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Irish Public Service Broadcasting: A Contingent Valuation Analysis

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Abstract: Irish public service broadcasting faces enhanced domestic and international competition and increasingly the Irish public service broadcaster (RTÉ) is being called upon to justify the scale of the television licence fee, its major source of funding. This paper describes the first nationwide valuation of RTÉ's services. In analysing the determinants of respondents' willingness to pay for RTÉ's services, the importance of domestic and international competing services and the relationships between willingness to pay for, usage of, and satisfaction with, RTÉ's services are analysed. In addition, this paper highlights the importance of distinguishing between household, and individual, willingness to pay.

I INTRODUCTION

The economics of stated preference is a rapidly growing field, with economists addressing issues of survey design and the psychology of survey response. It has become increasingly common to attempt to measure economic preferences for public products directly using stated preference methodology. The application of stated preference techniques to the area of cultural and media economics is one illustrative area (e.g. Ehrenberg and Mills, 1990; Schwer and Daneshvary, 1995; Papendrea, 1997; Finn, McFadyen and Hoskins, 2003). This paper focuses on the area of Irish public service broadcasting.[1]

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[1] This paper builds on research by Michael Jennings and John O'Hagan (e.g. Jennings 2001, Jennings and Curtis 2002, O'Hagan and Jennings 2003).

The context of this paper is both the debate concerning the future of public service broadcasting and the development of contingent valuation methodology ("CVM") as a tool in cultural analysis. This paper represents the first attempt, on a nationwide basis, to put a monetary valuation on Irish public service broadcasting services with the CVM being employed to estimate household willingness to pay in hypothetical choice formats. This paper describes the pre-tests that assessed the validity of CVM as a tool for valuing public service broadcasting and the construction, administration and analysis of the nationwide survey. As well as deriving estimates of willingness to pay for services produced by the Irish public broadcaster (RTÉ), estimates of the conditional distribution of willingness to pay with regard to preferences for domestic and international competing services (e.g. TV3) are also examined. The conditional distribution of willingness to pay for RTÉ's services with respect to usage of, and satisfaction with, various RTÉ's services, as well as reliance on the services for different types of programming are also analysed. The robustness/validity of the responses are investigated by modelling the probability of non-response, outlier bids, zero-bids and bids that specify directly an unwillingness to pay more than the current television licence fee ("licence fee"). In addition, the importance of distinguishing between household, and individual, willingness to pay is discussed, both in general and in the specific context of the nationwide survey.

Section II outlines Irish public service broadcasting and reviews the previous usage of CVM in cultural and broadcasting studies. Section III describes the specific research issues that this paper addresses, namely, willingness to pay for the Irish public service broadcaster, the importance of the availability of domestic and international competing services, the relationships between willingness to pay for, usage of, and satisfaction with, RTÉ's services and the importance of distinguishing between household, and individual, willingness to pay. Section III also describes the pre-testing that explored possible survey effects on willingness to pay. Section IV describes the nationwide survey, focusing particular attention on the crucial willingness to pay scenario. Section IV also describes the results of the survey. Section V offers concluding comments.

II VALUING IRISH PUBLIC SERVICE BROADCASTING

2.1 Irish Public Service Broadcasting

Radio Telefis Éireann (RTÉ) is the Irish public service broadcasting organisation and it has provided a radio service since 1926 and a television service since 1961. As an organisation, RTÉ is subject to the nine-member

RTÉ Authority, which is appointed by the government. The RTÉ executive board, which is responsible for the day-to-day running of RTÉ and is headed by RTÉ's director general, reports to the RTÉ Authority. RTÉ broadcasts three television services, RTÉ One, Network 2 and TG4 (an Irish language service), as well as four radio services, Radio 1, 2FM, Lyric FM and Raidió na Gaeltachta.[2] RTÉ is also responsible for advertising, performing groups (e.g. National Symphony Orchestra), publishing (e.g. RTÉ Guide), transmission and a range of other services (e.g. Aertel).

RTÉ is dually funded with approximately 40 per cent of its annual revenues in recent years coming from licence fee revenue with the remainder from advertising (close to 50 per cent), other broadcasting revenue and RTÉ Commercial Enterprises. However, the significant increase in the licence fee to €150 in January 2003 (from its previous level of €107) means that licence fee revenue is now RTÉ's primary source of funding.[3] O'Hagan and Jennings (2003) discuss public support for public broadcasting in Europe and summarise the rationale offered for state intervention under the headings of variety/diversity, democracy/equality, network externalities, innovation and investment and insurance.[4]

This paper, however, is not predicated on any particular theory of market failure rationalising state involvement in broadcasting markets. Rather the focus of this paper is on examining the possible existence, and scale, of signal failures that may arise when the government attempts to set the appropriate licence fee. As reviewed by Savage (1996), the funding of public service broadcasting in Ireland has always been a controversial issue in Irish politics. However, public discontent at the level and inherently regressive nature of the *ad rem* licence fee is noticeable by its absence, particularly in contrast to the difficulties associated with the introduction of some *ad rem* service charges, e.g. bin and water charges. The extensive nature of the various licence fee

[2] Viewing figures show that RTÉ's television channels remain popular, with *national individuals all-day television shares* of 25.4 per cent for RTÉ One and 12.4 per cent for Network 2; TV3's figure is 13.0 per cent (Nielsen Media Research, RTÉ *Annual Report 2003*). The major *national market shares of radio listening* (7am – 7pm, January – December 2003, adults aged 15+) were as follows for 2003: 'Home' local stations (41 per cent), Radio 1 (25 per cent), 2FM (17 per cent) and Today FM (9 per cent) (JNLR/TNS MRBI, RTÉ *Annual Report, 2003*).

[3] "In 2003, Television Licence Fee income slightly exceeded 50 per cent of RTÉ's total income for the first time in many years." (RTÉ *Annual Report, 2003*, p.17).

[4] A public broadcaster, it is suggested, can increase societal welfare by catering for minority interests (e.g. specialist tastes), by educating and informing (e.g. political information), by enhancing the sense of community (e.g. broadcasting major sporting events), by developing new talent/programming (e.g. conveyor-belting talent into the commercial sector) and by providing insurance with respect to the existence of broadcasting itself and with respect to ensuring basic services (e.g. quality) through demonstration.

waiver schemes may provide part explanation. This paper attempts to elicit directly households' willingness to pay for RTÉ's services. As such, this paper focuses attention on the demand side of the 'market'; supply side issues (e.g. RTÉ's internal cost efficiency) are not examined. The entrance of domestic competition, in the form of TV3 (September, 1998) and enhanced international competition in the form of an increased variety of cable and satellite services has likely influenced households' willingness to pay for RTÉ's services. Eliciting households' willingness to pay for RTÉ's services directly also offers the opportunity of at least complementing previous attempts at valuing these services, namely, usage and satisfaction figures/ratings, and the more recently introduced Audience Council.[5]

2.2 Valuation Issues

The behavioural data routinely used by economists in demand studies do not emit sufficient signals in the case of public broadcasting (e.g. Papendrea, 1997). Licence fee uptake is not a powerful indicator of preferences for RTÉ's services, as all television households must pay the licence fee, independently of watching, and/or deriving benefit from, RTÉ's television services. One could analyse those households who pay the licence fee but only receive Irish channels but this is not a representative sub-sample of the population and would only give the choice decision at one price point. In addition, since September 1998, the vast majority of these households also receive TV3, which would also confound the required statistical analysis. A further problem with using licence fee uptake is that it provides no information on preferences for RTÉ's radio services, as a household does not require a licence to receive radio broadcasts in Ireland.

