen & Dalton (1990) and Kitchen (1992) found that the value of investments has a positive effect on donating. In this thesis, the presence of loans and investments/savings, the household's tenure and the relative size of the household are used as measures of household wealth. In both survey periods, households with investments/savings and loans are more likely to donate to charity than households without. However, there is no significant effect on the amounts that households give. In 1994/1995, those who own their house outright, through a mortgage or though a tenant purchase scheme, are considerably more likely to donate than households that rent their accommodation. Similar results are found in 1999/2000 although households on a tenant purchase scheme are no more likely to donate in this year. The level of donations is not significantly affected by household tenure in either survey period. The relative size of the household (number of rooms adjusted for number of residents) also has a significant positive effect on the probability of donating in 1999/2000 but no effect on the size of donation. No such effect is found in 1994/1995.

It was expected that households who donate to their church would also donate to charity. Halfpenny (1990), Schlegelmilch, Diamantopoulos & Love (1997), Schervish & Havens (1997) and Bekkers (2002) find that individuals who feel religion is important to them are more charitable. In both survey periods, households that give to their church are more likely to donate to charity. In 1994/1995, church donors are also likely to donate larger amounts to charity but this is not the case in 1999/2000.

The size of the town in which the household resides also has a significant effect on the probability and size of donation. In 1994/1995, households that reside in rural areas and small towns (less than 3000 inhabitants) are significantly less likely to donate to charity than those residing in medium sized towns (between 3,000 and 20,000 inhabitants), large towns (over 20,000) and the Dublin Metropolitan area. Households that reside in the Dublin Metropolitan area and in large towns (over 20,000 inhabitants) donate larger amounts than medium towns, small towns and rural areas. This result is similar to that found by Auten & Joulfaian (1996) and Brooks (2002) who both found that households who reside in rural areas give less to charity. In 1999/2000, only those residing in the Dublin Metropolitan area are more likely to give and no town-size shows any significant difference in the size of donation. Dubliners and those in large towns, who donate significantly more to charity in 1994/1995, do not donate significantly more in 1999/2000.

Finally, a number of social status variables are significant with the upper-middle, middle and lower middle classes showing higher levels of donations. This effect is found in both periods. Households on the lowest level of subsistence were less likely to donate in 1994/1995 only.

4.4 Marginal effects

4.4.1 Calculation

Section 4.2 and Section 4.3 have described the variables that significantly affect the probability of donating and the level of donations by Irish households. In order to understand the magnitude of each of these variables and to investigate whether this magnitude has changed between the two survey periods, marginal effects for each significant variable are calculated. As the double-hurdle model captures charitable behaviour significantly better than the tobit model, marginal effects are calculated for this model only.

Marginal effects in the double-hurdle model are based on the McDonald and Moffitt (1980) decomposition. The unconditional mean or expected value for the model can be written as (Jensen and Yen, 1996):

$$E[y_i \mid x_i] = P(y_i > 0)E[y_i \mid y_i > 0] \tag{4.10}$$

or

$$E[y_i \mid x_i] = \left[\Phi(w_i'\alpha)\Phi\left(\frac{x_i'\beta}{\sigma_i}\right)\right] \times \left[\Phi\left(\frac{x_i'\beta}{\sigma_i}\right)^{-1} \int_0^{\infty} \left(\frac{y_i}{\sigma_i\sqrt{1+\gamma^2 y_i^2}} \times \phi\left(\frac{T(\gamma y_i) - x_i'\beta}{\sigma_i}\right)\right) dy_i\right] \tag{4.11}$$

Differentiating 4.11 with respect to each independent variable gives marginal effects for each independent variable unconditional on participation.

Alternatively, these effects can be decomposed to determine the change in probability of participation:

$$P(y_i > 0) = \Phi(w_i'\alpha)\Phi\left(\frac{x_i'\beta}{\sigma_i}\right) \tag{4.12}$$

and also to determine changes in the level of expenditure conditional on participation:

$$E[y_i \mid y_i > 0] = \Phi\left(\frac{x_i'\beta}{\sigma_i}\right)^{-1} \int_0^{\infty}\left(\frac{y_i}{\sigma_i\sqrt{1+\gamma^2 y_i^2}} \times \phi\left(\frac{T(\gamma y_i) - x_i'\beta}{\sigma_i}\right)\right)dy_i \tag{4.13}$$

Differentiating 4.12 and 4.13 with respect to each independent variable yields the marginal effect of that variable on the probability of participation and the marginal effect on the level of expenditure conditional on participation respectively. These marginal effects are used to calculate elasticities at the sample means for continuous variables. For categorical dummies, discrete effects are calculated as the percentage change in the probability of participation and level of expenditure when the variable moves from zero to one. As with all econometric models, these effects assume *ceteris paribus*. Elasticities for continuous variables

and discrete effects for categorical dummies are presented in Appendix A. Table 4.7 and Table 4.8 respectively.[6]

4.4.2 Interpretation

In 1994/1995, a one per cent increase in income leads to five per cent increase in the probability of participation and a 12 per cent increase in expenditure on charitable donations. In 1999/2000, a one per cent increase in income leads to a seven per cent increase in the probability of participation and a four per cent increase in the average level of donations. It is evident that income, as a determinant of the level of charitable donations in the Republic of Ireland, is decreasing in importance over time. Contrary to this, households with higher levels of disposable income are more likely to donate to charity in 1999/2000 than in 1994/1995.

The effects of age have also changed dramatically between 1994/1995 and 1999/2000. In 1994/1995, a one per cent rise in age is accompanied by a 12 per cent rise in the probability of participation. In 1999/2000, this effect has risen to 14 per cent. It appears that older households are more likely to donate in 1999/2000 than they were in 1994/1995. There are considerable differences in the level of donation between both survey periods. The effects on conditional expenditure have decreased from 0.41 in 1994/1995 to 0.13 in 1999/2000. In both survey periods, older households are likely to donate larger amounts to charity.

[6] Standard errors of marginal effects are not considered in this thesis. It is assumed that variables remain to be significant after marginal effects are calculated.

However, the magnitude of this effect appears to have decreased substantially between surveys.

The number of dependent children has a significant effect on participation in both survey periods. This effect has increased from 0.04 per cent in 1994/1995, to 0.06 per cent in 1999/2000. Households with a higher number of dependent children are more likely to donate to charity in both survey periods and this effect is stronger in 1999/2000 than in 1994/1995.

The education level of the head of household significantly affects participation and expenditure in both survey periods. In 1994/1995, those with a degree are most likely to donate followed by those with a masters/PhD, diploma/certificate, leaving certificate, junior certificate, primary and those with no education. Similar results are found in 1999/2000. Compared to those with either no education or primary education, those with a masters/PhD are 13 per cent more likely to donate followed by those with a diploma/certificate (11 per cent more likely), those with a degree (nine per cent more likely), those with a leaving certificate (six per cent more likely) and those with a junior cert (one per cent more likely). In general, the effects on participation across all education variables increased between 1994/1995 and 1999/2000 implying that those with higher education are more likely to donate in 1999/2000 than in 1994/1995. Similar effects are found for the level of donation. In 1999/2000, increases in education are consistently accompanied by increases in the amounts donated. This pattern is not present in

1994/1995. In this period, heads of households with a degree give the most to charity (eight per cent more than the base category (those with no education or primary education)) followed by those with a diploma/certificate (four per cent more), masters/PhD (three per cent more), junior certificate (three per cent more) and leaving certificate (two per cent more). Similar to their effects on participation, most educational variables have gained in importance as determinants of expenditure between 1994/1995 and 1999/2000. One exception to this are heads of households with a degree, who give eight per cent more than the base category in 1994/1995, and six per cent more in 1999/2000.

The variation in donating across head of household economic categories in 1994/1995 is not considerably large. Farmers are 16 per cent more likely to donate to charity and on average give 16 per cent more than the base category (fishermen, forestry and agricultural workers). Manual workers, who are 14 per cent more likely to donate and give 15 per cent more, are the second most charitable economic group. Non-manual workers, the self-employed and the non-economically active are all around 12 per cent more likely to donate and give 15-16 per cent more than the base category. The main conclusion from 1994/1995 is that fishermen, foresters and agricultural workers are the least charitable economic categories in the Republic of Ireland. This difference across economic categories in 1994/1995 is no longer present in 1999/2000. In 1999/2000, only households with a self-employed head of household are seven per cent less likely to donate to charity. In addition, it is evident that households headed by someone

in full-time education are 15 per cent more likely to donate in this year. However, these households are not likely to donate significantly larger amounts.

