Environmental Economics and Accounting

Theory and practice of environmental valuation

2011-2012

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WHY ENVIRONMENTAL VALUATION?

FICTIONAL CASE STUDIES:

1. During some military exercises, an Italian plane destroys the front facade of the Parthenon in Athens
2. A drunk driver kills the last Iberian Lynx
3. A new landing strip needs to be built due to an extension of Malaga Airport. It will increase the noise level of 2.000 inhabitants

QUESTIONS FOR THE JURY:

a) Should the person who causes the damage compensate somebody? Should anyboy else pay?

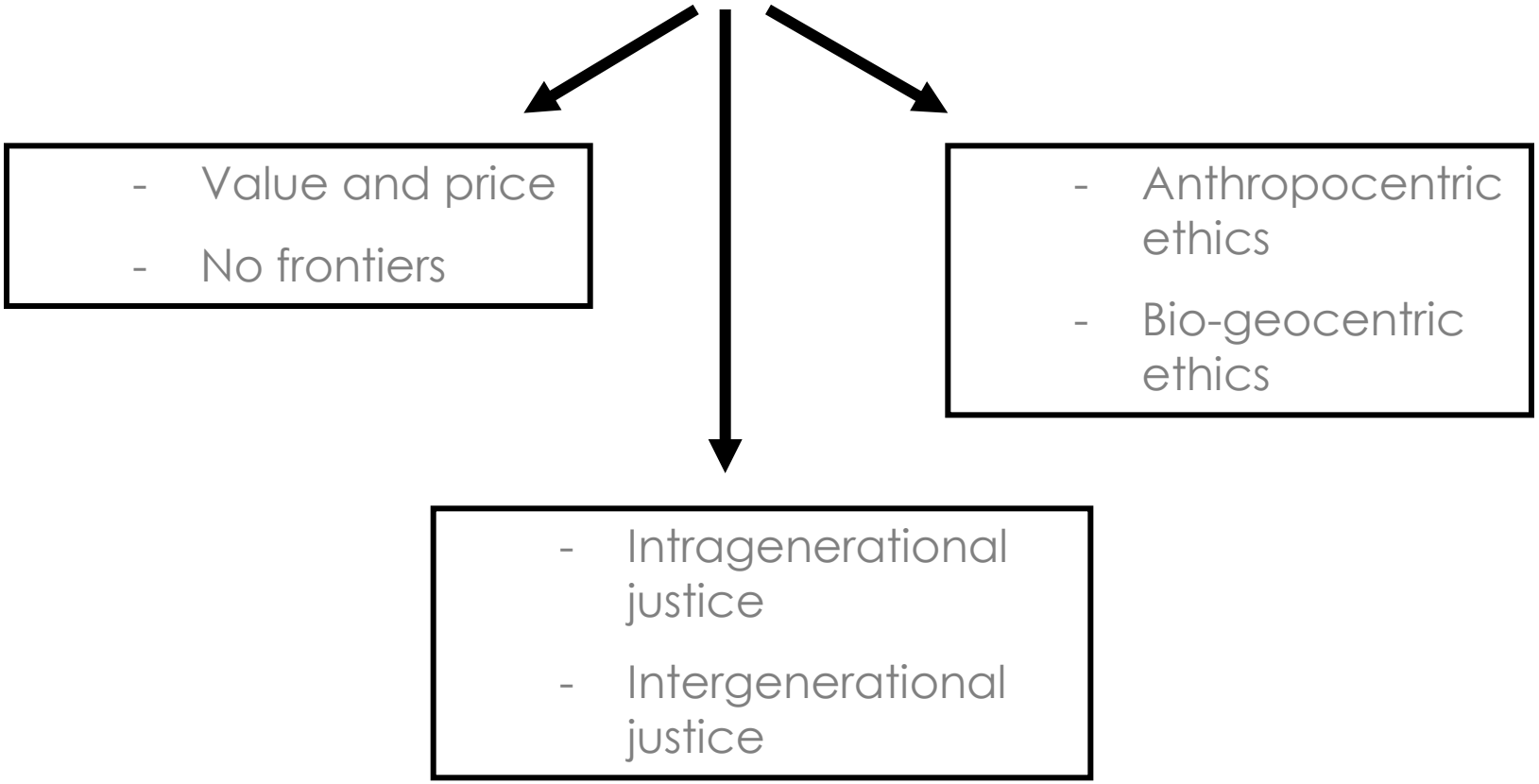
b) If so, who should receive this compensation? Should it be invested in any particular use?

