Contingent valuation methodology surveys in rural South Africa

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THE CONTINGENT VALUATION methodology[1] (CVM) is a survey technique used to determine the economic value or attitude to an *economic value of non-market goods* such as water, clean air, etc. This survey technique uses a questionnaire to directly extract the value of the amenity in monetary terms. It involves more than just asking if a person is willing and able to pay for a service. The methodology includes a choice situation (bidding game) that approximates conditions in an actual market. It is called 'contingent' valuation because people are asked to state their willingness to pay, *contingent on a specific* hypothetical scenario and description of the prospective service.

The following characteristics have to be present in the methodology[2]

- The questionnaire must elicit considered budget constrained economic responses;
- Respondents must clearly comprehend the characteristics of the service offered.
- Respondents have to believe that the mechanism for providing the service will be effective and they must accept the notion of paying for the service.
- Respondents must understand the consequences of their choice.
- The questionnaire must provide incentives for honest responses and eliminate the perceived prospect of obtaining the offered goods or service without incurring the financial cost.

Although CVM studies have been used extensively in a number of developing countries to ascertain consumer demand for improved water services and therefore to assist in the planning of water delivery systems, the methodology is contentious. This methodology refers to what people say they would do, as opposed to what they are observed to have done. This is both the methodology's greatest strength as its weakness.

This paper will look critically at the methodology's applicability and perceived weaknesses in CVM surveys done in rural South Africa to establish willingness and capacity of households to pay for water through yard connections.

Data Base

Just short of 3,000 CVM surveys were done in nine rural villages in South Africa[3] with sample sizes of between 30% and 50% of the households. The surveys were conducted over a period of two years. The sample sizes were deliberately large because the survey purposes were to ascertain the community's willingness to pay and concomitant qualification for micro loans for yard connections (as opposed to basic water supply on standtap level).

In all instances the following sampling conditions applied:

- all sampling was done randomly
- surveyors were asked to do the sampling over weekends and evenings
- social consultants were trained by Mvula Trust as team leaders
- in all the villages unemployed youths (literate, numerate and with a school education) were used for the surveying under supervision of the consultants
- one basic questionnaire was used with minimal cost modifications for varying water tariffs
- all questionnaires were supposed to have been tested on the Water Committee members first
- community co-operation was obtained in all the communities (in some villages it took up to two months of workshopping to agree to the surveys)
- there was no cost recovery – even for basic service provision — in any of the villages

The data from all the surveys were collapsed into one database and national averages were extracted.

Critique and Problems Encountered

The debate about the applicability and credibility of CVM surveys have been raging since the early 1990s when this methodology was first mooted[4]. The methodology is prone to influences and biases because the responses are sensitive to the question format, the nature of the service being evaluated, difficulties in making tradeoffs, and the importance of substitutes. An important aspect of the methodology is the verbalisation of the choices, implications, etc. by the surveyor to convey greater insights, leading to a willingness-to-pay response on the part of recipients.[5]

Imbedded Biases

Three methodological critiques can be levelled at CVM when it is applied to hypothetical markets for utility services. All are based on concerns that respondents may not answer willingness-to-pay questions accurately and thus not reveal their 'true' willingness to pay. The possibilities are that:

- respondents believe that they can influence a policy decision by not answering the interview question truthfully – a strategic bias;
- the question format may itself influence the bid, and that respondents may give answers to please the interviewer and interpret the initial price suggested as a clue to the correct bid – starting-point bias;
- individuals may not understand the description of the goods or service being hypothetically offered or may simply not take the hypothetical question seriously at all – hypothetical bias.

Survey Problems

After the surveys were collapsed into one database and analysed, it transpired that the outputs were firstly, completely out of line with other national data and secondly, the outputs appeared corrupt. An investigation was started to ascertain the reasons for the skewed and unreliable data. A sample of 500 questionnaires were checked against the captured data to check whether the data collection, data capturing or analysis were at the root of the problem. It transpired that the data capturing was in order, but that the problem lay with the social environment within which the surveyors conducted their research, and the complexity of the methodology. For instance, all the survey forms from one particular Social Consultant were discarded and the sample was reduced to 2,200 households when unacceptable discrepancies were uncovered. Although the remaining 2,200 questionnaires were analysed, problems still existed and adjustments still had to be made. The problems are briefly discussed below.

Data

The data formats differed as in some instances the break values and categories across the different provinces were inconsistent, e.g. income levels were adjusted by the surveyors to suit the unique circumstances of the provinces and varied from R250 to R1,000 monthly income with R100-break values, to income variations starting at R400 to R5,000 with R250-break values. Averages had to be calculated and used for the end calculations instead of the data itself. This occurred as a result of the lack of insight and experience from the Social Consultants, who took it upon themselves to change the break values if and when they thought that the noted income levels were either too low or too high.