There is considerable variation in the probability of donating with respect to town-size. In 1994/1995, households residing in large towns (20,000+) or the Dublin Metropolitan area are around two per cent more likely to donate to charity than the base category (medium towns (3,000-20,000)). Households residing in small towns (<3000) and rural areas are five per cent and four per cent less likely to donate respectively. In 1999/2000, the probability of participation for households residing in the Dublin Metropolitan area compared to all other town-sizes has increased to six per cent. In 1994/1995, households residing in Dublin or large towns give around two per cent more to charity than the other town-sizes. In 1999/2000, town-size has no significant effect on the size of donation.

The marginal effects of the household's tenure are also calculated. In 1994/1995, households that own their house via a mortgage are nine per cent more likely to donate to charity than the base category (households that rent their accommodation). Households that own their house via a tenant purchase scheme or who own their house outright are seven per cent and six per cent more likely to donate than the base category respectively. Households with a mortgage are again the most likely donors in 1999/2000 showing a participation probability of around eight per cent (compared to households that rent or own their house through a tenant purchase scheme). In this survey period, households who own their house

outright are five per cent more likely to donate. Between 1994/1995 and 1999/2000, the magnitudes of the household tenure variables have all decreased.

Households that hold investments/savings are more likely donors. Such households are six per cent more likely to donate in 1994/1995 and four per cent more likely to donate in 1999/2000. Similar effects are found for the presence of loans. In both surveys, households with loans are four per cent more likely to donate to charity than households without.

The expenditure variables are predominantly significant for participation. Households that spend on newspapers, books and magazines are eight per cent more likely to donate in 1994/1995 and seven per cent more likely to donate in 1999/2000. The effects of artistic expenditure on participation have decreased between 1994/1995 and 1999/2000. Households with positive levels of artistic expenditure are six per cent more likely to donate in 1994/1995 and four per cent more likely to donate in 1999/2000 than households with zero expenditure. Expenditure on tobacco has a negative effect on charitable giving in 1999/2000 only. Such households are around two per cent less likely to donate to charity and give three per cent less in donations than households with zero tobacco expenditure.

The importance of religion as a determinant of charitable giving has also decreased slightly. Households who give to their church are 14 per cent more

likely to donate to charity in 1994/1995 and 13 per cent more likely to donate in 1999/2000. In addition, households that give to their church in 1994/1995 donate, on average, around six per cent more to charity. However, no such effect on the size of donation is evident in 1999/2000.

The time of year has a significant effect on the probability of participation. Compared to December, all months show lower levels of participation and expenditure. January and February are particularly bad months for participation and expenditure in both 1994/1995 and 1999/2000. Households interviewed in January and February are seven per cent less likely to donate in 1994/1995 and eight per cent less likely to donate in 1999/2000 than households interviewed during December. These households give around seven per cent less to charity in 1994/1995 and 12-13 per cent less to charity in 1999/2000.

4.5 Conclusion

This chapter has outlined the econometric methodology and results for the determinants of charitable donations in the Republic of Ireland in both 1994/1995 and 1999/2000. Section 4.2 outlined the standard tobit model. The model was estimated and adjusted for non-normality and heteroskedasticity and subsequently interpreted. Section 4.3 outlined the double-hurdle model which although consistent and complementary to the tobit model, performs significantly better than the univariate model. Any specification adjustments deemed necessary for the tobit model were subsequently applied to the double-hurdle model. A

heteroskedastistic IHS double-hurdle model is found to be the overall best specification for 1994/1995. However, for 1999/2000, an IHS double-hurdle model without any heteroskedasticity adjustments is found to be most appropriate. Section 4.3 concluded with an interpretation of double-hurdle results focusing on direction and significance of coefficients only. Section 4.4 calculates marginal effects for these coefficients which were used to calculate elasticities and discrete effects for both periods. Elasticities and discrete effects were interpreted and any apparent trends were highlighted. The main econometric findings and conclusions are outlined in Chapter 5.

Chapter 5

Conclusion

5.1 Introduction

This thesis has used the Irish Household Budget Survey (HBS) to find the most likely and generous donors to charitable organisations in the Republic of Ireland in 1994/1995 and 1999/2000. This chapter explores ways to potentially increase the income of charitable organisations in the Republic of Ireland. Section 5.2 describes the general trend in the level of donations over the 1990s. Section 5.3 overviews the econometric results from this thesis and recommends ways in which charitable organisations could increase their number of donors and the size of donations of existing donors on the basis of these results. Section 5.4 revisits current government policy in relation to voluntary giving in the Republic of Ireland and makes policy recommendations that could contribute towards increasing charitable income in the future. Section 5.5 describes any areas for further research.

The definition of charitable donations taken from the HBS is 'donations to all non-educational and non-religious charitable organisations'. As outlined in Chapter 1.4, the types of charitable organisations that could potentially fall under this heading include those involved in culture and arts, sports and recreation, research, nursing homes, mental and other health, social services, emergency and relief, income support and maintenance, community development, housing, employment and training, civic/advocacy, legal, foundations, and international activities (Donoghue, Anheier and Solomon, 1999). These charitable organisations have differing degrees of reliance on private sources of funding although it is evident that organisations involved in international activities, health, social services and civic/advocacy are among the most reliant. Econometric results from this thesis will therefore have more relevance to charitable organisations involved in such activities.

5.2 The Trend in Charitable Donations in the Republic of Ireland

Chapter 1.2 outlined the economic, social and value changes in the Republic of Ireland between the survey periods. Irish households became considerably wealthier over the 1990s. The period is also characterised by the growth in individualism, materialism and consumerism. In relation to charitable donations, these are two opposing forces. On one side, it could be expected that the rising income levels would have increased the level of donations between 1994/1995

and 1999/2000. Alternatively, many of the negative social characteristics accompanying the boom may have counter balanced this increase.

In 1999/2000, the average weekly household charitable donation over all households was 1.20 euro. This is an 18 per cent increase from the 1994/95 average of 1.01 euro (all 1994/1995 figures have been inflated to 1999/20o prices using the Consumer Price Index). Focusing just on the households that made a donation (26 per cent of the sample in 1994/1995 and 23 per cent in 1999/2000), the average amount donated was 3.84 euro in 1994/1995 and 5.13 euro in 1999/2000 representing a 33 per cent increase. Although household donations have increased, this increase significantly lags behind the growth in real GNP which was around 83 per cent between the end of 1994 and 1999. As households became wealthier over the late 1990s they donated relatively less of their income to charity. If the growth in donations continues to lag behind the growth in the economy, it is evident that government support for the sector would have to increase to maintain the existing level of services in the future.

5.3 Recommendations for Charitable Organisations

5.3.1 Increasing the numbers of donors

The double-hurdle model outlined in Chapter four describes the variables that affect participation (whether or not a household donates to charity) and the variables that affect expenditure (how much it gives) in the Republic of Ireland. This section focuses on the variables that significantly affect participation in both

survey periods and any differences between the two surveys are highlighted. Charitable organisations with the ability to target certain types of households could increase their numbers of donors by specifically targeting the types of households outlined in this section.

In both survey periods, the level of household income (disposable income adjusted for family size) significantly affects participation and the magnitude of this effect appears to have increased between 1994/1995 and 1999/2000. The more income the household has, the more likely it will donate to charity. Based on this result, charitable organisations should attempt to target individuals/areas with relatively high levels of income to increase their number of donors.

A number of household demographics are explored. It is found that older heads of household are significantly more likely to donate to charity. This effect also appears to have increased between survey periods. Charitable organisations could focus on geographical areas with relatively older populations or advertise in magazines geared towards older individuals to increase their number of donors.

The presence of dependent children also has a positive and significant effect on participation. The more children in the household, the more likely it is that the household donates to charity.[1] It is possible that charitable organisations could enter into partnerships with child-orientated businesses. For example, charitable

[1] It is likely that children learn about the wider society and social issues while they are at school. This may positively influence their parent's outlook on charitable activity.

appeals could be placed in the shopping bags of schoolbook shops, children's clothes shops or even toyshops. It is also possible that such businesses would be willing to donate a small percentage of sales to charity. If effectively advertised, these schemes would likely increase the incomes of both parties significantly.

It was expected that married households would donate more to charity, however no significant relationship is evident between being married, single or divorced. In addition, it is evident that the gender of head of household has no effect on whether a household donates to charity in the Republic of Ireland.