In practice, usage figures are the main interface between consumer preferences and broadcasting decisions in Ireland and provide useful information as to which of RTÉ's services are most utilised (and by what groups). However, usage is not a complete indicator of derived utility. People may watch just one hour a week of RTÉ's services but, if the degree of substitutability between this hour and other broadcasting services is very low, this hour may be extremely valuable. Conversely, some of RTÉ's television programmes with high ratings may be those that are highly substitutable for the viewer (e.g. programmes available on other TV channels). In addition, usage figures do not encapsulate option values that accrue from the existence

[5] The Audience Council, consists of approximately 22 members with many being nominated by the various social partners (e.g. IBEC and ICTU), the Arts Council, the National Children's Office, the City and County Managers' Association, the Equality Authority, Foras na Gaeilge, the Irish Council of Churches and the Irish Sports Council.

of broadcasting services, nor do they take account of parental utility (e.g. children's programming).

It could be argued that the political economy of broadcasting decisions would result in the licence fee being set at approximately the correct level by a benevolent, and/or vote-maximising, government. However, such an outcome may not be attained for a number of reasons. First, public service broadcasting (and, indeed, cultural policy more generally) is usually not a major issue in election campaigns. Second, lobbying plays an important role. Public service broadcasters are generally vociferous lobbyists and RTÉ does not appear to be an exception. If the public service broadcaster's organisational objectives were at variance with the maximisation of public utility, then its greater cohesion as a lobbyist could lead the level of the licence fee (and/or programming provision) away from the appropriate level. Conversely, commercial broadcasters have interests that are often opposed to the interests of the public service broadcaster; lobbying by commercial broadcasting could also result in inefficiency. More generally, it appears very difficult to argue that the multi-period 'game' being played between government, public broadcaster, commercial broadcasters, viewers, voters and regulator(s) would inevitably result in the appropriate licence fee.[6]

The issue of whether the public service broadcasting market approximates an efficient equilibrium can, however, be usefully addressed in an empirical sense by representative surveying of the population. Mitchell and Carson (1989), in their influential work on CVM, offer a history of its development. First mentioned by Ciriacy-Winthrop (1947), CVM developed as an alternative to hedonic pricing and travel-costing as a means of assessing the benefits of environmental products that are not directly traded in the market. The first application was by Davis (1963) for preferences with respect to woodland areas in Maine. The methodology rapidly proliferated in the 1970s and 1980s and entered the US legal and political framework as a federally recognised method of assessing lost 'passive' or 'non-use' values arising from environmental damage/destruction.

Many cultural products share certain properties with environmental products, in that pricing is often not organised on a market basis, making traditional welfare analysis unworkable. The use of CVM to assess the benefits of cultural projects has been explored in a number of papers in recent years. For example, Hansen (1997) looked at willingness to pay for the Royal Theatre in Copenhagen, while Aabo (1998) looked at public libraries in a

[6] Similarly, it is difficult to envisage the Audience Council being expected to correct for all possible imbalances in the future.

contingent valuation set-up.[7] Noonan (2002, 2003) and Navrud and Ready (2002) give comprehensive reviews of the CVM literature in the fields of culture and heritage, respectively.

Portney (1994) offers a very simple tripartite division of the contingent valuation survey. Initially, one must design a hypothetical scenario. One must then elicit respondents' willingness to pay through an appropriate question. Finally, one must collect socio-demographic information on the respondents. The general research methodology is to regress willingness to pay on socio-demographic characteristics in order to analyse the determinants of willingness to pay, and to provide policy-makers with useful information as to demand for the services being (at least potentially) provided. Socio-demographic variables have been shown to be significant determinants of willingness to pay in previous contingent valuations of cultural products. For 'high-level' cultural products such as theatres and museums, perhaps unsurprisingly, levels of income and education predict willingness to pay to a significant degree (e.g. Hansen, 1997).[8]

The responses to a contingent valuation question can be thought of as realisations of a randomly distributed variable that is generally observed in continuous, censored, dichotomous or polycotomous form. Estimation procedures generally involve probit, logit or weibull for the discrete case, and OLS, Censored Tobit, Double-Hurdle and Heckman procedures for the continuous, censored or sample selection case.[9] As regards scenario design, one may model the hypothetical market after a political or a private products market. Cultural studies often choose a modified political market, as the specification of the value of the product often involves externalities that would not be highlighted in a private products scenario. As regards elicitation method, there is a trade-off between the risk of artificially constraining responses as may occur with elicitation methods that offer a discrete array of alternatives (which also require a larger sample size), and the risk that respondents will find the question too difficult and meaningless to offer a sensible response, as may occur with an open-ended format (Mitchell and Carson, 1989).

2.3 Contingent Valuation of Broadcasting

Bohm (1972) was the first paper to look at eliciting preferences for

[7] See also Santagata and Signorello (2000) and Bravi, Scarpa and Sirchia (1998).

[8] However, the methodology has not yet developed standardised formats for dealing with the attitudes and beliefs of the respondents, factors that clearly influence willingness to pay responses.

[9] Increasingly non-parametric inferential procedures have become popular in the literature owing to the difficulty of parametrically specifying the distribution of willingness to pay figures.

broadcasting services, although the contingent valuation method itself was not a prominent part of this seminal paper. However, Bohm notes that, when compared with other methods of eliciting demand, the contingent valuation method may lead to respondents giving over-estimates of their willingness-to-pay, in that willingness to pay in a hypothetical scenario was found to be higher than that elicited when actual money was involved. This is a feature of CVM reinforcing the recommendation of the NOAA panel (Arrow *et al.,* 1993) that the results of CVM studies should be applied and analysed 'conservatively'.

Ehrenberg and Mills (1990) analysed demand for BBC services in a hypothetical subscription set-up. They began with the research question *Do the British population feel constrained by the licence fee to do something they would not otherwise do voluntarily*? They offered the two main BBC television channels to households at different subscription rates. They found that demand for BBC services dropped by 20 per cent at levels slightly above the then licence fee, but that beyond this point demand was "remarkably insensitive" to prices of up to £200, over two and a half times the licence fee at the time.

Schwer and Daneshvary (1995) analysed demand for public sector broadcasting in the state of Nevada in a hypothetical donation set-up. They asked respondents how much they would be willing to donate in order to retain public broadcasting in Nevada. The main result of interest, in terms of the present study, was the extent to which positive preferences for so-called 'look-a-like' cable channels correlated negatively with willingness to pay to retain public broadcasting. However, in terms of scenario design, a donation format would be unsuitable in the Irish context, as there is no history of donating to public broadcasting.[10]

Papendrea (1999) applied the contingent valuation method to estimate community benefits in Australia from the mandatory transmission of Australian programmes by television stations. Papendrea employed a two-part referendum format for the valuation question. Respondents were provided with information as to how much it cost to provide the current amount of domestic programming and then asked whether this should be increased, decreased or stay the same. The second step was to ask respondents what would be the maximum that their household would be prepared to pay in increased prices and taxes each year in order to retain the current amount of Australian programmes on television. Willingness to pay for increased

[10] However, it would be interesting to test the use of a donation format as a payment vehicle against other payment vehicles involving perceived compulsion in order to examine the effects of protest on willingness to pay.

provision of Australian programming, using increased prices for advertised commodities as a payment vehicle, was also assessed.

Jennings followed Papendrea (1999) by analysing demand for RTÉ services in a modified policy set-up (Jennings, 2001; Jennings and Curtis, 2002). Respondents were asked, in a payment card set-up, how much they would be willing to pay to retain RTÉ as a public service broadcaster rather than allow it to become a private commercial concern. This scenario is part of a family of possible scenarios that involve respondents' assessing benefits in different (policy) states of the world.[11] The disadvantage of this approach is that respondents are being, in effect, asked to construct the relevant counterfactual and only then value the difference between the two states (i.e. the present scenario and the relevant counterfactual).

