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Information Effects in Valuation of Electricity and Water Service Attributes Using Contingent Valuation

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The role of information in consumers' decision making process is a rich area of research especially with regards to market goods. Less attention has been paid to information effects in consumers' valuation of non-market goods. Understanding how information can affect consumers is particularly pertinent to the electricity sector in the UK which is undergoing fundamental changes that will have implications on both service levels and prices.

This paper applies the contingent valuation method (CVM) to investigate information effects in the valuation of electricity and water attributes through two self-designed surveys. There are two key considerations of this research; firstly, the paper explores whether the relevance of the service attribute can affect respondents' processing of the information presented in the survey. Secondly, the paper investigates whether the quantity and complexity of information places a cognitive burden on the respondents.

In order to address these research questions, two self-designed surveys were conducted online covering England, Scotland and Wales. The first survey was administered in 2006 and the second survey was conducted in 2008. For both surveys, half the survey sample was presented with information on the attribute in question before being asked their valuations, while the other half was asked for their valuation without the information card.

One of the potential difficulties in modeling WTP responses obtained from CVM surveys is that the distribution of stated WTP tends to be multi-modal and in most cases has a spike at zero. Conventional models that are applied to estimate WTP, such as ordered logit or

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probit, ignore this potential multi-modality in the dataset which can lead to bias and inconsistent estimates.

There is a high propensity for zero WTP responses in both the 2006 and 2008 surveys. In order to take into account of the excess zeros, the zero-inflated ordered probit (ZIOP) model proposed by Harris and Zhao (2007) is used in the analysis of the data. The ZIOP model allows the consideration of the factors that affect zero WTP separately from the factors that affect positive WTP. This is a particularly important consideration in WTP studies because the factors that influence a respondents to state a zero WTP are likely to be different from those stating a positive amount of WTP.

The hypothesis of this paper is that the personal relevance of the utility service attribute to the respondent affects their motivation to process the information provided in the survey. The relevance of the electricity and water disruptions can be measured by the number of disruptions experienced by the respondent prior to the survey. The higher the number of disruptions, the higher is the likelihood that the issue of service disruption will be more relevant to the respondent which will have an impact on their motivation to process the information presented in the CVM scenario.

Over half of the survey sample reported experiencing a blackout in contrast to less than 25 per cent of the sample experienced a water disruption. Electricity shortages can then be considered to be more relevant to the respondents than water disruptions. As a consequence, the ex-ante expectation is for information effects to be observed for electricity disruptions but not for water disruptions.

This hypothesis is supported by the results. The information provided has a positive and significant effect on willingness to pay for avoidance of blackouts but it is insignificant for willingness to pay for avoidance of water service disruptions.

The content and quantity of information can also affect respondent valuations. If the volume of information presented in the survey is too large or cognitively demanding it can lead respondents to disregard the information completely, in which case there will be no differences in WTP for a group provided with the information and the control group.

The results from the EPRG 2006 survey lead to a weak observation of information overload. From the dataset it can be concluded that the information presented had no effect on selection of fuel types or on

willingness to pay. A stronger conclusion on information overload would have been possible if the survey had provided part of the sample medium level of information. However, an intermediate information set was not provided in the EPRG 2006 survey which leads to a weaker conclusion on information overload.

In summary, this paper finds evidence that information affects WTP only if the service attribute in question has personal relevance to the respondent. The results also indicate that if the information is cognitively demanding then it may result in the information being ignored.

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