The education level of the head of household has a significant and positive effect on participation in both periods. In general, it can be assumed that the higher the education level of the head of household, the more likely it is a household will donate. This effect is found in both survey periods. In 1994/1999, those with a degree are the most likely donors, while in 1999/2000, those with a Master/PhD are the most likely donors. In addition, it is evident that the magnitude of the education variables appears to have increased between survey periods. This implies that education has become more important over the 1990s as a factor that determines whether or not a household gives to charity.

A number of head of household economic categories are also explored. In 1994/1995, farmers are the most likely donors followed by manual workers, non-manual workers, the self-employed and the non-economically active. In

1999/2000, only the self-employed are seven per cent less likely to donate to charity than all other categories. It is possible that the self-employed chose to donate through their business rather than out of their own personal finances. Why farmers are no longer more charitable than all other economic categories may be linked to the relative worsening economic conditions faced by the group over the 1990s.[2]

In 1994/1995, households residing in the Dublin Metropolitan area or large towns (over 20,000 population) are the most likely donors followed by medium towns (3,000 – 20,000 population), rural areas and small towns (less than 3,000 population). In 1999/2000, only households residing in the Dublin Metropolitan area are six per cent more likely to donate than households living outside of the Dublin area (with no significant difference among other households). This may be due to higher levels of charitable activity in the capital.

Household tenure, the presence of loans and investments/savings and the relative size of the accommodation (number of rooms divided by equivalent adults) are used as measures of household wealth. In 1994/1995, households who own their accommodation outright are the most likely donors followed by households with a mortgage and households with a tenant purchase scheme. Similar effects are evident in 1999/2000. In both survey periods, households that rent their accommodation are the least likely donors. The strength of the household tenure

[2] While the average disposable income (again adjusted for the number of equivalent adults) for farmers increased by 26 per cent between survey periods, the average income for the total sample increased by 37 per cent (Figures calculated from the HBS).

variables appear to have decreased between survey periods implying their decreasing importance as factors that influence participation. The relative size of the accommodation (number of rooms divided by the number of equivalent adults) has a significant positive effect on participation in 1999/2000 only. In this survey period, households with relatively large houses are significantly more likely to donate.

The presence of loans and investments/savings has a significant positive effect on whether a household donates although it is evident that the strength of these variables has also decreased over the 1990s. This result may be linked to the increased levels of borrowing in the Republic of Ireland over the 1990s. In 1994/1995, 38 per cent of households had some form of loan. In 1999/2000, this figure had increased to 45 per cent.[3] The presence of loans may be a less appropriate measure of wealth in 1999/2000 than in 1994/1995. It is recommended that charitable organisations could increase their number of donors by entering into marketing partnerships with financial institutions. In the past, such organisations have displayed a willingness to support charitable organisations. If they were made aware that households with loans and investments/saving are more likely to donate, they may be prepared to assist charitable organisations with their advertising. Charitable appeals could be circulated along with loan/savings account or dividend statements. This strategy could also be applied to mortgage holders.

[3] Figures calculated from the Household Budget Survey

Expenditure on newspapers, books and magazines positively affects participation in both survey periods. It was expected that households who read such items would have a higher awareness of social conditions and problems. It is therefore expected that such households would be more charitable. Households that purchase these items are eight per cent more likely to donate in 1994/1995 and seven per cent more likely to donate in 1999/2000 than households that do not. In both survey periods, around 90 per cent of households showed positive levels of reading expenditure. Therefore this result implies that the ten per cent of households that do not regularly read are the less likely donors.

Households with positive levels of artistic expenditure (cinema, theatre and dancing) were expected to be more socially active.[4] Such households are therefore expected to be more involved and knowledgeable about their community and thus in tune with its needs. In both periods, households that purchase such item are more likely to donate to charity than households that do not. The strength of this effect has decreased from 6 per cent more likely in 1994/1995 to 4 per cent more likely in 1999/2000. Charitable organisations could increase their number of donors by screenings advertisements in cinemas prior to movies or by advertising in entertainment/artistic publications. Charity collection boxes could also be placed at counters in cinemas, theatres or video rental stores.

[4] Artistic expenditure, as with reading expenditure, is likely to be correlated with social class and education. However, the estimated models did not have any multicollinearity problems.

The link between religion and donating has been found in previous research. Similar results are found for the Republic of Ireland in both survey periods. Households that made voluntary contributions to their church are 14 per cent more likely to donate to charity in 1994/95 and 13 per cent more likely to donate in 1999/2000 than households who did not. It is expected that charitable organisations are already aware of the benefit of collecting at church gates and it is recommended that they continue doing so in the future.

Research from the United Kingdom has found that smokers are less charitable individuals (Banks & Tanner, 1997). In the Republic of Ireland, this effect is found in 1999/2000 only. Households with at least one smoker are two per cent less likely to donate than non-smoking households.

Finally, it is found that households are significantly more likely to donate in December than in any other month. January and February appear to be particularly bad months in both survey periods. It is also evident that this effect appears to be stronger in 1999/2000. This result may be due to the increased campaigning of charitable organisations in the run-up to Christmas. Based on this result, it is recommended that charitable organisations should continue this marketing approach in the future.

This section has highlighted the many household characteristics that lead to a higher probability of donating in 1994/1995 and 1999/2000 in the Republic of

Ireland. To increase the numbers of donors, charitable organisations with the ability to target certain groups within society, should focus their marketing efforts on older households with higher income, education and more dependent children. Charitable organisations should also focus on households with loans and investments/savings, households that own their house outright or with a mortgage, households that live in the Dublin Metropolitan area, households that spend on newspapers, books, magazines, cinema and theatre and households that also donate to their church. Although all of these variables significantly effect participation, it is apparent that the strength of the household tenure variables and the presence of investments/savings have decreased over the 1990s implying their declining importance as determinants of participation. It is also likely that the importance of age, education, income and dependent children has increased between periods. The variation across economic categories and towns-sizes in 1994/1995 has disappeared in 1999/2000. In 1999/2000, only the self-employed are less likely to donate and only the Dublin Metropolitan area are more likely to donate.

5.3.2 Increasing the level of donations of existing donors

This section explores the variables that effect donation levels by existing donors in 1994/1995 and 1999/2000. The size of donations could potentially be increased in the Republic of Ireland if charities could focus marketing efforts on the significant household characteristics outlined in this section.

The level of household disposable income positively affects the level of charitable donations in both survey periods. This effect has decreased from 12 per cent in 1994/1995 to 4 per cent in 1999/2000. It appears that income has decreased substantially in importance as a variable that affects how much an Irish household donates to charity. This results helps explain why donating failed to keep pace with the booming economy over the 1990s.

Similarly, the importance of the age of the head of household appears to have decreased as a variable that affects how much a household donates. Although older households donate more in both survey periods, it is apparent that they gave substantially more in 1994/1995 than in 1999/2000. Gender and marital status of head of household has no effect on the size of donations (an identical result to their effect on participation).

The education level of the head of household positively affects how much a household donates. In 1994/1995, households with third level education are the most generous donors. Similar effects are found in 1999/2000. In this period, increases in education are consistently accompanied by increases in the amount donated. With the exception of heads of households with a Junior Certificate and a Degree, the strength of education variables appears to have increased between survey periods.

In 1994/1995, there is significant variation in the size of donations across different economic categories. In this period, farmers are the most generous donors giving 22 per cent more than the base category (fishermen, foresters and agricultural workers). In 1999/2000, no economic category shows significantly higher or lower levels of donations.

In 1994/1995, households residing in the Dublin Metropolitan area and large towns give around two per cent more to charity than those residing in medium sized towns, small towns and rural areas. As with the economic categories, this variation has disappeared in 1999/2000. Although charitable organisations would have increased the level of donations by campaigning in the Dublin Metropolitan area and large towns in 1994/1995, it is unlikely that doing so would increase donations in 1999/2000.

The wealth variables (household tenure, the presence of loans and investments/savings and the relative size of the accommodation) do not affect the level of donations in either year. These variables are predominantly significant for participation.

In 1994/1995, households that made a voluntary contribution to their church donated around six per cent more to charity than households that did not donate to their church. This expenditure effect is not present in 1999/2000. This result may

be linked to the declining levels of church attendance in the Republic of Ireland over the 1990s.

A number of expenditure variables are explored. While it is evident that smokers give around three per cent less to charity in 1999/2000 than non-smokers, households with positive levels of reading and artistic expenditure are not found to donate a significantly different amount then households who do not spend on such items.