Finn, McFadyen and Hoskins (2003) used contingent valuation and contingent choice techniques to estimate use and non-use values of the programming services provided by the Canadian Broadcasting Corporation (CBC). They received 577 responses from a mail-survey sample of 2,404 households from a survey conducted in September 1998. The contingent choice design involved a mixed factorial set-up with 16 packages of programming types (alternated by hours) and a vector of 4 price levels. From the contingent valuation set-up, the authors estimated a total household value for the CBC of $5.03 per household. Of this, $3.70 was the value of the average respondent's own household having access, and $1.33 was the value to the average household of other Canadian households having access to the services. This represents an aggregated yearly value of $664 million for the total value of the CBC, with about $488 million (or 74 per cent) coming from private effects and $175 million (or 26 per cent) coming from external effects.

III PRE-TEST QUESTIONNAIRE

3.1 Research Issues

In examining the Irish public service broadcasting market from an empirical perspective, there are a number of specific research questions with respect to public preferences.

(i) Willingness to pay for RTÉ's services: The major empirical issue concerns household demand for Irish public service broadcasting. In particular, what is the average household willingness to pay for RTÉ's services

[11] For example, respondents could be asked about their preferences for different regulatory regimes, such as RTÉ becoming a smaller organisation with smaller funding.

and how does it compare with the licence fee?[12] In addition, what factors determine responses to the willingness to pay question and how statistically robust are these responses? Key issues in this regard include the determinants of zero-bids, outlier bids, non-response and bids where the respondents state that they are willing to pay the current licence fee (without specifying the actual amount).

(ii) The presence of domestic and international competing services: An interesting research question concerns the extent to which domestic and international competing services act as complements, or substitutes, for RTÉ's services. For example, are those who view and/or are satisfied with TV3 more, or less, willing to pay for RTÉ's services?

(iii) The effects of usage and/or satisfaction on willingness to pay: As previously indicated, usage figures are a major interface between consumer preferences and decisions with respect to public service broadcasting in Ireland. An obvious research issue concerns the degree of correlation between willingness to pay, usage and satisfaction figures.

(iv) Household, and individual, willingness to pay: Many contingent valuation studies fail to specify to the respondent whether they are looking for household, or individual, willingness to pay.[13] This paper explores the possible effect of this ambiguity by following the standard open-ended willingness to pay question with further questions seeking clarification with respect to whether the stated willingness to pay represented household, or individual, willingness to pay.

In order to address these core research issues, a number of pre-tests were concluded, including one relatively major study. Examples of issues that were

[12] This paper only attempts to estimate private household willingness to pay for RTÉ's services. As such, this paper does not attempt to estimate the valuation of effects external to the household (e.g. inter-household altruism). Finn, McFadyen and Hoskins' (2003) results may be regarded as somewhat re-assuring in this regard, as their estimate of the internal valuation tends to dominate their estimate of the external valuation. More generally, the household willingness to pay estimates in this paper could be regarded as lower bounds for total household willingness to pay for RTÉ's services.

[13] A typical example in the CVM literature comes from a study of the benefits of reducing gun violence conducted by Ludwig and Cook (1999). Their final conclusion is that a 30 per cent reduction in gun violence would be worth $23.8 billion dollars to the US public. This is based on the responses to the following question: *Suppose that you were asked to vote for or against a new program in your state to reduce gun thefts and illegal gun dealers. This program would make it more difficult for criminals and delinquents to obtain guns. It would reduce gun injuries by about 30 per cent, but taxes would have to be increased to pay for it. If it cost you an extra {$50/$100/$200} in annual taxes would you vote for or against the program*? The authors make the assumption that respondents were reporting on household rather than individual WTP and state that this is conservative given that many respondents would have given personal, rather than household, WTP. This example is discussed further in Delaney (2004); further examples abound.

usefully explored in these pre-tests include testing for the presence of anchoring in the dichotomous choice with follow-up set-up and examining respondents' verbal rationales of their willingness to pay.

3.2 Pre-Test Questionnaire: Design and Implementation

The main pre-test data set, involving information from 360 respondents, was based on a survey collected on major inter-city train routes in May 2002.[14] The main independent variables collected in the data can be grouped into standard qualitative variables (e.g. dummy variables) and variables based on the five-point Likert set-up (e.g. strongly agree; agree; neither agree nor disagree; disagree, strongly disagree). Examples of the former included income; cable/satellite; gender; children; and education, while examples of the latter included satisfaction with TV3; RTÉ's television channels compared to other television channels; RTÉ's radio stations compared to other radio stations; "RTÉ represents a waste of public money"; and "Ireland needs a public service broadcaster".

The following represents the basic scenario presented to all respondents in the pre-test:

> *RTÉ currently provides RTÉ 1, Network 2, and TG4 on television and Radio 1, 2FM, Lyric FM and Raidió na Gaeltachta on radio. It also provides Aertel and RTÉ online. Think about a situation where RTÉ was a subscription service. So, to get the above RTÉ services, you would have to pay a yearly subscription. Bearing the following points in mind:*
>
> *– there would be no licence fee;*
> *– any money you spend on the subscription would be money you could have spent on other products; and*
> *– you would not receive the services unless you paid the subscription,*
>
> *if a subscription to RTÉ cost you* ***x*** *euro per year, would you subscribe?*

The subscription was offered to each respondent at one of the following seven price levels (€30, €60, €90, €120, €150, €180 and €210). The dichotomous choice elicitation method is the most widely used in current

[14] Given the expense of commissioning professional surveys, researchers on limited budgets need to think of innovative ways of collecting pre-test survey data, if not the actual survey material itself. The use of railway routes as a sampling device has several advantages. First, one gets a fairly broad sample of the population. Second, potential respondents will generally be willing to comply, as their opportunity costs are often relatively low. Third, actual respondents will generally have some time to think about their responses. Fourth, a large sample can be gathered quickly and relatively inexpensively.

contingent valuation studies, as it closely mimics an actual market transaction and is more meaningful to respondents than the more difficult open-ended question which yields lower response rates and more "don't know" answers.

Respondents were also asked two follow-up questions: *What is the maximum amount of money, per year, you would pay for the above services before you would do without them?* and *What were the main reasons for your answer to the above question?* Using an open maximum willingness to pay follow-up question to the dichotomous choice question allows a test of the 'anchoring effect' (e.g. Kahneman, Slovic and Tversky, 1982). Several studies in experimental cognitive psychology predict that the mean response to the open-ended willingness to pay question will be linearly increasing in the amount initially offered (Green *et al.,* 1998). Thus, for example, one might expect that a person offered the services at €210 would subsequently show a higher maximum willingness to pay than someone initially offered the services at €30. The explanation for this effect is that, in the absence of perfect information, people use the initial bid as an 'anchor' in their response to the subsequent open-ended question.[15] One of the main reasons for the use of the dichotomous-choice question with the open-ended follow-up question in this pre-test study was to test for survey effects on willingness to pay. The stability of the maximum bid across different (initial) price levels would be used as an indicator of the stability of preferences. The rationale behind the second follow-up question is dual. First, the addition of an open-ended dialogue section allowed the collection of feedback on the valuation question. Second, the use of open-ended dialogue-type questions enables the researcher to give content to the responses and identify themes and express them in the language of the respondents, thus adding more context and meaning to the process (Clark *et al.,* 2000).

3.3 Results

Of the 360 collected questionnaires, 19 were discarded owing to either a failure to complete a significant amount of the survey or the non-residency of the respondent. Of the 341 completed surveys, 332 respondents (98 per cent) answered the dichotomous choice question, and 289 (85 per cent) answered the open-ended maximum willingness to pay question.