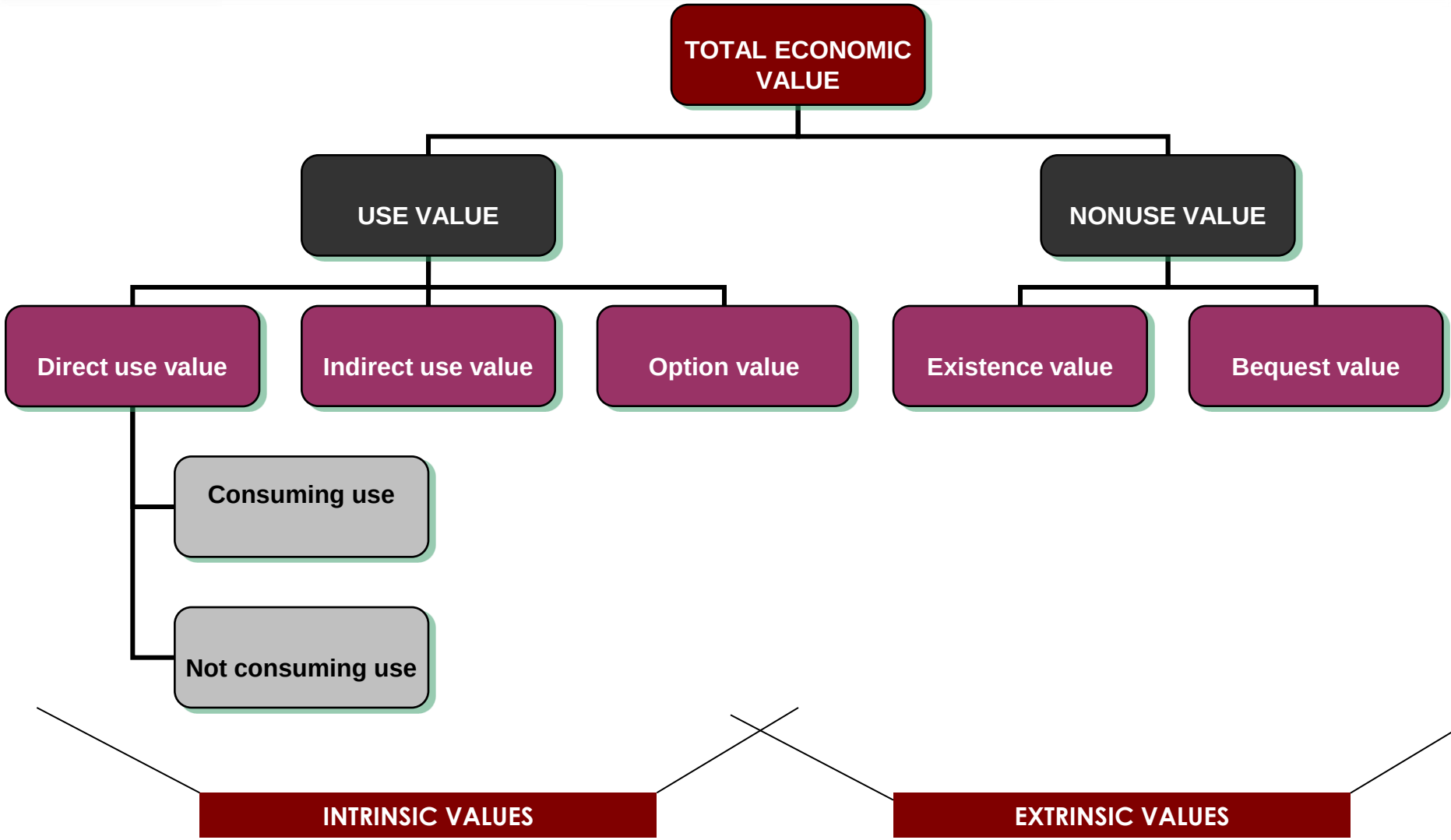
c) How can we fix the value of the good? Try to lay down a method (goal, description, steps)

d) How much compensation should be paid (€)?