The time of year when the household is surveyed significantly affects how much it donates. In both survey periods, households give the most in December and the least in January and February. It is also evident that households gave more in December in 1999/2000 than they did in December 1994/1995.

It is apparent that the majority of independent variables are mostly significant for participation and that many of the variables significantly affecting the level of donations in 1994/1995 are no longer relevant in 1999/2000. The effects of income and age have both decreased substantially between survey periods. In addition, it is evident that the economic categories, town-size variables and the voluntary contribution to religious organisation variable, all of which had significant effects in 1994/1995, are no longer significant in 1999/2000. Only the educational variables (excluding Degree and Junior Certificate) and the effects of

December appear to have gained importance as determinants of expenditure over the 1990s.

The number of variables that affect expenditure appears to be declining substantially. To increase charitable income in the future, charitable organisations may have to focus on creating new donors as outlined in Section 5.3.2 rather than trying to increase the size of donations by existing donors. Based on the results of this thesis, only a limited number of recommendations can be made to help charitable organisations to increase the size of donations by existing donors. It is evident that households with higher income, age and education give the most in both periods. It is also evident that households donate the most in December and least in January and February.

The relationship between charitable giving and education in the Republic of Ireland is apparent throughout this thesis. Households with higher levels of education are more likely to donate and donate larger amounts. It is also found that households headed by someone in third level education are more likely donors (although this group accounts for less than one per cent of the survey sample). Based on these results, it is recommended that Irish charitable organisations should attempt to increase their presence in third level institutions. Those with higher education are noticeably more charitable and if these individuals could be encouraged to donate and volunteer while they are in college, the level of charitable donations would likely increase in the future. Universities

should also be made aware that they are in a position to increase future levels of charitable giving. An increased percentage of funding should be allocated to charitable societies and students with high levels of charitable involvement should be rewarded (perhaps with a charitable distinction attached to their qualification).

5.4 Government Policy

5.4.1 Support for the sector

The opening address of the White Paper on Supporting Voluntary Activity by Minister Dermot Ahern stated that the government 'is strongly committed to building an inclusive society in which Community and Voluntary groups can play a vital role'. As mentioned in the Johns Hopkins Comparative Nonprofit Project (Donoghue, Anheier and Salamon, 1999), the voluntary and community sector in the Republic of Ireland is primarily reliant on the public sector as a source of income (60 per cent of total income). The remainder of income comes from private sources such as households and businesses. This thesis has shown that donations by Irish households did not keep pace with the booming economy over the 1990s. If the growth in donations continues to lag behind the growth in the economy in the future, the government will either have to increase its existing level of support for the sector or implement policies designed to promote donating from private sources.

Historically, the Republic of Ireland has trailed internationally on the level of regulation within the sector. At present, there are very few restrictions when

setting up a charity and no 'best practice' accounting policies exist. In December 2003, a consultation paper entitled 'Establishing a Modern Framework for Charities' was launched by Minister Noel Ahern (Department of Community, Rural and Gaeltacht Affairs, 2003). This paper recommended establishing a statutory body which would determine charitable status and maintain a register, regulate and monitor activities (including fundraising), provide guidance to trustees and directors of charities, monitor and investigate possible abuses, advise the Minister on charity regulation and issue codes of conduct and best practice guidelines. A Charities Regulation Bill, providing many of the consultation paper's recommendations is due in 2006 (Humphries, 2005).

The recommendations outlined in this paper may promote donating by Irish households in the future. The lack of regulation and accountability in the past will have undoubtedly increased donor suspicion and lowered the growth in the level of private donations in the Republic of Ireland. Donating to charity rests heavily upon the donor's perception of the organisation's trustworthiness and efficiency (see Section 1.3 for a discussion on donor motivation) and the relationship between donor and charitable organisation, before anything else, must be grounded in *trust*. Charities endlessly ask individuals to hand over a portion of their income in exchange for nothing tangible. There are no signals of 'value for money' and little is known about the efficiency at which donations are turned into charitable output.

Irish attitudes towards charity were explored by Ruddle and Mulvihill (1999). In their survey, respondents were asked what they believed an acceptable level of administration cost per euro is. It was found that 26 per cent thought 1-10 cent, 28 per cent thought 11-20 cent and 23 per cent thought 21-30 cent. The amount that respondents actually believed was being spent by the charity differed significantly. On average, it was expected that around 50 cent per euro for Irish organisations and 40 cent per euro for international organisations was being spent on administration (Ruddle and Mulvihill, 1999). In a recent article, it was found that three of the Republic of Ireland's largest charities, Concern, Trocaire and Goal, all spent less than two per cent of total income on management and administrative costs in 2004 (Murdoch, 2005). The void between the public's perceptions of organisational efficiency and the current reality is apparent. The lack of regulation in the past will have undoubtedly added to this misperception and may have lowered the level of private donations in the Republic of Ireland significantly. The government's recent progress on fast-tracking regulation in the sector is commendable and will lead to greater numbers of donors and higher levels of donating in the future.

5.4.2 Tax treatment of charitable organisations

Chapter 1.5.2 outlined the current tax reliefs applied to charitable income. There is currently much debate regarding the treatment of Value Added Tax (VAT) for charitable organisations. The Irish Charities Tax Reform group (ICTRG) was established 10 years ago and currently consists of over 140 charitable

organisations. In 2003, the group commissioned a report which estimated that charitable organisations pay 18 million per year in unnecessary VAT charges (Ernst and Young, 2003). Ireland's largest international charity, Concern, paid around 2 million euro in VAT in 2002. Despite consistent campaigning by the ICTRG to alter the current system, very little has changed. The Revenue Commissioners state that they are bound by European Union VAT law and cannot exempt charitable organisations even if they wished (see Mitchell, 2003). Contrary to this, the ICTRG claims that national governments could introduce a VAT refund mechanism without obstructing the current laws and refunds would be possible through a ministerial order from the Minister of Finance (Byrne, 2002).

The motivation behind the current system is unclear. VAT is without a doubt an unnecessary burden on charitable organisations and eliminating the tax would provide substantial extra income for the sector. If the government is as committed to supporting the sector as it claims, the current system should be modified to the benefit of charitable organisations. A scheme of VAT refunds has been suggested as a solution to the problem. If such a scheme is not viable, as the Revenue Commissioners have previously stated, then it is clear that the government should attempt to amend this law at European Union level. If the current system has been met with such hostility in other member states as it has been in the Republic of Ireland, then support for such an amendment would probably be strong.

The relationship between the voluntary and community sector and the Revenue Commissioners has been poor in the past and it is apparent that there is substantial disagreement in the legal interpretation of applicable laws. It could be argued that there is a sense of distrust between the two parties which is can be seen in the mandatory auditing of organisations with income in excess of 50.000 euro (the comparable figure for the commercial sector is 317,434 euro). The proposed regulation of the sector in the future will hopefully improve the relationship between the two parties.

5.4.3 Tax deductibility of charitable donations

Since the 6th of April 2001, private individuals have been able to claim tax relief on charitable donations (see Chapter 1.5.2). A minimum of 250 euro must be donated to a single charitable organisation and can be donated in an unlimited number of payments over the course of a single tax year.

The majority of studies reviewed in Chapter 2 focused on countries where charitable donations are tax deductible (Taussig, 1967; Schwartz, 1970; Feldstein, 1975; Feldstein & Clotfelter, 1974; Feldstein & Taylor, 1976; Boskin & Feldstein, 1977; Reece, 1979; Schiff, 1985; Weisbrod & Dominguez, 1986; Posnett & Sandler, 1989; Kitchen & Dalton, 1990; Jones & Posnett, 1991; Lankford & Wyckoff, 1991; Kitchen, 1992; Auten & Joulfaian, 1996; Wong, Chua & Vasoo, 1998; Chua & Wong, 1999; Brooks, 2002). With the exception of the two earliest studies by Taussig (1967) and Schwartz (1970), all have found that the presence

of deductibility leads to significantly higher levels of donating. In these studies, there is no minimum required level of donations to gain tax relief as there currently is in the Republic of Ireland. The logic behind the 250 euro threshold is unknown. It is possible that such a high level is intended to encourage higher levels of donating. This research has shown that the average weekly donation across all households is 1.20 euro or around 62 euro per year in 1999/2000. As such, the presence of deductibility will have little effect on the average level of donation in future surveys. Alternatively, of the households that do donate (23 per cent of sample), the average weekly donation is 5.13 euro or 266.76 euro for 1999/2000. It is likely that the current system will do little to stimulate the numbers of donors although it may increase the level of donations of existing donors (provided donors only donate to the one organisation throughout the year).