[15] Anchoring is one of several cognitive heuristics that experimental psychologists claim characterise human thinking and judgement. For example, Kahneman, Slovic and Tversky (1982) report a study where one group of people asked whether the chance of nuclear war was greater or less than 1 per cent estimated it to be about 10 per cent, whereas another group asked if it was greater or less than 90 per cent estimated it to be over 20 per cent. Similar examples abound in the literature.

Table 1 shows the number (and relevant percentages) of people accepting or rejecting the subscription at the seven different price levels. Demand for RTÉ's services appears relatively insensitive to price between €90 and €150, with the probability of acceptance at each price level being slightly above or below 50 per cent; the then current licence fee was €107.

Table 1: *Dichotomous Choice Question*

	€30 %	*€60* %	*€90* %	*€120* %	*€150* %	*€180* %	*€210* %	*Total* %
Yes	44 (86)	31 (79)	19 (53)	16 (43)	22 (49)	21 (31)	9 (16)	162 (48)
No	7 (14)	8 (21)	17 (47)	21 (57)	23 (51)	45 (69)	49 (84)	170 (52)
Total	51	39	36	37	45	66	58	332

Table 2 shows the mean response to the open-ended follow-up question at each of the seven price levels. Respondents did not anchor their responses to the initial bid in a linear fashion. This is a positive result in terms of the validity of the methodology and indicates that respondents' preferences were generally stable across different survey features.[16]

Table 2: *Maximum Willingness to Pay Question*

	€30	*€60*	*€90*	*€120*	*€150*	*€180*	*€210*	*Total*
Mean	€112	€108	€97	€96	€117	€113	€118	€110
Total	45	37	31	32	38	55	51	289

The comments elicited from the open-ended question/probe asking respondents to explain the reasons for the answer they gave to the willingness to pay questions seemed to point to a rational appraisal of the costs and benefits of subscribing to RTÉ's services, with the vast majority of respondents detailing the quality of the services, their cost and the cost and quality of alternatives.[17]

Responses to a number of questions assessing perception of the importance of public service broadcasting in Ireland were also elicited. Respondents were posed the following statement, *Ireland needs a public broadcaster* and asked to rate their level of agreement in a five-point Likert set-up: 35 per cent of respondents strongly agreed; 47 per cent agreed; 13 per cent chose the "neither" option; 3 per cent disagreed; and 2 per cent strongly

[16] In only one of three relevant models (see Table 3) did the initial bid emerge as a statistically significant factor in influencing the subsequently stated maximum willingness to pay.
[17] Further details are available from the authors upon request.

disagreed. Thus, there appears to be a very general level of agreement on the need for a public service broadcaster in Ireland. This is supported by the responses to the other Likert items employed in the survey. In response to, *Public broadcasting should be financed by public money*: 16 per cent strongly agreed; 42 per cent agreed; 16 per cent chose the neither option; 19 per cent disagreed; and 7 per cent strongly disagreed. In response to, *Public Broadcasting should be financed by the licence fee*: 8 per cent strongly agreed; 46 per cent agreed, 18 per cent chose the "neither" option; 20 per cent disagreed; and 9 per cent strongly disagreed. In addition, 84 per cent either strongly agreed or agreed that RTÉ is important to Irish society, while only 15 per cent either strongly agreed or agreed that RTÉ is a waste of public money.

3.4 Valuation Functions

Valuation functions based on pre-test data guide hypothesis formulation, question design and test for the robustness of results. Table 3 outlines three valuation functions based on responses to the dichotomous choice question. The discrete-choice valuation functions are estimated using binomial probit analysis. The three valuation functions include the price at which the subscription was offered; as expected, this is significant (and negative) across all three functions. The first valuation function examines the effects of gender, location (urban/rural), presence of children, education, income, age, and whether the respondent was the main bills-payer in the household. Both age and income are positive and significant indicating a greater probability of accepting the subscription among those respondents in the older and higher income groups. The remaining variables were insignificant.

The second valuation function analysed the effect of attitudinal variables on the decision to subscribe. Respondents who felt that Ireland needed a public broadcaster were significantly more likely to subscribe, whereas respondents who felt that public broadcasting was a waste of public money were significantly less likely to subscribe. However, attitudes about the suitability of public financing and the licence fee as a payment vehicle did not significantly determine the decision to subscribe. The third valuation function included usage of TV3 and satisfaction with TV3 as well as whether the household had cable or satellite services. It also included how the respondent felt radio and television services provided by RTÉ compared with others they received in terms of quality; the latter two variables were the only statistically significant variables.

Valuation functions using censored tobit models of the determinants of the open-ended follow-up questions were also estimated and are also outlined in Table 3. The initial price at which the subscription was offered was shown to have no effect in two of the three valuation functions, but emerged as

Table 3: *Multiple Regression Estimates of Determinants of WTP (Pre-Test Sample)*

	PROBIT ESTIMATES (DC DATA)			*TOBIT ESTIMATES (OE DATA)*		
	(1)	(2)	(3)	(1)	(2)	(3)
Constant	**0.90* (0.46)**	**1.22* (0.61)**	0.11 (0.49)	43.76 (27.89)	62.15 (35.65)	16.022 (28.06)
Price	**–0.31** (0.04)**	**–0.31** (0.03)**	**–0.32** (0.04)**	1.88 (2.31)	3.38 (2.21)	**3.75 (2.21)**
Gender	–0.13 (0.16)	–	–	–11.74 (9.93)	–	–
Town	0.004 (0.18)	–	–	8.38 (10.94)	–	–
Children	–0.02 (0.21)	–	–	–4.14 (12.68)	–	–
Education	0.07 (0.12)	–	–	10.66 (7.16)	–	–
Income	**0.2* (0.11)**	**–**	–	**13.81* (6.71)**	**–**	–
Age	**0.22* (0.10)**	**–**	–	**17.4* (6.25)**	**–**	–
Bills Payer	–0.15 (0.07)	–	–	**–7.6 (4.6)**	**–**	–
Public Broadcasting	–	**0.22* (0.11)**	**–**	–	7.49 (6.01)	–
Irish Made	–	–0.12 (0.10)	–	–	–2.55 (5.87)	–
Public Finance	–	0.004 (0.007)	–	–	6.97 (4.39)	–
Licence Fee	–	0.11 (0.007)	–	–	**11.6** (4.3)**	**–**
Waste	–	**–0.38** (0.008)**	**–**	–	**–22.74** (4.47)**	**–**
TV3 Usage	–	–	–0.14 (0.09)	–	–	0.68 (5.24)
TV3 Satisfaction	–	–	0.003 (0.09)	–	–	**–9.59 (5.41)**
Cable	–	–	–0.001 (0.16)	–	–	5.13 (9.44)
Satellite	–	–	0.006 (0.17)	–	–	3.56 (10.27)
Compare TV	–	–	**0.19 (0.09)**	**–**	–	**15.49** (5.94)**
Compare Radio	–	–	**0.33** (0.09)**	**–**	–	**17.39** (5.43)**
Log-Likelihood	–159.206	–152.71	–163.94	–1359.771	–1443.079	–1433.910
Restricted Log-Likelihood	–194.73	–207.23	–207.88	–1594.75	–1594.75	–1594.75
Chi-Squared	71.05	109.05	87.88	469.96	303.3	321.68
Degrees of Freedom	8	6	7	8	6	7
Significance	**0.0000****	**0.0000****	**0.0000****	**0.0000****	**0.0000****	**0.0000****

Bold indicates significant at the .10 level. * implies statistical significance at the .05 level. ** implies statistical significance at the .01 level. Standard errors are in the parentheses.

significant at the .10 level, in the third; as such, overall there is only limited evidence for an anchoring effect. Reassuringly, there is no change in the sign of any of the variables in these valuation functions from those estimated on the responses to the dichotomous choice question. However, some variables do emerge as significant. For example, the level of agreement with the licence fee as a payment vehicle is a significant determinant of the open-ended bid. Also, and consistent with Schwer and Daneshvary (1995), satisfaction with TV3 negatively influences willingness to pay for RTÉ's services.