Capacities of Social Consultants

Different provincially-based Social Consultants were recruited, firstly because of language impediments, secondly to ensure continuity in the different villages in the provinces and thirdly because a fair amount of time had to be spent on community liaison. The consultants were given a one-day training course in the methodology and asked to train their surveyors who then had to test the surveys on the Water Committee members first before doing anything in the communities. It became evident from the survey forms

and data analysis that the interviews were not done in accordance with the guidelines as in some cases the data conflicted with the control questions, in some cases the questions were modified and in most cases the bidding game was not understood. It was furthermore clear that biases influenced the respondents' answers.

Complex methodology

From the overall data outputs and analysis, it became clear that firstly, the Social Consultants either did not understand the basics of surveying or were lackadaisical in their approach to the surveys. Secondly, the intricacy of the bidding game was beyond their as well as the respondents' understanding. For example, although the issue of migrant workers (normally the men) were discussed and it was agreed that surveys would be done in the evenings and weekends, the outputs clearly state that more than 70% of the respondents were women. This has obvious implications for the 'need for water', the proximity of taps to homesteads, etc.

After reviewing and redoing some of the training to the Social Consultants, it became clear that surveyors could only apply this methodology if they are *au fait with* the intricacies of the methodology. They have to firstly understand the verbalisation of the choices, implications and consequences, secondly, the importance of keeping the questionnaire format, thirdly, the difficulties of the bidding game (making tradeoffs) and lastly their obligation to convey insights into the hypothetical service provision under investigation.

Community demands vis-à-vis for using local unemployed youth to do surveys

Apart from the inadequacies of the available Social Consultants, the surveyors that they were coerced into employing influenced the surveys. Because of the high unemployment rate in South Africa's rural areas, the Water Committee members insisted on using their own unemployed people (literate, numerate and with at least a school-leavers certificate) to be trained as surveyors and paid for their efforts. In all the villages, we complied and the local villagers were trained. The same difficulties that applied to the Social Consultants, can be applied to the surveyors, except to a much greater degree. The methodology proved to be inappropriate for use with either local Social Consultants or unemployed villagers.

Interpretation

When the surveys were analysed, it became clear that in many cases the control questions differed. Where this was noted, the questionnaires were discarded. Whilst any good surveyor would pick up the discrepancies, few of the surveyors noted the differences. A good example of how biases influenced the outcomes is that in one community a respondent stated herself as earning a R400 pension per month and in the employment section her employment is

stated as 'teacher'. The surveyor was asked about the batch of questionnaires that showed a 90% employment rate, all of them teachers, and he confessed that he did not ask that question and filled it in *post factum*.

Conclusion

The appropriateness of CV methodology has been debated for a long time, and the two camps that exist have not agreed on the applicability. From the surveys done by the Mvula Trust in South Africa, it is clear that our rural environment is not yet conducive to this complex methodology. Apart from the biases and issues stated above, the following theoretical factors influenced the outcomes of this large survey sample.

- It is clear that the surveys assumed that the respondents understood the goods in question and revealed their preferences in the contingent market just as they would in a real market. However, most people were unfamiliar with placing monetary values on water service provision. Therefore, they did not have an adequate basis for stating their true value.
- The expressed answers to the willingness to pay questions might have been biased because the respondents were answering a different question than the surveyor had intended. Rather than expressing value for the good, the respondent might actually be expressing their feelings about the scenario or the valuation exercise itself.
- Respondents might have stated a positive willingness to pay in order to signal that they placed importance on improved water provision in general, rather than the actual issue at hand, e.g. willingness to pay for a yard tap.
- There is a fundamental difference in the way that people make hypothetical decisions relative to the way they make actual decisions. For example, respondents may have failed to take questions seriously because they would not actually be required to pay the stated amount.
- It was clear from the survey results that the responses were expressions of what individuals would like to

have happen rather than true valuations. In some cases, people's expressed willingness to pay for yard taps depended on where it was placed on a list of things being valued.
- The way in which the surveyors changed the starting bid amounts and the break values obviously influenced the responses. It has been shown that the choice of starting bid affects respondents' final willingness to pay response.[6]

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[1] Also known as the "stated preference" methodology.

[2] An Explanation of Contingent Valuation Methodology, Northern Illinois University, www.niu.edu/depts/pubaffairs/releases/99news/april/sos4.htm

[3] Mothlabe (North West Province); Moropolala (Northern Province), Mohlala (Mpumalanga), Chebeng (Northern Province), Chweni (Mpumalanga), Isulubashe Mvunyane (KwaZulu-Natal), Piva, Phosaville & Vlakbult (Mpumalanga)

[4] The Contingent Valuation Debate: sopme number is better than no number, Greg McComb, http://www,umanitoba.ca/student/group/EGSA/edit001/el-oo1.txt.

[5] Progress report: How People Respond to Contingent Valuation Questions, US Environmental protection Agency, http://es.epa.gov/ncerqa/progress/paynear.html.

[6] The section on theoretical criticism was adjusted and applied from "An Explanation of Contingent Valuation Methodology, Northern Illinois University, www.niu.edu/depts/pubaffairs/release/99news/april/sos4.htm

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