As with the government's treatment of VAT, there is currently much debate regarding the deducibility of charitable donations in the Republic of Ireland. The ICTRG are again at the forefront of the campaign and would like to see the minimum annual donation reduced from 250 euro to 100 euro (ICTRG, 2004). This reduction would significantly encourage charitable giving by Irish households. It is also evident that increased public awareness of the current system is required. In a recent survey in Dublin, it was found that only 42 per cent of respondents were aware that charitable donations could be deducted for tax purposes (Viewpoint, 2004). In addition, 72 per cent of respondent said that

'improving tax incentives' would motivate more people to make charitable donations.

The 250 euro threshold needs investigation. In the majority of other countries where the deductibility system works efficiently, individuals itemize their own tax returns and in essence do not create any extra paperwork burden on the taxation authorities. In the Republic of Ireland, the donating individual must send a tax relief form to the eligible organisation and the organisation must then send these forms to the Revenue Commissioners. If the threshold was eliminated and the scheme properly advertised, the numbers availing of the deduction would increase considerably. Although charitable organisations would benefit greatly, the sheer volume of claims would likely place a great deal of strain on the Revenue Commissioners. This may be part of the rationale behind the current threshold.

It is possible that the scheme for deductibility of charitable donations for tax purposes could be incorporated into the current PAYE system. Some Irish employers already provide a mechanism for donations to be made straight out of an employee's paycheck. Having such a mechanism as a standard option in the PAYE system and deducting the donation directly from net pay for tax purposes would substantially reduce the paperwork involved in the current scheme. Such a proposal automatically operates at the zero threshold desired by the sector and without adding to the Revenue Commissioners' workload. Compilations of eligible charities, each allocated a charity number, could be provided to every

employer and made available to their employees. Such a register already exists for charitable organisations claiming tax relief on income and a more comprehensive register is proposed in the Government's consultation paper. Employees would then find the number of their chosen charity and request their employers to deduct an assigned amount each week/month from their gross pay. Such donations would automatically be tax-free. Every eligible charity would then have an account in the Revenue Commissioners that would be credited as PAYE contributions enter the system. Previous research has found that planned donating in the Republic of Ireland is particularly underdeveloped (Ruddle and Mulvihill, 1999). Having a system where donations could be made directly out of gross pay would lead to a significant increase in the level of planned giving. Launching such a scheme would make donating to charity easier for the donor, make the tax deductibility of donations automatic and increase the level of charitable income in the Republic of Ireland dramatically.

5.5 Areas for Future Research

This thesis has used a double-hurdle model with an inverse hyperbolic sine (IHS) transformation of the dependent variable. This transformation has not been previously applied in the area of charitable donations and this thesis finds that this adjustment improves the econometric model significantly. In addition, it is found that the double-hurdle model captures the process of donating to charity

significantly better than the tobit model applied in the majority of previous studies.

Only the 'other' category of voluntary contributions was explored in this thesis. The HBS also provides information on voluntary contributions to educational organisations and religious organisations. Similar analysis and methodology could be applied to both of these categories in the future. In addition, independent variables could be divided into situational, structural and personal factors and further econometric analysis could be used to explore the relationships between each.

It is evident that exploration of the HBS 2004/2005 would confirm any apparent trends outlined in Chapter 5.2. Exploring this dataset would also provide information on the efficiency of the current tax relief on donations. In addition, the 2004/2005 HBS occurs during the time period of Asian Tsunami appeals, therefore, it would be possible to find the types of households that are most charitable in such circumstances.

Appendix A: Model Results

Table 4.1: Description of Variables Explored

Variable Name	Type	Description	1994/1995 Mean	1994/1995 Std. Dev	1999/2000 Mean	1999/2000 Std. Dev.
CHARITY	C[1]	Household Charitable Donations	1.011562	4.457827	1.205587	6.489006
DISPOSABLE	C	Household Disposable Income	171.1282	110.0742	235.9623	154.5456
ROOMS	C	number of rooms	5.493208	1.527008	5.695447	1.435472
DEPENDENT	C	number of dependent children	1.220642	1.524663	1.088828	1.384891
AGE	C	Age of HoH	50.73302	16.66737	51.66405	15.97555
ECNCAT1	D[2]	HoH[3] is manual worker in Industry & Service	.1717659	.3772008	.202381	.401801
ECNCAT2	D	HoH is a non-manual worker	.2867843	.4522887	.2817896	.4499008
ECNCAT3	D	HoH is Self-employed in Industry & Service	.0728704	.2599401	.0803244	.2718126
ECNCAT4	D	HoH is a Farmer	.0939444	.2917699	.0752224	.2637671
ECNCAT5	D	HoH is an Agricultural Worker	.013076	.1136077	.0071952	.0845243
ECNCAT6	D	HoH is a Fisherman or Forester	.0036816	.0605683	.0011774	.0342952
ECNCAT7	D	HoH is not economically active	.3578774	.4794062	.35191	.4775973
EDUCAT1	D	HoH has no formal education	.0115526	.1068672	.005102	.0712508
EDUCAT2	D	HoH has Primary education	.4025644	.4904456	.3118786	.4632909
EDUCAT3	D	HoH has Intermediate/Junior Cert	.240066	.4271504	.24045	.4273847
EDUCAT4	D	HoH has Leaving Cert	.1936016	.3951454	.2260597	.4183056
EDUCAT5	D	HoH has Diploma	.0539546	.2259423	.0830717	.2760086
EDUCAT6	D	HoH has Primary Degree	.0545893	.2271913	.0817635	.274022
EDUCAT7	D	HoH has Masters or/and PhD	.0255173	.1577002	.0427786	.2023709
SOCIAL1	D	HoH Social Status: Upper middle class	.0953409	.2937038	.0590005	.2356411
SOCIAL2	D	Middle Class	.1199695	.3249465	.181057	.3850906
SOCIAL3	D	Lower middle class	.0980069	.2973428	.0947148	.2928398
SOCIAL4	D	Skilled working class	.1305065	.3368813	.1764783	.3812515
SOCIAL5	D	Other working class	.1275866	.3336502	.1177394	.3223204
SOCIAL6	D	Lowest level of subsistence	.3326139	.4711795	.2868917	.4523402
SOCIAL7	D	Farmers (50+ acres)	.0672845	.25053	.0697279	.2547045
SOCIAL8	D	Farmers (<50 acres)	.0286911	.1669475	.0143904	.1191014
TOWN1	D	Household resides Dublin metropolitan area	.2726926	.4453724	.2340398	.4234249
TOWN2	D	Household resides large town (20,000+)	.1329186	.3395083	.1384092	.3453516
TOWN3	D	Household resides medium town (3,000-20,000)	.1717659	.3772008	.14869	.3552124
TOWN4	D	Household resides small town (<3,000)	.0392281	.1941496	.0257718	.1584643
TOWN5	D	Household resides rural area	.3568617	.4791039	.4536892	.4978853
TENURE1	D	House is owned outright	.4321442	.4954056	.4857405	.4998293
TENURE2	D	House is owned mortgage	.3214422	.4670597	.3309785	.4705961
TENURE3	D	House is owned 'Tenant purchase scheme'	.039482	.1947512	.0185767	.1350332
TENURE4	D	House is rented	.2069316	.4051317	.1647043	.3709378
READER	D	Household purchased reading material	.8802844	.3246493	.8991366	.3011675
ART	D	Household purchased Artistic products	.2973213	.4571082	.2995814	.4581046
SMOKE	D	Household purchased tobacco product	.4843214	.4997858	.4425693	.4967233
INVEST	D	Household has Investments and/or Savings	.2888155	.4532408	.3453689	.4755195
LOAN	D	Household has a loan	.3811096	.4856902	.4532967	.4978466
HOLY	D	Household donates to religious organisations	.6248572	.4841905	.6134223	.4869973
MARRIED	D	HoH is Married	.6744954	.4685928	.7157248	.4510981
SexHoH	D	HoH is Female	.7327663	.4425435	.2919937	.4547092
EDUCAT	D	HoH is in full-time education	.0181541	.1335171	.0083726	.0911239
JAN	D	Household was interviewed in January	.073759	.261395	.0542909	.2266057
FEB	D	Household was interviewed in February	.076425	.2656938	.0655416	.2474953
MAR	D	Household was interviewed in March	.0877238	.2829107	.0790162	.2697817
APR	D	Household was interviewed in April	.0636029	.2440597	.0733909	.2607941
MAY	D	Household was interviewed in May	.0840421	.2774686	.0808477	.272619
JUN	D	Household was interviewed in June	.1146376	.3186043	.140764	.3478007
JUL	D	Household was interviewed in July	.0802336	.2716717	.1440345	.3511477
AUG	D	Household was interviewed in Aug	.0878507	.2830956	.0801936	.2716195
SEP	D	Household was interviewed in September	.0914054	.288203	.0794087	.2703933
OCT	D	Household was interviewed in October	.0785832	.2691042	.0719519	.2584251
NOV	D	Household was interviewed in November	.0883585	.2838336	.0728676	.2599361

