

Using Discrete Choice Experiments to assess the willingness to pay to protect natural resources: the case of mount Jaizkibel (Gipuzkoa)

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2. Methodology: Discrete Choice Experiments
3. Case study: mount Jaizkibel
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Introduction
The concept of economic value
Environmental valuation methods
Motivation

Rationale for environmental valuation

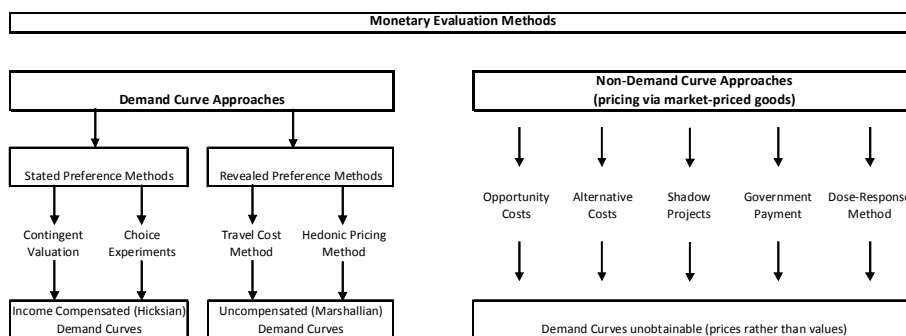
- Market prices are the most common indicator of value used by economists but:
 - There is a significant lack of market prices for many entities of great interest for economists
 - Market prices are not the appropriate measure of value: a great proportion of people's utility is due to non-paid costs and non-feasible profits
- The emergence of non-market valuation was due to a paradigm shift in the 1940s:
 - “economics is not just the study of markets but the study of human preferences and behaviour”

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The modern concept of economic value

- Economic value is defined in terms of exchange (WTP/WTA)
- Environmental valuation aims to obtain a monetary measure of a welfare change through the monetary payment that individuals would consider equivalent in terms of the total impact on their welfare
 - It captures what a good is worth to people (not its costs), thus reflecting their subjective preferences
 - The information about the economic value of a good is gathered in the demand function

Environmental valuation methods



Motivation

- The purpose of this research was to evaluate the social loss that encompasses the environmental degradation of mount Jaizkibel (i.e. the social benefits of its conservation)
- Two main research questions:
 - If mount Jaizkibel is environmentally damaged, what would be the social loss?
 - What is the social value of the damage to each of the main environmental attributes of mount Jaizkibel?

Discrete Choice Experiments

- DCEs involve generation and analysis of choice data through the construction of a hypothetical market using a survey
 - It contains several choice set with hypothetical alternatives between which respondents choose their preferred one
 - Alternatives are defined by a set of attributes and levels
 - Levels describe ranges over which attributes vary across alternatives
 - Individuals' choices imply implicit trade-offs
 - A baseline alternative or status quo option is usually included

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Study site
 Environmental attributes
 Valuation question
 Sample strategy

Mount Jaizkibel



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Considered attributes

Landscape



Flora



Avifauna















Seabed



Example of protection alternative

If in order to get the levels of protection that appear in this card, you had to pay a certain amount of money, what option would you prefer?

	No Program	Program A	Program B
Protected landscape	 40%	 60%	 80%
Protected flora	 50%	 70%	 100%
Protected avifauna	 25%	 50%	 100%
Protected seabed	 50%	 85%	 50%
Annual contribution	0 €	100 €	5 €
I would choose:	<input type="radio"/> No Program	<input type="radio"/> Program A	<input type="radio"/> Program B

Attributes and levels considered

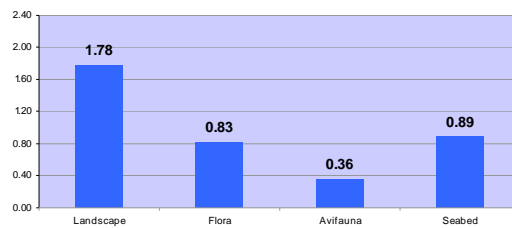
Attribute	Level							
Landscape	40%*	60%	80%	100%				
Flora	50%*	70%	85%	100%				
Fauna	25%*	50%	75%	100%				
Seabed	50%*	70%	85%	100%				
Annual payment	0 €*	5 €	10 €	15 €	20 €	30 €	50 €	100 €

Sample

- The relevant population was the population of the BAC (Bizkaia, Gipuzkoa and Alava), Navarre and part of the French Basque Country
- Representative sample of 636 individuals in terms of age, gender and geographical distribution
- Home CAPI interviews
- Interviews between october and november 2006
- Average time of interview was approx. 20 minutes

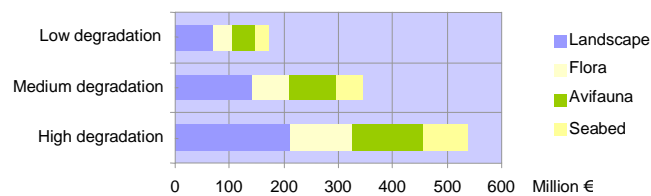
WTP for protecting mount Jaizkibel's attributes (€ 2006)

Attribute	Marginal WTP (€/ person-year)	95% confidence interval
Landscape	1.39	(0.98,1.86)
Flora	0.87	(0.41,1.31)
Avifauna	0.68	(0.41,0.95)
Seabed	0.63	(0.33,0.96)



Annual welfare loss (€ 2006)

Scenario	Level of damage				Mean WTP (€/person-year)
	Landsc	Flora	Avifauna	Seabed	
High degradation	60%	50%	75%	50%	208.74 (126.26-296.87)
Medium degradation	40%	30%	50%	30%	134.17 (81.71-190.34)
Low degradation	20%	15%	25%	15%	67.09 (40.86-95.17)



Compensating surplus for different degradation scenarios (€ 2006)

- If mount Jaizkibel is environmentally damaged, how much would be the social loss?
 - Between 172 and 536 million € per year, depending on the future degradation
- What is the social value of the damage to each of the environmental attributes of mount Jaizibel?
 - Landscape: 71-213 million €
 - Flora: 33-111 million €
 - Avifauna: 44-131 million €
 - Seabed: 24-81 million €

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Concluding remarks (I)

- Natural resource managers and policy makers need to evaluate policies affecting the welfare of population with limited and often non-comparable information
- If relevant environmental costs and benefits are not incorporated in the decision making-process, they will be either undervalued or overvalued
- Scarcity of quantitative information for policy-making has often been raised up by resource managers

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Concluding remarks (II)

- DCE can be an efficient valuation method for estimating economic values of the social benefits derived from environmental goods and services:
 - It permits an ex ante assessment of natural resource's damages in monetary terms
 - It is capable of estimating marginal impacts
- Trade-offs information is gathered not only between attributes and price but between environmental attributes themselves

Thank-you very much!

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