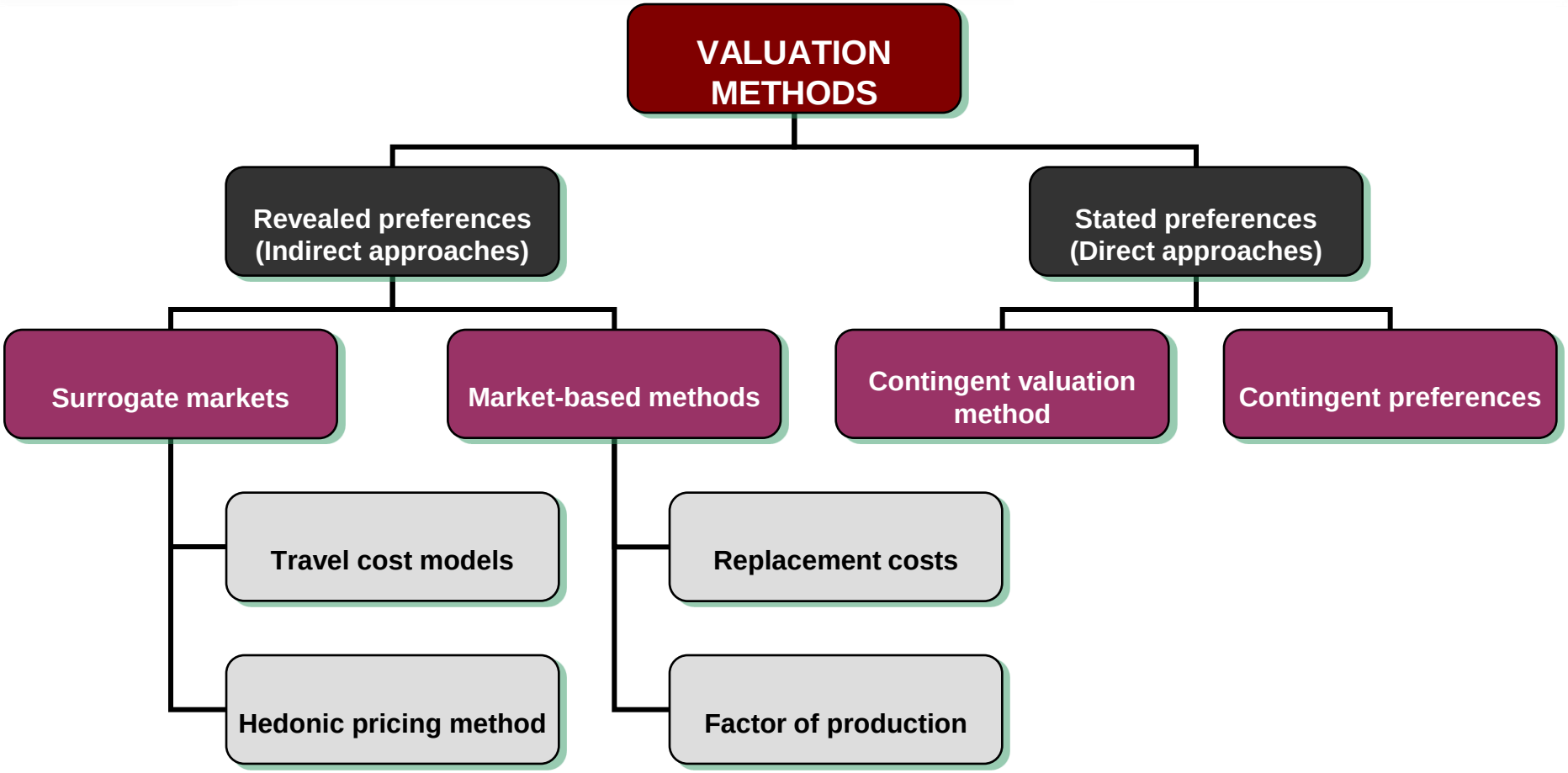
THE IBERIAN LYNX

ENVIRONMENTAL VALUATION





SOURCE. Azqueta (2007) pp. 88 y ss.



SOURCE. Partially from Azqueta (2007) pp. 100 y ss.

Indirect approaches (revealed preferences) → Market-based methods

REPLACEMENT COSTS

- ✓ The replacement cost method is applied by estimating the costs of replacing the affected ecosystem services
- ✓ Conditions:
  - ✓ Restoration is possible
  - ✓ People always assign a value to the environment (direct use)

FACTOR OF PRODUCTION

- ✓ The value of the natural resource is monetized based on the economic valuation of the good as an input in a production process
- ✓ Dose-response functions are used to determine the effects

