'A travel cost analysis of the value of Carnarvon Gorge National Park for recreational use': reprise

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What a delicious position to be in! John Kennedy's article says my original research estimate (Beal 1995) is four times too large and Chotikapanich and Griffiths say the estimate is six times too small.

There are two contentious issues raised by Kennedy. The first concerns the unit of analysis. In my original research, I regarded the transformation of the four-day camping trip demand curve to a daily demand curve as being akin to an iso-elastic shift of the demand curve, where the demand curve swings about the 'choke' price and price elasticity remains the same at every price point. However, I now perceive that one probably should not assume constant price elasticity at every price level; that is, that demand will respond to a small price change in the same manner for a trip of several days as for a one-day visit. Equally, one should not presume that price elasticity will remain unchanged at a daily price set at 25 per cent of the four-day level. The difficulty lies in the nature of TCM and of entry to national parks as an economic good.

Using TCM analysis is not as straightforward as the estimation of the demand curve for soap, for example. The demand curve for a soap which is produced in 4-cake bars may well be manipulated so that a demand equation for individual cakes is estimated. *Ceteris paribus*, both the horizontal and vertical slope and intercept terms in the (inverse) demand curve would change, so long as the public perceive the two forms to be essentially the same good. In relation to the national park demand curve, I might have elected also to divide the (vertical) intercept term, so that a $60 intercept for a four-day demand curve becomes a $15 intercept for a daily entry demand curve. I now accept that this is a reasonable, but somewhat mechanistic, option.

Faced with the same problem again, however, I believe I would take the same course as before. Many respondents to surveys conducted in the Carnarvon Gorge National Park report that the park, in their view, is unique

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and that entry to it is an unforgettable privilege. It is being at the park that is important rather than the time dimension. TCM uses costs incurred for trips to the park as a proxy for price but trip costs are less closely related to trip duration, at least in the 3-7 days range, than to distance travelled. For many visitors, trip expenditure buys a valued experience not just 'x days at the park'. Trip costs thus give a particular choke price regardless of the average length of trips being, for example, three days or six days. In these circumstances, simple division of the intercept by the average length of trips will severely understate the true choke price.

The second issue relates to the treatment of multiple destination visits. Theory gives economists little guidance to the proper allocation of joint costs. Kennedy holds that to make no adjustment is arbitrary and risks overestimation of consumer surplus. Beal (1995) made the point that adjustments to cost perforce are arbitrary and noted several adjustment methods which have been reported in the literature. In addition, Beal noted (1995, p. 294) that Sorg *et al.* (1985) found by use of contingent valuation methods that multiple destination visitors actually placed a *higher value* on a given site than single destination visitors.

The extended comment by Chotikapanich and Griffiths is in a different class altogether. At the time of first submitting my Carnarvon Gorge paper, I was of the opinion, and indeed little has changed, that too few non-market valuation papers had been published in Australia. The environmental and ecological economics sphere can only benefit from a vigorous publication ethic, so that the findings of research are available to all and methodological advances are made within the Australian natural environment, which is considerably different from elsewhere in the world.

The research underlying Beal (1995) was completed with the motivation of developing a pricing policy in addition to providing a fairly simple model that would not be too difficult for non-economists to follow. The adoption of the final linear function was thus in line with parsimony and this objective, even though other functional forms seemed to give a better fit.

I welcome the work by Chotikapanich and Griffiths as an example of an advance in TCM method. It is to be hoped that their article sparks more debate in the literature on non-market valuation methodology.

References

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