

ESTIMATING THE ECONOMIC VALUE OF RECREATIONAL USE OF THE NATURAL PARK DELTA DEL EBRO THROUGH THE ZONAL TRAVEL COST METHOD

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The natural areas have the characteristics of a public good, ie, inclusion (nobody can be deprived of access to space and if there is an entry price is usually very small) and non-rivalry (everyone can access without restriction of capacity, congestion problems are not covered). These two features, in fact, are reflected in the absence of a market with a private supply and demand, helping to establish the price of the property as a major indicator of its value. The absence of this price entails the need to implement techniques for their derivation, either directly or indirectly.

In this sense, the economic valuation methods suggested in the literature have been grouped into two broad categories. First, we have the declared preferences methodologies, also called direct methods, which infer the value simulating a market, and, secondly, there are methods called revealed preference, or indirect methods, to derive the value of the property from its relationship with another good, that if you have a market value (price) equilibrium. The first involves a great cost in obtaining the data and some ambiguities and biases in the methods used (ie contingent valuation). The latter require less information, are more easily accessible and existing techniques have been formed as very attractive. Among these, one should underline the travel cost method (TCM onwards).

The TCM, pioneer suggested by Harold Hotelling (1947), contains only the economic value of use of the property. That is, the existence of good generates a direct benefit to the user in terms of welfare and this is what is expected. Thus, the TCM does not consider the existence of benefits associated with an option value of the property in question and an existence value (the property can bring welfare to those agents who keep the option to visit in the future and / or for those values strictly because it exists.) Also, under this valuation technique, the price inferred as to the use of the property is approximately offset by the cost of the consumer. Overall, we expect that the higher the cost the lower the probability of use and thus their demand. In this way, you can build a derived demand function, relating the cost of travel as the source of the consumer's propensity to move as this one, which will then be used to estimate the economic value of the property from the

calculation of the aggregate surplus consumer, a measure of the benefit is the enjoyment of the property. The TCM has had multiple applications, especially for the estimation of recreational use of natural areas. For example, through this method has estimated the value of the national park Aigüestortes and Estany de Sant Maurici. (Farré, M. 2003).

This paper proceeds to perform an economic assessment of the Natural Park of Delta del Ebro (NPDE onwards) for the period 1999-2007 through this method in their zonal variant. We understand that the information can be useful for staff to guide public decision-making as a means of promoting the park or, simply, as an information tool for the public.

The zonal approach (seven areas) carried out involve two types of underestimates of the actual value of NPDE. First, since it requires the last area to reflect a demand equal to 0 it will produce an underestimate of consumer surplus by forcing the estimated demand curve to cross the vertical axis at a low value; a second source of underestimation of the value is given by the own conformation of NPDE as open park. Thus, there may be visitors who have not undergone any focus and, therefore, are not registered as such.

The inclusion of different cost elements in the calculation of travel cost is the main ambiguity of the method. In most cases, the construction of this variable includes three terms: the cost of travel, the cost of time and cost to the destination. Then we can construct the total travel cost (TC) as:

$$CV = CD + CT + CA$$

The real ignorance of much of the data leads us to make conservative assumptions to calculate the various components. We analyze below each of the components:

— Cost of travel (TC): This component is characteristic of the method and is incorporated in all studies. As always, the quantification has some qualifications. The areas considered to justify the assumption that all visitors entering the NPDE by land and by car. We assume occupancy of one person per vehicle, which compensates the underestimation of not considering the wear of the car or supported tolls on motorways in approaching the NPDE by most visitors. In particular, we consider the average number of kilometers from the area of origin NPDE, a return trip and a consumption of 8 l/100 km. The updating of the prices makes taking the data from the annual price reports from the Ministry of Industry Tourism and Trade.

— Cost of time (TmC): the consideration of this term has been an element of discussion covered in the literature (Azqueta 1999). The total time may contain two items of interest: travel time and length of stay countryside. We will not consider, according to the literature, the time spent in the NPDE to be regarded in many cases more a benefit than a cost (in our case, we do not know the actual duration of stay). Greater divergence of the specific modelling raises the time costs associated with travel. We take as average cost 0.3 times salary, a conservative position. The time for the shift in hours is obtained by dividing the number of kilometers of round trip between 90km / h average speed. The calculation is:

$$CT = \frac{km \cdot 2 \cdot 0.3 \cdot \omega}{90 \cdot 160}$$

We recognize that it is the most controversial factor, although with the assumptions made its effect on the total cost is very small.

— Cost to the destination (DC): Here we collect the costs incurred in restoring consumer and accommodation in the NPDE and its vicinity. The level of aggregation and ignorance makes us again very conservative. We assume, by proximity, visitors to areas 1 and 2 do not stay overnight. We assign the average cost of each of these concepts obtained by the study's Demand Terres de l'Ebre conducted by the Provincial Council of Tarragona in 2006 CPI updated each year

The results are therefore contingent on the data and assumptions used. In particular, we note that the total surplus, which is identified with the economic value linked to recreational use, has risen from 4.1 million € in 1999 to nearly 6.5 million in 2007. The maximum, however, was reached in 2005. Thus, between 1999 and 2007 the estimated total recreational value for NPDE would have increased by nearly 60%, and this despite the increase in fuel prices. Indeed, this increase would have meant a shift to the left of the demand function considered, with a decrease in the number of visitors.

It seems necessary to dwell on the estimated values for 2005, which notes a very high number of visitors and the largest surplus of the period. Note that in 2005 produced the repeal of the national water plan and, therefore, natural space NPDE recorded an increase of its presence in the media, which is a better understanding of space. In terms of demand, this increase in knowledge could be translated into a shift in the demand function to the right, with a consequent increase in total surplus and the estimated value of the park.

In order to explore, tentatively, the effect of this point in the estimated value for PNDE we construct two hypothetical scenarios. First, we recalculate the number of visitors under the assumption that they had grown at the same rate as total visitors to national parks in Spain, while maintaining the distribution of each area based on 2005. Second, we assume that the impact did not affect equally to visitors from different areas and therefore the distribution is projected in 2004. For the first hypothetical scenario would be observed one plus in the value of the park that could be in the 0.8 million euros. Under the second scenario, the increase would reach 1.1 million euros, representing about half the increase in value.