The pre-test results lead to a number of conclusions. First, the response rate to the willingness to pay question is very high. Second, the follow-up open-ended question did not lead to a collapse in the response rate and, third, the degree of anchoring was limited. However, the open-ended comments suggested that the use of an explicit subscription format, while facilitating a meaningful valuation, does have potential costs in terms of eliciting protests from respondents.

IV SURVEY AND RESULTS

4.1 Survey

The nationally representative survey, of the landline telephone owning population aged 15+, was based on 1,000 telephone interviews carried out by Lansdowne Market Research at the end of November/beginning of December 2002.[18] There was quota controlling based on age, gender, telephone code (i.e. place of residence) and social class. All interviews were completed before the announcement of the increase in the licence fee to €150 (from €107) and also before budget day. A number of caveats, however, must be expressed. First, the sampling methodology as mentioned above was based on random digit dialling of landline telephones. Second, the characteristics of non-respondents are not available. Thus, the survey results must be interpreted as being based on a sample of 1,000 respondents that (a) possessed land-line telephone numbers; (b) were available to be sampled; and (c) agreed to participate in the survey.[19]

[18] The NOAA Panel on CVM encouraged the use of face-to-face interviewing where possible in order to facilitate the use of visual aids. Face-to-face interviewing was not financially possible in the present context. However, the telephone-based approach does have the relative advantage of minimising interviewer effects. See Mitchell and Carson (1989) for further discussion.

[19] A great deal of survey research in Ireland is carried out through the use of random digit dialling of landline telephones. There are a number of practical justifications, such as being able to determine location for the purposes of quota sampling. However, it does bias against those who do not have landline telephones, e.g. some users of mobile phones. It would be interesting to ascertain whether this group has any peculiar characteristics (outside of the quota demographics) that could potentially bias surveys.

The questionnaire used in the nationwide survey consisted of 20 questions.[20] The questions were ordered such that respondents were initially asked to consider how much they used and how much they paid for, and their level of satisfaction with, general and specific broadcasting services (e.g. cable). They were then asked to compare RTÉ's services with the services offered by other broadcasters and other questions about RTÉ's services. Respondents were then asked the willingness to pay question(s). To facilitate maximum response, the potentially sensitive income and education questions were placed towards the end of the questionnaire. Finally, the respondents were offered an opportunity to comment on Irish broadcasting.

4.2 Willingness to Pay Scenario

The willingness to pay scenario was presented as follows:

> Q.13 *Thinking of a situation where there was no licence fee and you had a choice of either paying to receive RTÉ's services or not paying and not receiving RTÉ's services. Bearing in mind that any money that you spend is money that you could spend on other goods and services, what would be the maximum amount of money you would be prepared to pay each month in order to receive RTÉ's services?* (*Do not prompt*)
>
> If appropriate, the respondent was then asked the follow-up question(s).
>
> Q.14 (Only ask this question if there is more than one person in the respondent's household) *Which of the following best describes your answer to Q.13?* (*Tick one*)
>
> ■ *This is the most you personally would be willing to pay*. (If yes, then ask Q.15)
> ■ *This is the most your entire household would be willing to pay.* (If yes, then skip Q.15, go to Q.16)
>
> Q.15 *In light of your answer to Q.14, what do you think is the maximum amount of money your household would be willing to pay each month to receive RTÉ's services?*

A number of issues need to be addressed in assessing the suitability of the above willingness to pay scenario. The open-ended format where respondents are directly asked their willingness to pay has the distinct advantage that

[20] The questionnaire is available from the authors upon request.

maximum willingness to pay figures, as opposed to discrete indicators of willingness to pay that would be available from the dichotomous choice elicitation method, are obtained. However, as indicated previously, the open-ended format has been found to produce lower response rates and to be more prone to unrealistic answering. The open-ended format was deployed in the present case for three main reasons. First, given general familiarity with RTÉ's services in Ireland, respondents could be expected to be able to form reasonable judgements as to how much they value the services. Second, as discussed above, the open-ended format did not produce low response rates in pre-testing. Third, and perhaps most importantly, the use of the most common formats such as the double-bounded dichotomous choice method would have required the use of a number of split-samples, a facility that would have added greatly to the expense of the survey.

Having decided to adopt a private products framework for analysing willingness to pay for RTÉ services, the standard approach would have been to use a hypothetical subscription market (as was done in pre-testing). Indeed, the subscription format has several advantages. Most respondents would be familiar with the notion of paying a subscription in order to receive broadcasting services, rendering the willingness to pay scenario meaningful. Furthermore, there is little ambiguity as to what the respondents would receive for their money, as may arise in more general environmental policy-type settings.[21] However, during pre-testing several respondents expressed dislike at the notion of a subscription. The pre-testing open-ended comments demonstrated that some respondents felt that a subscription system would change the nature of RTÉ's services (e.g. it would be unfair as some viewers would likely be excluded). The scenario chosen, where the delivery and payment mechanisms are left unspecified, serves to focus attention on the value of the services themselves, rather than on issues surrounding the delivery mechanism. In particular, the underlying implicit concept is one of personal, as opposed to collective, exclusion.

Both from a theoretical perspective and from pre-testing experience, one of the most important issues was whether a respondent addressed the willingness to pay question from an individual or household perspective. The follow-up questions to the basic willingness to pay question are particularly important if a figure for average household's willingness to pay for RTÉ's services is to be constructed for the purposes of comparison with the licence fee. More generally, any comparison between the licence fee (say €x) and the

[21] Notwithstanding the fact that as part of the survey respondents were reminded of the full range of RTÉ services (e.g. television, radio, orchestras), it is likely that many of the respondents focused exclusively on RTÉ's television (and perhaps radio) services. Approximately 58 per cent of licence fee revenue is assigned to RTÉ One and Network 2.

average household's willingness to pay for RTÉ's services (say €y) should be attempted with great caution. Apart from inter-household distributional issues (e.g. the standard deviation of households' willing to pay), other issues such as the dual funded nature of RTÉ, the internal efficiency, or otherwise, of RTÉ, the external benefits produced by RTÉ's services and the effects of the licence fee on the wider Irish broadcasting market (and possibly the advertising market) should be considered, before a meaningful policy comparison between €x and €y could be attempted. Notwithstanding these caveats, the evolution of €y over time, and even a snapshot of €y at a particular point in time, should be at least suggestive with regards to the setting of the appropriate licence fee.

4.3 Results: Willingness to Pay for RTÉ Services

Of the 1,000 respondents, 8 were not asked the basic willingness to pay question as they did not have a television. Of the remaining 992 potential respondents, 128 did not answer the question and 57 respondents answered that they would pay the licence fee and no more.[22] In addition, there were 88 zero-bids. The mean willingness to pay from the initial willingness to pay question was €18.02. When addressing the follow-up question, 428 respondents confirmed that the amount represented total household willingness to pay, while 241 respondents confirmed that the amount represented individual willingness to pay. These latter 241 respondents were then asked to estimate their total household willingness to pay. Of these, 24 did not answer the question, 2 responded by saying licence fee and no more and there were 14 zero-bids (all of whom had already responded zero to the initial question). The mean willingness to pay elicited from the follow-up question, asked of the 241 respondents, was €28.63.