[1] 'C' meaning the variable is a continuous variable
[2] 'D' meaning the variable is a Dummy variable
[3] 'HoH' refers to Head of Household

Table 4.2: Standard Tobit Results

	1994/1995		*1999/2000*	
Variable	*Coefficients*	*t-values*	*Coefficients*	*t-values*
Constant	-7.4908***	-11.554	-11.138***	-12.727
LogDISPOS	0.3068***	5.4180	0.5430***	6.2700
LogAGE	0.6026***	4.9820	1.1632***	7.2450
LogDEPEND	---	---	0.2895***	3.3640
LogROOMS	---	---	0.3600***	3.2760
ECNCAT1	1.1492***	3.8380	---	---
ECNCAT2	1.1301***	3.7850	---	---
ECNCAT3	1.0918***	3.5480	-0.4294***	-3.1430
ECNCAT4	1.3223***	4.3300	---	---
ECNCAT7	1.1356***	3.7140	---	---
EDUCAT3	0.3959***	5.1680	0.4091***	3.9490
EDUCAT4	0.4629***	5.5750	0.4381***	3.9370
EDUCAT5	0.6310***	5.0970	0.7165***	5.1140
EDUCAT6	0.7792***	6.0180	0.8444***	5.7010
EDUCAT7	0.7056***	4.4880	0.9120***	4.8870
SOCIALS1	0.3141***	2.9580	0.2352	1.5620
SOCIALS2	0.3179***	3.3660	0.3551***	3.3420
SOCIALS3	0.2165**	2.2620	0.2684**	2.2480
SOCIALS4	---	---	0.2494**	2.4790
SOCIALS6	-0.2592***	-2.6060	---	---
TOWN1	0.2669***	3.6090	0.3456***	4.3430
TOWN2	0.3081***	3.5060	---	---
TOWN3	0.1789**	2.3180	0.2352***	2.5490
TENURE1	---	---	0.4450***	3.3850
TENURE2	---	---	0.5366***	4.1710
TENURE4	-0.3444***	-3.4930	---	---
INVEST	0.2699***	4.6770	0.2587***	3.7570
LOAN	0.1086*	1.8390	0.1718**	2.3110
HOLY	0.7938***	12.0260	0.8109***	9.9960
MARRIED	0.1990**	2.7380	---	---
READER	0.4882***	4.1150	0.5748***	3.8390
ARTY	0.2221***	3.9560	0.2760***	3.6560
SMOKER	---	---	-0.2192***	-3.1070
EDUCAT	---	---	1.2351***	2.9390
JAN	-0.5507***	-4.0250	-1.0659***	-5.2690
FEB	-0.6162***	-4.5220	-0.9879***	-5.2640
MAR	-0.1903	-1.5330	-0.5091***	-3.1170
APR	-0.1842	-1.3100	-0.5548***	-3.1580
MAY	-0.0814	-0.6460	-0.5890***	-3.4900
JUN	-0.3474***	-2.8350	-0.5762***	-3.7070
JUL	-0.2048	-1.4970	-0.8444***	-5.3450
AUG	-0.1216	-0.9330	-0.7963***	-4.6330
SEP	-0.2794**	-2.1460	-0.7383***	-3.9930
OCT	-0.1994	-1.5580	-0.8262***	-4.6720
NOV	-0.2501**	-1.9910	-0.5027***	-2.9560
Sigma	2.0402***	55.415	2.4022***	52.6820
N	7877		7644	
Log-likelihood	-3012.49		-2890.11	

Where *** means the variable is significant at a 1 per cent level, ** at a five per cent level and * at the ten per cent level. Variables with no reference are significant at a level higher than ten per cent

Table 4.3: Standard Tobit Results (assuming multiplicative heteroskedasticity)

	1994/1995		*1999/2000*	
Variable	*Coefficients*	*t-values*	*Coefficients*	*t-values*
Constant	-4.8327***	-5.0620	-11.4945***	-7.9100
LogDISPOS	0.0643	0.9680	0.6163***	4.8570
LogAGE	0.2827	1.5140	1.1732***	4.3240
LogDEPEND	---	---	0.2286	1.5790
LogROOMS	---	---	0.2800	1.5440
ECNCAT1	1.0362***	2.6760	---	---
ECNCAT2	1.0397***	2.6870	---	---
ECNCAT3	0.9690**	2.4210	-0.4245**	-2.4530
ECNCAT4	1.2575***	3.1790	---	---
ECNCAT7	1.0876***	2.7660	---	---
EDUCAT3	0.3544***	3.5660	0.403***	2.9260
EDUCAT4	0.4198***	3.6760	0.4429***	2.9990
EDUCAT5	0.5874***	3.4770	0.7166***	3.7520
EDUCAT6	0.7936***	4.6010	0.8375***	4.2250
EDUCAT7	0.6800***	2.9850	0.8836***	3.5580
SOCIALS1	0.3561**	2.3690	0.2183	1.0330
SOCIALS2	0.3473***	2.6170	0.3336**	2.3430
SOCIALS3	0.2246*	1.6550	0.2577	1.5590
SOCIALS4	---	---	0.2425*	1.7920
SOCIALS6	-0.2736**	-2.0550	---	---
TOWN1	0.2734***	2.7910	0.3477***	3.0890
TOWN2	0.3072***	2.6140	---	---
TOWN3	0.1748*	1.6490	0.2359*	1.8050
TENURE1	---	---	0.4251**	2.5470
TENURE2	---	---	0.5139***	3.1280
TENURE4	-0.3327***	-2.7900	---	---
INVEST	0.2815***	3.5800	0.2522***	2.6350
LOAN	0.1070	1.3660	0.1602*	1.6060
HOLY	0.7621***	8.7880	0.7979***	7.2400
MARRIED	0.1985**	2.1130	---	---
READER	0.4445***	3.1610	0.5749***	2.9860
ARTY	0.2253***	2.9320	0.2652***	2.5760
SMOKER	---	---	-0.2213**	-2.3140
EDUCAT	---	---	1.2073**	2.0160
JAN	-0.5188***	-2.8210	-1.0584***	-4.0090
FEB	-0.5960***	-3.2310	-0.9933***	-4.0130
MAR	-0.1551	-0.9230	-0.4891**	-2.1710
APR	-0.1599	-0.8700	-0.5399**	-2.3330
MAY	-0.0777	-0.4570	-0.5817**	-2.5580
JUN	-0.3543**	-2.1610	-0.5645***	-2.7460
JUL	-0.2033	-1.1460	-0.8394***	-4.0330
AUG	-0.1204	-0.7100	-0.7855***	-3.3960
SEP	-0.2616	-1.5490	-0.7227***	-3.0320
OCT	-0.1739	-1.0100	-0.8084***	-3.3650
NOV	-0.2334	-1.3840	-0.486**	-2.0850
Sigma	0.6859***	-1.8320	0.9177**	1.9770
LogDISPOS(HET)	0.1407***	3.6680	-0.0205	-0.6260
LogAGE(HET)	0.1702**	2.1810	-0.0006	-0.0060
LogDEPEND(HET)	---	---	0.0474	0.7340
LogROOM(HET)	---	---	0.0732	0.9700
N	7877		7644	
Log-likelihood	-3005.04		-2889.28	

Where *** means the variable is significant at a 1 per cent level, ** at a five per cent level and * at the ten per cent level. Variables with no reference are significant at a level higher than ten per cent. (HET) refers to variables included in z, the exogenous variables causing heteroskedasticity.