Indirect approaches (revealed preferences → Surrogate markets

HEDONIC PRICING METHOD

- ✓ Environmental quality is sometimes included wihin the price of a private good. For example: noise quality in households
- ✓ Because there is a close relationship between the environmental good (e.g. acoustic pollution) and the private good (e.g. the house)
- ✓ The influence of the environmental qualities needs to be isolated from other factors within the global price of the good

E.G. Price of a house (P_v):

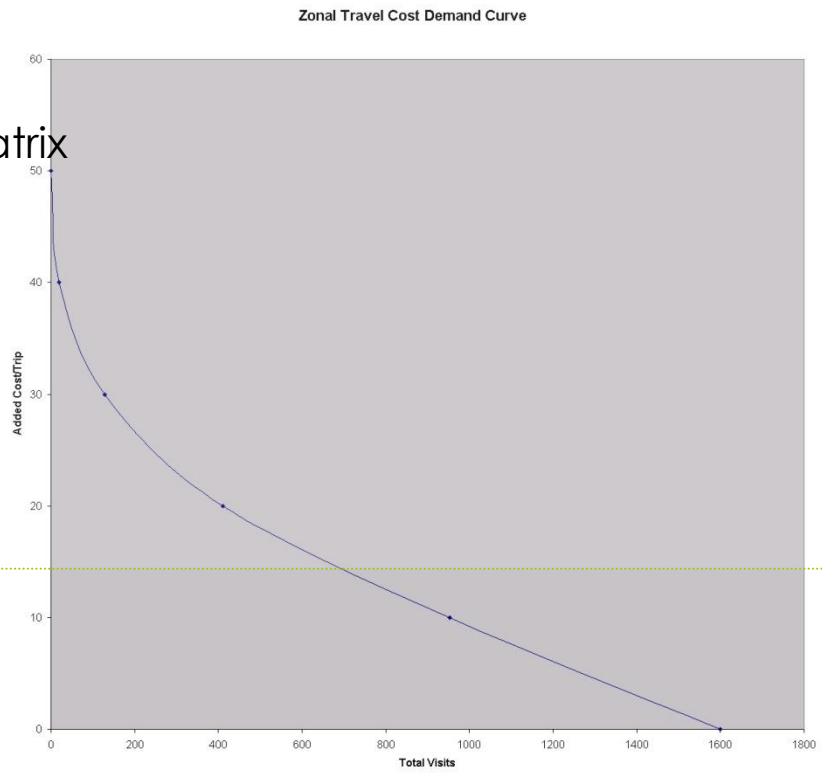
$$P_v = f_v (S_v, N_v, X_v)$$

- ✓ S_v = structural quality
- ✓ N_v = neighbourhood and ubication
- ✓ X_v = environmental quality