Total mean household willingness to pay was constructed as follows. Where a respondent confirmed that the initial bid represented total household willingness to pay, this bid was recorded as household willingness to pay. Where the respondent confirmed that the initial bid represented individual willingness to pay, their subsequent household willingness to pay bid was recorded. For those respondents who were unsure about whether their initial bids represent individual, or household, willingness to pay, the initial bid was taken as household willing to pay. The total mean household willingness to pay was €21.05, while the median household willingness to pay was €15. The monthly mean figure of €21.05 translates into an annual mean figure of €252.6.

[22] The *no more than the current licence fee* responses (which would have at that time equated to €8.92) are omitted from the general analysis in the rest of this paper.

A number of independent variables were constructed from the responses to the questionnaire. Respondents were asked to detail the broadcasting services available in their households and how regularly they used the main television channels and radio stations. This information gave rise to the following independent variables:

- Cable/Satellite: Dummy (Access to cable/satellite services = 1);
- RTÉ 1 Usage: Qualitative (Very often or often = 1);
- Network 2 Usage: Qualitative (Very often or often = 1); and
- TV3 Usage: Qualitative (Very often or often = 1).

Respondents were asked their overall satisfaction with RTÉ's services and their reliance on the main Irish television channels and radio stations for different programming genres. Respondents were also asked how RTÉ's radio and television services compared with other radio and television services they received. This information gave rise to the following independent variables:

- TV3 Satisfaction: Qualitative (Very satisfied or satisfied = 1);
- Comparison with other Radio Services: Qualitative (RTÉ's Radio stations much better or better = 1);
- Comparison with other Television Services: Qualitative (RTÉ's TV channels much better or better = 1);
- Overall Satisfaction: Qualitative (Very satisfied or satisfied with RTÉ's services = 1);
- Reliance on RTÉ for Current Affairs: Qualitative (Yes = 1); and
- Reliance on RTÉ for Sport: Qualitative (Yes = 1, No = 0).

Table 4 contains an OLS regression on household willingness to pay ("WTP"), censored tobit regressions on WTP both with, and without, outliers (defined as bids of over €50) and binary logistic regressions analysing the determinants of whether WTP was greater than or less than (or equal to) the median WTP of €15. As expected, household size has a positive and statistically significant effect on WTP in all the regressions. A number of the other variables have a statistically significant and substantial effect on WTP in the two initial regressions, which include outliers. Having access to non-terrestrial broadcasting services significantly and substantially reduces WTP. Households within the highest income category also display a statistically significant tendency towards an increased WTP, while respondents in the 25-34 years age group have a reduced WTP.

However, many of these results appear outlier-driven, as can be shown by estimating a censored tobit regression without the outliers. While the signs on

Table 4. *Regression Models of Demographic Determinants of Household Willingness to Pay for RTÉ's Services*

	(1) *OLS (including Outliers)*	*(2)* *TOBIT (including Outliers)*	*(3)* *TOBIT (excluding Outliers)*	*(4)* *LOGIT (on High/Low)*	*(5)* *LOGIT (on High/Low)*
Constant	**23.51 (4.64)****	**21.25 (4.96)****	**11.83 (2.95)****	**–**0.27 (0.26)	**–2.18 (0.56)****
Household Size	**2.03 (0.72)****	**2.19 (0.77)****	**0.76 (0.45)**	0.06 (0.04)	**0.13 (0.07)**
Income (€)					
0-20,000	–	–	–	–	–
20,001-40,000	–2.12(2.33)	–2.48 (2.49)	–0.15 (1.44)	0.04 (0.13)	0.16 (0.23)
40,001-60,000	–1.45 (2.77)	–1.9 (2.96)	0.21 (1.71)	0.02 (0.16)	0.19 (0.28)
60,001-80,000	–0.44 (3.58)	–1.62 (3.84)	–2.02 (2.21)	–0.09 (0.20)	0.2 (0.36)
80,001+	**7.12 (3.95)**	**7.06 (4.22)**	2.07 (2.49)	–0.08 (0.23)	0.27 (0.41)
Cable/Satellite	**–7.65 (2.43)****	**–8.55 (2.58)****	**–**1.82 (1.55)	–0.11 (0.14)	–0.39 (0.25)
Gender (1 if Male)	–1.52 (1.76)	–1.41 (1.88)	**–1.93 (1.1)**	**–**0.07 (0.10)	–0.07 (0.17)
Kids (1 if Yes)	–3.42 (2.28)	–3.5(2.43)	–1.33 (1.42)	–0.16 (0.13)	–0.18 (0.22)
Age :					
15-24	0.63 (3.87)	1.71 (4.16)	**5.45 (2.49)***	0.27 (0.22)	0.06 (0.39)
25-34	**–10.32 (3.90)****	**–8.72 (4.21)***	**–**2.24 (2.48)	–0.33 (0.22)	**–0.95 (0.39)***
35-50	–4.19 (3.55)	–2.56 (3.84)	0.91 (2.29)	–0.07 (0.20)	0.21 (0.36)
50-65	–1.37 (3.46)	0.28 (3.73)	2.82 (2.23)	0.14 (0.20)	0.27 (0.41)
65+	–	–	–	**–**	**–**
Education:					
Primary	–	–	–	**–**	**–**
Secondary	2.33 (3.22)	1.75 (3.44)	2.88 (2.02)	0.21 (0.18)	0.28 (0.33)
Some College	0.24 (3.57)	–0.81 (3.82)	–0.03 (2.23)	0.08 (0.20)	0.15 (0.37)
Completed Degree	1.59 (3.57)	1.4 (3.81)	**3.65 (2.23)**	0.28 (0.20)	0.32 (0.37)
Postgraduate	2.73 (4.99)	2.47 (5.33)	2.76 (3.13)	**0.52 (0.29)**	0.49 (0.52)
Region:					
Rest of Leinster	0.92 (2.35)	1.46 (2.51)	0.76 (1.45)	0.03 (0.13)	–0.01 (0.24)
Munster	2.42 (2.48)	3.01 (2.65)	**2.77 (1.54)**	**0.29 (0.14)***	0.29 (0.25)

Table 4. *Regression Models of Demographic Determinants of Household Willingness to Pay for RTÉ's Services (contd.)*

	(1) *OLS (including Outliers)*	*(2)* *TOBIT (including Outliers)*	*(3)* *TOBIT (excluding Outliers)*	*(4)* *LOGIT (on High/Low)*	*(5)* *LOGIT (on High/Low)*
Connaught	2.28 (2.64)	2.93 (2.82)	3.21 (1.63)*	0.25 (0.15)	0.20 (0.27)
Dublin	–	–	–	–	–
RTÉ 1 Usage	–	–	–	–	–0.12 (0.22)
Network 2 Usage	–	–	–	–	0.43 (0.19)*
TV3 Usage	–	–	–	–	0.21 (0.19)
TV3 Satisfaction	–	–	–	–	0.02 (0.22)
Overall Satisfaction	–	–	–	–	0.49 (0.22)*
Comparison with other Radio Services	–	–	–	–	0.44 (0.26)
Comparison with other Television Services	–	–	–	–	0.94 (0.39)*
Reliance for Current Affairs	–	–	–	–	–0.06 (0.21)
Reliance for Sport	–	–	–	–	0.52 (0.19)**
	R2 = 0.07	Chi-Sq = 51.29	Chi-Sq = 49.37	Chi-Sq = 35.29	Chi-Sq = 66.16
	F = 2.67	Df (19)	Df (19)	Df (19)	Df (28)
	Prob > F = 0.0002	P > Chi = 0.001	P > Chi = 0.002	P > Chi = 0.129	P > Chi = 0.001
	N = 689	N = 689	N = 597	N = 689	N = 645
		Pseudo R2 = 0.008	Pseudo R2 = 0.009	Pseudo R2 = 0.04	Pseudo R2 = 0.07