Table 4.4: IHS Tobit Results

	1994/1995		*1999/2000*	
Variable	*Coefficients*	*t-values*	*Coefficients*	*t-values*
Constant	-2.0870***	-6.3990	-4.6648***	-12.3150
LogDISPOS	0.0332	1.2910	0.2400***	6.3450
LogAGE	0.2827**	2.1090	0.4616***	6.6860
LogDEPEND	---	---	0.1361***	3.6320
LogROOMS	---	---	0.1722***	3.6020
ECNCAT1	0.4377***	3.6410	---	---
ECNCAT2	0.4382***	3.6530	---	---
ECNCAT3	0.4095***	3.2920	-0.1878***	-3.1810
ECNCAT4	0.5284***	4.3100	---	---
ECNCAT7	0.4566***	3.7160	---	---
EDUCAT3	0.1499***	4.7450	0.1578***	3.5300
EDUCAT4	0.1777***	5.1490	0.1693***	3.5220
EDUCAT5	0.2452***	4.8080	0.2852***	4.6940
EDUCAT6	0.3285***	6.1000	0.3421***	5.3280
EDUCAT7	0.2849***	4.3910	0.3679***	4.5470
SOCIALS1	0.1469***	3.3410	0.0976	1.4970
SOCIALS2	0.1456***	3.7390	0.1496***	3.2450
SOCIALS3	0.0942**	2.4110	0.11**	2.1240
SOCIALS4	---	---	0.0999**	2.2960
SOCIALS6	-0.1130***	-2.7810	---	---
TOWN1	0.1130***	3.7390	0.1533***	4.4320
TOWN2	0.1281***	3.5670	---	---
TOWN3	0.0733**	2.3170	0.1025***	2.5610
TENURE1	---	---	0.1796***	3.1920
TENURE2	---	---	0.2128***	3.8680
TENURE4	-0.1405***	-3.5790	---	---
INVEST	0.1166***	4.8500	0.1128***	3.7700
LOAN	0.0455*	1.8870	0.0702**	2.1760
HOLY	0.3196***	11.542	0.3522***	10.0350
MARRIED	0.0826**	2.7640	---	---
READER	0.1877***	3.8970	0.2447***	3.7440
ARTY	0.0941***	4.0770	0.1272***	3.8850
SMOKER	---	---	-0.0967***	-3.1540
EDUCAT	---	---	---	---
JAN	-0.2165***	-3.8310	-0.4683***	-5.3320
FEB	-0.2487***	-4.4550	-0.4309***	-5.2990
MAR	-0.0655	-1.2540	-0.2296***	-3.2390
APR	-0.0655	-1.1440	-0.2409***	-3.1480
MAY	-0.0315	-0.6210	-0.2633***	-3.5920
JUN	-0.1456***	-2.9200	-0.2555***	-3.7850
JUL	-0.0835	-1.5030	-0.3696***	-5.3780
AUG	-0.0489	-0.9360	-0.3535***	-4.7360
SEP	-0.1092**	-2.0630	-0.3274***	-4.0750
OCT	-0.0721	-1.3650	-0.3653***	-4.7610
NOV	-0.0960*	-1.8750	-0.2250***	-3.0470
Sigma	-1.4498***	-4.1570	1.0428***	52.6810
LogDISPOS(HET)	0.1277***	3.3320	---	---
LogAGE(HET)	0.1588**	2.4880	---	---
γ	0.2303***	3.7360	0.0026***	19.0670
N	7877		7644	
Log-likelihood	-2267.06		-2253.25	

Where *** means the variable is significant at a 1 per cent level, ** at a five per cent level and * at the ten per cent level. Variables with no reference are significant at a level higher than ten per cent. (HET) refers to variables included in z, the exogenous variables causing heteroskedasticity. γ is the parameter created by the IHS transformation.

Table 4.5: Standard Probit Results

	1994/1995		*1999/2000*	
Variable	*Coefficients*	*t-values*	*Coefficients*	*t-values*
Constant	-4.4971***	-12.37	-5.7263***	-14.89
LogDISPOS	0.1766***	5.41	0.2695***	8.71
LogAGE	0.4586***	6.20	0.5815***	6.75
LogDEPEND	0.1061***	2.83	0.1803***	4.02
LogROOMS	---	---	0.2524***	4.56
ECNCAT1	0.5767***	3.33	---	---
ECNCAT2	0.6690***	3.90	---	---
ECNCAT3	0.4814***	2.71	-0.3016***	-4.67
ECNCAT4	0.5619***	3.17	-0.1634**	-2.28
ECNCAT7	0.5692***	3.25	-0.1023**	-1.93
EDUCAT1	-0.5001***	-2.57	---	---
EDUCAT2	-0.4199***	-7.12	---	---
EDUCAT3	-0.1940***	-3.48	0.1873***	3.70
EDUCAT4	-0.1182**	-2.21	0.2201***	4.14
EDUCAT5	---	---	0.3728***	5.28
EDUCAT6	---	---	0.3635***	5.09
EDUCAT7	---	---	0.4344***	4.86
SOCIALS4	-0.1133**	-2.08	---	---
SOCIALS6	-0.2451***	-4.26	---	---
JAN	-0.1691***	-2.61	-0.4401***	-4.41
FEB	-0.2266***	-3.50	-0.4044***	-4.26
MAR	---	---	-0.1215	-1.38
APRIL	---	---	-0.2130**	-2.37
MAY	---	---	-0.2346***	-2.67
JUNE	-0.1242**	-2.35	-0.2283***	-2.87
JULY	---	---	-0.3417***	-4.27
AUG	---	---	-0.2824***	-3.19
SEP	---	---	-0.3463***	-3.81
OCT	---	---	-0.2733***	-2.99
NOV	---	---	-0.1215	-1.35
DEC	---	---	-0.4401***	-4.41
TOWN1	---	---	0.1869***	4.55
TOWN4	-0.2006***	-2.23	---	---
TOWN5	-0.1478***	-3.69	---	---
TENURE1	0.2268***	3.90	0.1845***	3.03
TENURE2	0.2750***	4.77	0.2620***	4.35
TENURE3	0.2008**	2.10	---	---
SMOKER	-0.0548*	-1.61	-0.0917***	-2.54
ARTY	0.1562***	4.32	0.1448***	3.71
READER	0.2710***	4.28	0.2796***	4.08
HOLY	0.4650***	11.98	0.4421***	11.09
INVEST	0.1777***	4.96	0.1333***	3.69
LOAN	0.1165***	3.17	0.1261***	3.36
MARRIED	0.1138***	2.62	---	---
EDUCAT	---	---	0.6886***	3.10
N	7877		7644	
Log-likelihood	-3947.118		-3679.3662	

Where *** means the variable is significant at a 1 per cent level, ** at a five per cent level and * at the ten per cent level. Variables with no reference are significant at a level higher than ten per cent

Table 4.6: Double-Hurdle Model Results

	1994/1995		*1999/2000*	
Variable	*Participation*	*Expenditure*	*Participation*	*Expenditure*
Constant	-3.2351***	-1.5715***	-5.3791***	-1.9978***
	(0.6780)	(0.2371)	(0.6446)	(0.3214)
LogDISPOS	0.1810***	0.0406**	0.2838***	0.1173***
	(0.0662)	(0.0180)	(0.0518)	(0.0245)
LogAGE	0.3753**	0.1711***	0.4037***	0.3588***
	(0.1566)	(0.0479)	(0.1366)	(0.0603)
LogDEPEND	0.2264***	---	0.3481***	---
	(0.0870)		(0.0786)	
LogROOMS	---	---	0.3976***	---
			(0.0908)	
EDUCAT1	-0.7387**	---	---	---
	(0.2954)			
EDUCAT2	-0.5415***	---	---	---
	(0.1178)			
EDUCAT3	-0.2603**	0.0855**	---	0.0420
	(0.1219)	(0.0374)		(0.0346)
EDUCAT4	---	0.0613	0.1533*	0.1654***
		(0.0402)	(0.0875)	(0.0408)
EDUCAT5	---	0.1144**	0.3789***	0.1380***
		(0.0540)	(0.1241)	(0.0483)
EDUCAT6	---	0.2175***	0.2536*	0.1764***
		(0.0577)	(0.1366)	(0.0567)
EDUCAT7	---	0.1589**	0.3021*	0.2838***
		(0.0669)	(0.1625)	(0.0616)
TOWN1	---	0.0636**	0.2990***	---
		(0.0276)	(0.0694)	
TOWN2	---	0.0654*	---	---
		(0.0346)		
TOWN4	-0.3039*	---	---	---
	(0.1639)			
TOWN5	-0.2235***	---	---	---
	(0.0808)			
SOCIAL1	---	0.1849***	---	0.2904***
		(0.0439)		(0.0807)
SOCIAL2	---	0.1630***	---	0.0776
		(0.0384)		(0.0563)
SOCIAL3	---	0.1047***	---	0.0999***
		(0.0395)		(0.0356)
SOCIAL6	-0.2722***	---	---	---
	(0.0883)			
TENURE1	0.4140***	---	0.2641***	---
	(0.1019)		(0.0887)	
TENURE2	0.5786***	---	0.4126***	---
	(0.1140)		(0.0885)	
TENURE3	0.4093**	---	---	---
	(0.1830)			
SMOKE	---	---	---	-0.0854***
				(0.0281)
ART	0.3656***	---	0.1969**	---
	(0.0853)		(0.0798)	
READER	0.4689***	---	0.4082***	---
	(0.0993)		(0.0966)	
HOLY	0.5751***	0.1732***	0.7061***	---
	(0.5751)	(0.0361)	(0.0633)	
INVEST	0.3908***	---	0.2279***	---
	(0.0846)		(0.0619)	
LOAN	0.2446***	---	0.2423***	---
	(0.0800)		(0.0624)	
ECNCAT1	---	0.4707***	---	---
		(0.1164)		