Indirect approaches (revealed preferences → Surrogate markets

TRAVEL COSTS MODELS

- ✓ It is employed to measure the value of recreational sites by surveying travelers on the economic costs they incur (e.g., time and out-of-pocket travel expenses) when visiting the site
- ✓ Steps:
  - ✓ Zonal analysis. Origin-destination matrix
  - ✓ Visitors per population
  - ✓ Distances, time and costs
  - ✓ Regression analysis
  - ✓ Demand curve
  - ✓ Consumer surplus calculation



Direct approaches (stated preferences)

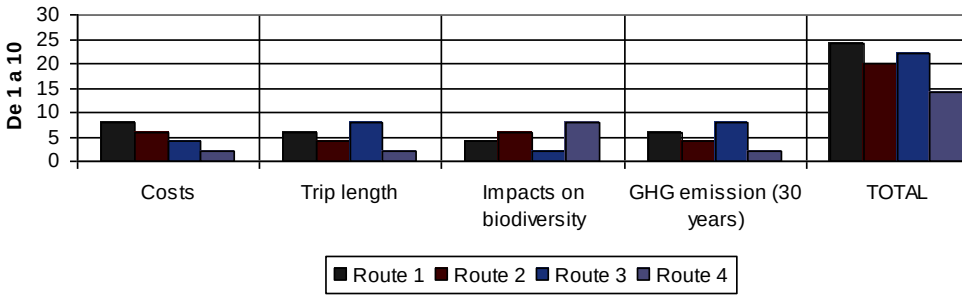
CONTINGENT VALUATION

- ✓ It is based on an enquiry to the public regarding:
  - ✓ The willingness to pay for an environmental profit
  - ✓ The amount of compensation for an environmental cost
- ✓ Different techniques: a) personal interviews; b) surveys by phone; c) surveys by mail; y d) experiments, etc.
- ✓ The amount can be obtained by:
  - ✓ Open questions
  - ✓ Auctioning
  - ✓ Multiple choices
  - ✓ Binary method
  - ✓ Iterative method
- ✓ Challenges: Biases, politically-oriented answers, ignorance, etc.

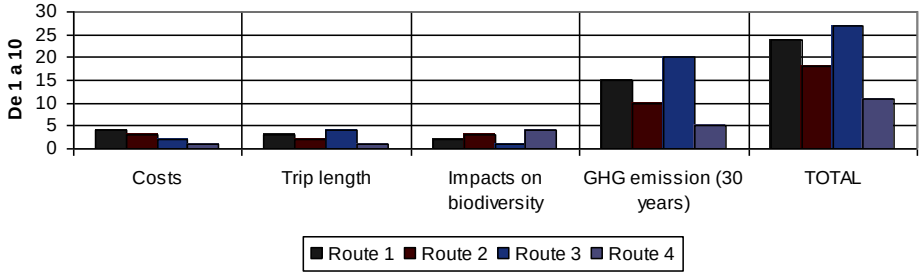
MULTICRITERIA ANALYSIS

	Alternatives	Costs	Trip length	Impacts on biodiversity	GHG emission (30 years)
		mill €	h.	Preferences	kg. CO2e/ vehicle
ALTERNATIVES TO A HIGHWAY	*Route 1*	60,00	0,65	3	7,80
	Route 2	80,00	0,80	2	9,60
	Route 3	120,00	0,50	4	6,00
	Route 4	200,00	1,40	1	16,80

NON ADJUSTED SCORES



ADJUSTED SCORES



And inaction is always a choice!

Thank you!

Climate policies

Mitigation and adaptation
Inventories, projections and modelling
Carbon sinks

Carbon markets

Spot & forward
Structured products
Portfolio management

Flexible mechanisms

CDM & JI
Feasibility studies
Methodologies

Emissions trading

Authorization and allocation
Strategic advice
Closures and new entrants

Voluntary initiatives

Carbon Footprint
Communication and green plans
Customized training

Solutions

Renewable energy
Management, reduction and efficiency
Mobility and transport
Built environment

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