Bold implies statistical significance at the .10 level. * implies statistical significance at the .05 level. ** implies statistical significance at the .01 level. Standard errors are in the parenthesis.

the effects of the above variables remain the same, the magnitudes of those effects are substantially decreased and they are no longer statistically significant. A relatively small number of older, higher-income respondents with no access to non-terrestrial broadcasting services appear to be over-represented in these outliers; this is confirmed by the outlier analysis below (see Table 6). Within the more robust regressions, the 25-34 years old age group is again, in general, found to have a significantly lower WTP, while regional effects also emerge sometimes.[23]

The final regression is a (binary) logistic regression of WTP on indicators of preferences for RTÉ's services as well as on the standard vector of demographic variables. There are many possible choices for the former variables. Pre-testing suggested that TV3 was censoring demand for public services broadcasting. Indeed, consistent with this, TV3/RTÉ 1 emerged as the most popular combination of channels, when respondents were asked to choose two Irish television channels from the four available. However, this TV3 effect did not translate into a statistically significant effect on WTP. Usage of Network 2 is found to increase WTP, as does overall satisfaction with RTÉ's services, comparisons of quality with other television channels and radio stations and reliance on RTÉ for sports services.

4.4. Household Response v. Individual Response?

Table 5 outlines binomial probit regression models analysing the determinants of choosing the household or individual perspective when responding to the basic willingness to pay scenario. Males are more likely to respond from an individual perspective, when addressing the basic willingness to pay scenario. Respondents in the 35-64 years age groups, respondents with children and respondents who are married or living as married are more likely to respond from a household perspective; these effects occur independently of household size and of who is the chief income earner within the household. The above results are, of course, particular to the above survey; however, the results are suggestive with respect to the possible effects of ambiguity with respect to the perspective taken by individual respondents in willingness to pay studies more generally.

[23] In regard to previous Irish contingent valuation studies, Stewart *et al.* (2000) find that income and primary education, but not age, influence willingness to pay for health care programmes, Alberini *et al.* (2002) find that income has little influence on willingness to pay for regeneration (of urban sites) projects while Scarpa *et al.* (2000) find that income bracket is significant with respect to the willingness to pay for forest recreation.

Table 5: *Probit Regressions on Individual (1) or Household (0) Response*

	(i)	(ii)	(iii)
Constant	0.0095 (0.25)	–0.115 (0.18)	–0.144 (0.18)
Gender (1 = Male)	**0.197 (0.12)**	**0.241* (0.13)**	**0.232* (0.11)**
Kids? (1 = Yes)	**–0.217 (0.12)**	**–0.265* (0.12)**	**–0.248* (0.12)**
Household Size	–0.0015 (0.004)	–0.0002 (0.004)	–0.0024 (0.12)
Chief Income Earner (1 = Yes)	–0.0085 (0.130)	–0.126 (0.12)	–0.103 (0.2)
Student (1 = Yes)	–	–	0.258 (0.11)
Married/As Married (1 = Yes)	–0.12 (0.14)	**–0.215* (0.11)**	**–0.178 (0.11)**
Age:			
15-24	–0.162 (0.26)	–	–
25-34	–0.292 (0.23)	–	–
35-49	–0.403 (0.21)	–	–
50-64	–0.427 (0.21)	–	–
65+	–	–	–
Log-Likelihood	–434.92	–437.82	–436.993
Res. Log-Likelihood	–449.92	–449.840	–449.840
Chi-Squared	29.83	24.03	25.695
Df	9	5	6
Significance	**0.00046****	**0.00021****	**0.00025****

Bold implies statistical significance at the .10 level. * implies statistical significance at the .05 level. ** implies significance at the .01 level. Standard errors are in the parenthesis.

4.5 Determinants of Zero, Non-response, Outlier and "Licence-Fee" Bids

Binomial probit regressions are utilised in order to examine the conditional probabilities of non-responses (to the basic willingness to pay scenario), zero-bids, outlier bids and "no more than the current licence fee" bids. In each case, plausible demographic and attitudinal explaining factors are explored. It is important to assess the demographic determinants in order to assess whether or not certain demographic groups are being under-represented or over-represented in the analysis. It is also important to ascertain whether or not non-respondents systematically differ in terms of their attitudes towards, or preferences for, the services. For example, are non-respondents those who do not watch or are not satisfied with RTÉ's services, or are they those who value RTÉ's services so much that they do not wish to put a monetary price on the services?

Non-responses

Table 6 outlines the demographic determinants of non-response to the basic willingness to pay question. The only statistically significant

Table 6: *Probit Regressions of Non-Responses, Zero Bids, Outlier Bids and "Licence Fee" Bids on Demographic Factors*

	Non-Response	*Zero-Bidders*	*Outliers*	*"Licence Fee"*
Constant	**–0.68* (0.29)**	**–1.35* (0.42)**	**–0.73* (0.35)**	**–0.94* (0.34)**
Gender (1 if Male)	–0.006 (0.13)	–0.16 (0.14)	**–0.24 (0.14)**	–0.11 (0.15)
Kids (1 if Yes)	–0.001 (0.15)	0.005 (0.17)	0.1 (0.16)	0.31 (0.19)
Other Services?	–0.21 (0.16)	**0.70* (0.31)**	**–0.46** (0.17)**	**–0.35* (0.18)**
Age:				
15-24	**–0.97** (0.28)**	**–1.24** (0.35)**	–0.13 (0.31)	**–1.17* (0.4)**
25-34	**–0.61* (0.25)**	**–0.69* (0.29)**	**–1.14** (0.38)**	–0.50 (0.32)
35-50	**–0.65** (0.22)**	**–0.60* (0.26)**	–0.38 (0.26)	–0.39 (0.27)
50-65	–0.27 (0.19)	**–0.51* (0.24)**	–0.25 (0.25)	–0.16 (0.25)
65+	–	–	–	–
Education:				
Primary	–	–	–	–
Secondary	0.18 (0.21)	–0.12 (0.26)	0.36 (0.27)	–0.32 (0.24)
Some College	–0.002 (0.24)	0.35 (0.28)	0.27 (0.31)	0.13 (0.26)
Completed Degree	–0.21 (0.24)	–0.003 (0.29)	0.37 (0.31)	–0.28 (0.28)
Postgraduate	–0.41 (0.41)	0.007 (0.41)	0.56 (0.41)	–0.57 (0.5)
Income:				
<20,000	–	–	–	–
20,001-40,000	0.001 (0.16)	0.15 (0.21)	–0.007 (0.18)	**0.34 (0.21)**
40,001-60,000	0.11 (0.21)	0.21 (0.25)	–0.16 (0.22)	0.18 (0.26)
60,001-80,000	0.28 (0.27)	**0.59* (0.29)**	–0.003 (0.3)	0.008 (0.38)
80,000+	0.009 (0.31)	0.10 (0.35)	0.34 (0.28)	0.29 (0.36)
Marital Status	–0.25 (0.16)	–0.15 (0.19)	–0.008 (0.19)	–0.26 (0.19)
Region:				
Dublin	–	–	–	–
Rest of Leinster	0.20 (0.18)	–0.19 (0.18)	–0.14 (0.19)	–0.007 (0.22)
Munster	0.27 (0.19)	–0.27 (0.21)	0.002 (0.19)	–0.004 (0.23)
Connaught	0.32 (0.19)	–0.19 (0.21)	.0004 (0.19)	0.24 (0.23)

Table 6: *Probit Regressions of Non-Responses, Zero Bids, Outlier Bids and "Licence Fee" Bids on Demographic Factors (contd.)*

	Non-Response	*Zero-Bidders*	*Outliers*	*"Licence Fee"*
Log-Likelihood	–258.10	–183.40	–212.698	–163.38
Restricted				
Log-Likelihood	–275.36	–201.40	–230.717	–177.25
Chi-Squared	34.51	35.99	36.03	27.74
Df	19	19	19	19
Significance	0.0001**	0.0001**	0.0001**	0.0008**

Bold implies statistical significance at the .10 level. * implies means statistical significance at the .05 level. ** implies statistical significance at the .01 level. Standard errors are in the parenthesis.