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	1994/1995		1999/2000	
Variable	*Participation*	*Expenditure*	*Participation*	*Expenditure*
ECNCAT2	---	0.4313***	---	---
		(0.1164)		
ECNCAT3	---	0.4172***	-0.4064***	---
		(0.1207)	(0.1030)	
ECNCAT4	---	0.5455***	---	---
		(0.1195)		
ECNCAT7	---	0.4201***	---	---
		(0.1171)		
EDUCAT	---	---	0.8785**	---
			(0.3540)	
JAN	---	-0.2399***	---	-0.4215***
		(0.0571)		(0.0808)
FEB	---	-0.2376***	---	-0.3917***
		(0.0573)		(0.0748)
MAR	---	-0.0942*	---	-0.2137***
		(0.0522)		(0.0646)
APRIL	---	-0.0685	---	-0.2065***
		(0.0585)		(0.0709)
MAY	---	-0.0412	---	-0.2244***
		(0.0531)		(0.0659)
JUNE	---	-0.1530***	---	-0.2231***
		(0.0515)		(0.0616)
JULY	---	-0.0722	---	-0.3129***
		(0.0588)		(0.0635)
AUG	---	-0.0501	---	-0.3225***
		(0.0543)		(0.0684)
SEP	---	-0.1209**	---	-0.2519***
		(0.0551)		(0.0766)
OCT	---	-0.0979*	---	-0.3502***
		(0.0541)		(0.0704)
NOV	---	-0.1064**	---	-0.2221***
		(0.0524)		(0.0686)
LogDISPOS(HET)	---	0.1051***	---	---
		(0.0272)		
LogAge(HET)	---	0.2273***	---	---
		(0.0541)		
γ	---	0.2339***	---	0.1490***
		(0.0562)		(0.0571)
Mean Log-likelihood		-0.27597		-0.27497

where *** implies variable is significant at a 1% level, ** at a 5% level, * at a 10% level. All standard errors are in parenthesis.

Table 4.7: Elasticity Estimates for Double-Hurdle Models

Variable	*Probability*		*Conditional Expenditure*	
	1994/1995	*1999/2000*	*1994/1995*	*1999/2000*
LogDISPOS	0.0465	0.0732	0.1246	0.0412
LogAGE	0.1224	0.1379	0.4107	0.1260
LogDEPEND	0.0376	0.0644	---	---
LogROOMS	---	0.0736	---	---

Table 4.8: Discrete Effects for Double-Hurdle Models

Variable	*Probability*		*Conditional Expenditure*	
	1994/1995	*1999/2000*	*1994/1995*	*1999/2000*
EDUCAT1	-0.1213	---	---	---
EDUCAT2	-0.0901	---	---	---
EDUCAT3	-0.0209	0.0084	0.0289	0.0149
EDUCAT4	0.0180	0.0641	0.0207	0.0600
EDUCAT5	0.0339	0.1058	0.0396	0.0504
EDUCAT6	0.0646	0.0893	0.0783	0.0652
EDUCAT7	0.0472	0.1268	0.0327	0.1091
ECNCAT1	0.1383	---	0.1780	---
ECNCAT2	0.1268	---	0.1551	---
ECNCAT3	0.1229	-0.0719	0.1606	---
ECNCAT4	0.1587	---	0.2179	---
ECNCAT7	0.1232	---	0.1472	---
SOCIALS1	0.0548	0.0578	0.0653	0.1115
SOCIALS2	0.0483	0.0155	0.0570	0.0277
SOCIALS3	0.0309	0.0200	0.0360	0.0361
SOCIALS6	-0.0456	---	---	---
TOWN1	0.0187	0.0556	0.0214	---
TOWN2	0.0193	---	0.0222	---
TOWN4	-0.0514	---	---	---
TOWN5	-0.0374	---	---	---
TENURE1	0.0682	0.0488	---	---
TENURE2	0.0929	0.0764	---	---
TENURE3	0.0643	---	---	---
INVEST	0.0636	0.0423	---	---
LOAN	0.0405	0.0448	---	---
EDUCAT	---	0.1530	---	---
READER	0.0790	0.0724	---	---
ARTY	0.0596	0.0365	---	---
HOLY	0.1412	0.1263	0.0566	---
SMOKE	---	-0.0170	---	-0.0299
JAN	-0.0678	-0.0802	-0.0736	-0.1304
FEB	-0.0672	-0.0751	-0.0730	-0.1226
MAR	-0.0273	-0.0420	-0.0304	-0.0706
APRIL	-0.0199	-0.0406	-0.0222	-0.0683
MAY	-0.0120	-0.0441	-0.0135	-0.0739
JUNE	-0.0441	-0.0439	-0.0486	-0.0742
JULY	-0.0210	-0.0611	-0.0234	-0.1019
AUG	-0.0146	-0.0626	-0.0164	-0.1033
SEP	-0.0349	-0.0493	-0.0387	-0.0823
OCT	-0.0284	-0.0676	-0.0315	-0.1111
NOV	-0.0308	-0.0436	-0.0342	-0.0731

Appendix B: Specification Tests

Table 4.9: Likelihood ratio test of homoskedasticity restriction

H_0 = Restricted (Homoskedastic tobit) *H_1 = Unrestricted (Heteroskedastic tobit)*		
	1994/1995	**1999/2000**
Restricted: Log-likelihood Homoskedastic tobit	-3012.49	-2890.11
Unrestricted: Log-likelihood Heteroskedastic tobit	-3005.04	-2889.28
Critical value 1% (chi-squared with df = number of variables in heteroskedasticity equation)	9.21	13.28
Test statistic (2*(Unrestricted-Restricted))	14.9	1.66
Result	**Reject H_0**	**Cannot Reject H_0**

Table 4.10: Pagan and Vella test for normality

H_0 = Error term is normally distributed *H_1 = Error term is non-normally distributed*		
	1994/1995	**1999/2000**
Test Statistic	25.535	18.05
Prob > chi-squared	0.00	0.00
Result	**Reject H_0**	**Reject H_0**

Table 4.11: Likelihood ratio test of normality restriction

H_0 = Restricted (Tobit) *H_1 = Unrestricted (IHS Tobit)*		
	1994/1995	**1999/2000**
Restricted: Tobit Log-likelihood	-3005.04	-2889.28
Unrestricted: IHS Tobit Log-likelihood	-2267.06	-2253.25
Critical value 1% (chi-squared with df = 1)	6.63	6.63
Test statistic (2*(Unrestricted-Restricted))	1475.96	1272.06
Result	**Reject H_0**	**Reject H_0**

Table 4.12: Likelihood ratio test of univariate restriction

H_0 = Restricted (IHS Tobit) *H_1 = Unrestricted (IHS Double-Hurdle)*		
	1994/1995	**1999/2000**
Restricted: IHS Tobit Log-likelihood	-2305.48	-2323.51
Unrestricted: IHS Double-Hurdle Log-likelihood	-2173.82	-2101.86
Critical value 1% (chi-squared with df = no of variables in Probit equation)	33.4	34.8
Test statistic (2*(Unrestricted-Restricted))	263.32	443.3
Result	**Reject H_0**	**Reject H_0**

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