Table 7: *Probit Regressions of Non-Responses, Zero Bids, Outlier Bids and "Licence Fee" Bids on Attitude Factors*

	Non-Response	*Zero-Bidders*	*Outliers*	*"Licence Fee"*
Constant	–1.44** (0.21)	–1.113** (0.25)	–1.26** (0.21)	–1.62** (0.26)
Compare TV	0.007 (0.13)	0.004 (0.17)	0.009 (0.15)	0.10 (0.17)
Compare Radio	–0.008 (0.12)	0.006 (0.15)	**0.25 (0.14)**	0.008 (0.16)
Improving	0.12 (0.17)	–0.26 (0.16)	–0.24 (0.18)	0.34 (0.23)
Overall Satisfaction	**0.39* (0.17)**	**–0.55** (0.16)**	0.20 (0.18)	–0.27 (0.19)
Other Services?	–0.19 (0.15)	**0.38 (0.23)**	**–0.36* (0.16)**	–0.23 (0.19)
Log-Likelihood	–286.02	–203.643	–220.98	–157.17
Restricted				
Log-Likelihood	–291.26	–216.17	–227.34	–160.37
Chi-Squared	10.46	25.06	12.72	6.39
Df	5	5	5	5
Significance	**0.0006****	**0.0013****	**0.002****	0.27

Bold implies statistical significance at the .10 level. * implies means statistical significance at the .05 level. ** implies statistical significance at the .01 level. Standard errors are in the parenthesis.

determinant is age, with those over 65 years significantly more likely not to respond. This is consistent with pre-test experience where some pensioners who receive a free television licence declared that this would exempt them from any future charges. Table 7 outlines the attitudinal determinants of non-response. The only statistically significant determinant is overall satisfaction with RTÉ's services, with those satisfied being more likely not to respond.

Zero bids

The issue of what is represented by a zero bid is one that occupies a central place in the CVM literature. In this case, a modified private products scenario was utilised in order to avoid the concept of collective exclusion. As such, it appears very unlikely that a respondent would derive negative utility from having access to the services. As such, a zero bid can, in general, be viewed as a corner solution, as opposed to being a censoring point (Woolridge, 2002). The demographic determinants of zero-bids are outlined in Table 6. Those with access to cable or satellite services were significantly more likely to give a zero-bid. Age is also a factor, with those over 65 years significantly more likely to bid zero. The attitudinal determinants are given in Table 7. Those with low overall satisfaction with RTÉ's services were more likely to bid zero. However, the fact that neither the comparison of RTÉ's television channels nor radio stations (with the relevant alternatives) were significant suggests an attitude oriented response as opposed to an answer based on considerations of value and quality.

Outlier Bids

Among the concerns of the NOAA Panel were unrealistically high bids and the extent to which outliers are reflective of preferences. Table 6 outlines the demographic determinants of making a bid of over €50 per month and the attitudinal determinants are examined in Table 7. Doubt is cast on bids of over €50 as income is not a significant factor. However, the statistically significant co-efficient on comparison of RTÉ's radio services (with the relevant alternatives) does suggest that the high bids were at least somewhat motivated by considerations of quality.

"No more than the current licence fee" Bids

From the pre-tests it did not appear that respondents would overly focus on the licence fee as a valuing anchor. However, given that it would be very unlikely that 58 respondents would have answered "€107" without the licence fee anchor, it is clear that the licence fee had an effect on these respondents. Table 6 shows the demographic determinants of this response. Age is again a factor, with those over 65 years more likely to say "licence fee" than those

under 24 years. Those with access to RTÉ's services only were also more likely to say "licence fee", perhaps because of a greater awareness of the level, and effect, of the licence fee. Table 7 shows the preference-based determinants; the decision to say "licence fee" is not determined by preferences for the services, as indicated in the responses to the other questions.

V CONCLUDING COMMENTS

This paper has described the first nationally representative survey with respect to the valuation of RTÉ's services. The (annualised) mean household willingness to pay for RTÉ's services (at the end of 2002) was found to be €252.60; the (annualised) median household willingness to pay was €180. From a Kaldor-Hicks perspective, it is clear that the winners from the provision of RTÉ's services could hypothetically compensate the losers, as both of these numbers exceed the increased annual licence fee of €150 (since January 2003). More specifically, the mean household willingness to pay of the 52.8 per cent of the respondents who would continue to pay for RTÉ's services if confronted with a choice (i.e. annualised household willingness to pay _ €150), was €410.64, compared to an equivalent figure of €75.96 for the remaining 47.2 per cent of respondents.[24]

The household willingness to pay figure was derived from a series of questions that attempted to ensure that each response was based on the household, as opposed to the individual, willingness to pay. This potential survey ambiguity, which appears to be a relatively standard feature of the CVM literature, was found to be significant, with, for example, males being more likely than females to answer from the individual perspective.

The main determinants of household willingness to pay for RTÉ's services in models that included outlier bids were: age (with those in the 25-34 years age group being prepared to pay less); income (with those in the highest income category being willing to pay more); and, the presence of cable/satellite services (with those with access to the expanded services being willing to pay less). However, more robust models eliminated the statistical significance of

[24] Under certain conditions, the mean household willingness to pay could be used as a benchmark in setting the licence fee. First, assume that what RTÉ produces with licence fee income is as least as valuable as what it produces from other revenues. Second, some restrictions on the production function for RTÉ services would need to be imposed; constant marginal costs of extra programming would be sufficient. Third, the marginal utility to the mean customer of RTÉ services could not be kinked in a negative manner at the current level of provision. Under these conditions, mean household willingness to pay for RTÉ services being greater than the current licence fee could be used as an argument in favour of an increase in the licence fee as it would represent a potential Pareto improvement.

the latter two effects and suggested a regional effect, with respondents from Dublin being willing to pay less in general. There was little if any statistical evidence from the survey that those who were satisfied with TV3 were willing to pay less for RTÉ's services. There was a substantial level of correlation between those who were satisfied with RTÉ's services, those who used RTÉ's services extensively and those with relatively high willingness to pay. Comparisons of quality with commercial broadcasters for both radio and television and reliance on the services for certain programme genres also significantly influenced willingness to pay.

A number of future research and policy possibilities are suggested as a result of this paper. It has been demonstrated that CVM offers a mechanism for valuing RTÉ's services. Although it is appropriate to treat very cautiously the relationship between the mean household willingness to pay for RTÉ's services and the licence fee, a regularly-conducted nationwide survey of the demand for public service broadcasting, somewhat similar in nature to the above survey, could be informative in terms of influencing the programming content of public service broadcasting and ascertaining the distributional effects of public service broadcasting. It could also be used to inform the general debate with respect to the role of public service broadcasting and even be suggestive with respect to the setting of the licence fee. At a more general policy level, such a study could be just part of a much more comprehensive regular public valuation of products produced outside the market, e.g. cultural goods and so-called merit goods, that could be used to inform public debate and even budgetary policy. The household/individual survey ambiguity also deserves further treatment, both from a theoretical and empirical perspective.

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