Valuing the environment

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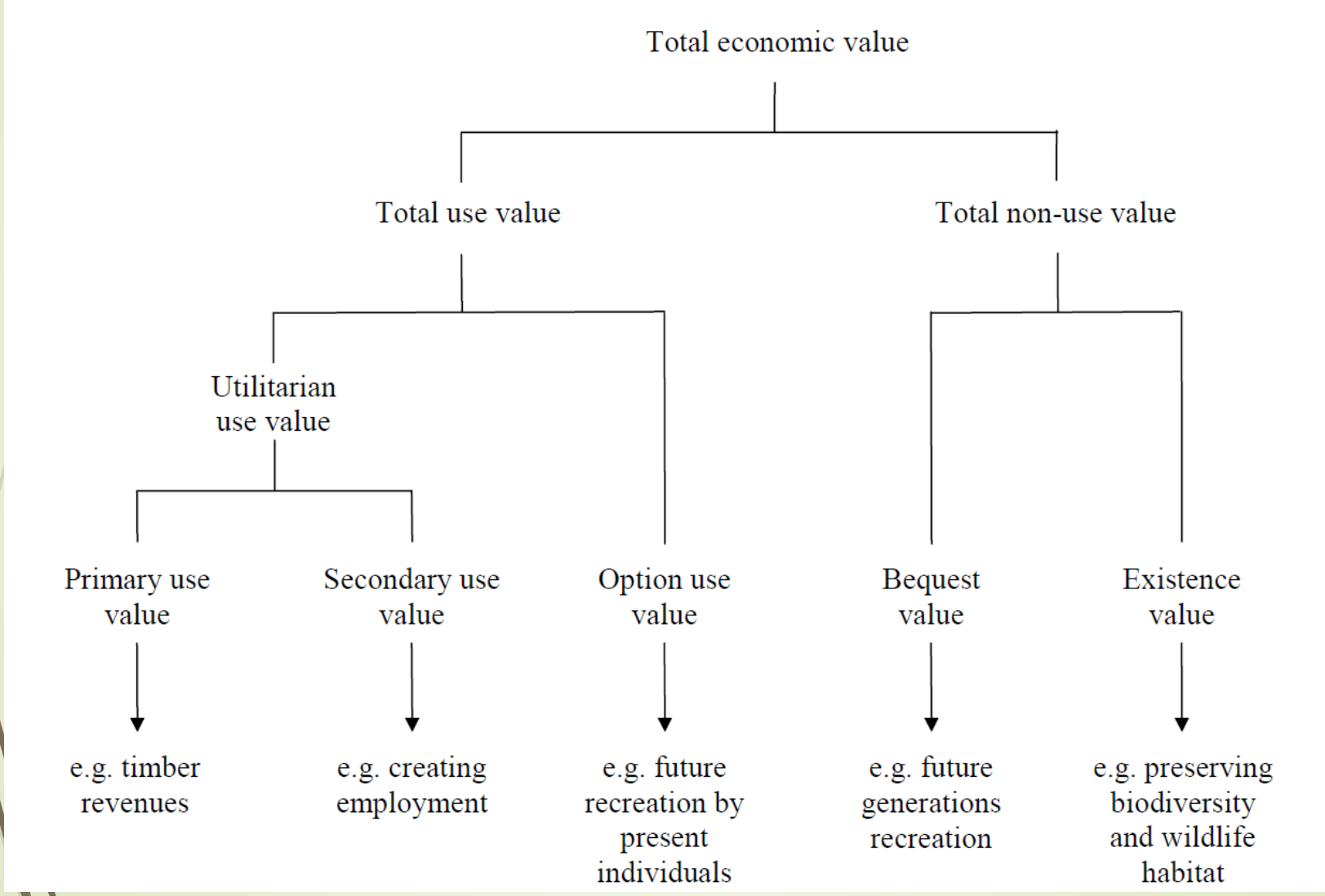
Total economic value



Bateman, I., Day, B., Lake, I. e Lovett, A. (2001) The effect of road traffic on residential property values: a literature review and hedonic pricing studies, Scottish Executive Development Department, Edimburgo, p. 2-8

Total economic value

- Use value:
  - direct
  - indirect
  - option value
- Non-use value:
  - bequest value
  - existence
- Total value:
  - use value + non-use value
  - WTP* = Price paid + Consumer Surplus

*WTP: willingness to pay

Applicable methodologies

	Indirect methodologies	Direct methodologies
Revealed preferences	**Hedonic price**	
	Travel cost	
Stated preferences	Conjoint Analysis	Contingent Valuation
	Dose–response	
	Production-function approach	

Hedonic price method

- We derive the value of a (public) good
  - unpolluted air, absence of noise pollution, environmental quality,...
- based on the price of a private good
  - typically, a real estate property
- whose value varies for the owner according to the quality or quantity of the public good that we want to evaluate

… the hedonic price method

- Pros:
  - Revealed preferences
  - Widely used for noise and air pollution
- Cons:
  - Indirect method:
    - it does not allow one to estimate the non-use value
  - It may be difficult to represent the public good to be assessed with measurable variables
  - Many environmental goods are not linked to housing markets
  - Prices might depend on anticipation of capital gains
  - The results might sensibly depend on the chosen functional form
  - It requires many data that are difficult to be collected

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Travel Cost Method (TCM)

- It was initially introduced by Hotelling in response to the US government, which had requested a method for evaluating the benefits of public land use.
- The demand function of an asset and the value attributed to it is derived from the expenses incurred to reach it.

TCM

- The collection of data (number of visits made in the reference time unit, typically the year, and travel costs) is usually done through the use of a questionnaire filled in by site visitors.
- This data is used to derive the recreational demand function of the site.
- As the cost to reach a site increases, the frequency of visits tends to decrease.
- The consumer surplus for the good under consideration is estimated from the function that relates the frequency of visits to the costs incurred to make them.

TCM

- Limitations:
  - What value for time spent
    - Opportunity cost = average salary
    - And for those who do not work?
    - What if holidays are "commanded"?
    - What if travel is a pleasure and not a cost?
  - Actual or perceived cost?
  - How should second home visitors and non-paying visitors be treated?
  - Multiple reasons for travel (linked trips)
    - Respondents are asked to attribute costs in percentages
  - The presence of substitutes in the vicinity may distort estimates

TCM

- …limitations:
  - Only use value (direct):
    - evaluation of users only
  - Important income effect, difficult to disentangled
  - Econometric problems:
    - what functional form to be used?
    - sensitivity analysis should be carried out with respect to the functional form used
- Advantages:
  - Useful for evaluating valuable locations (monuments, parks, lakes, areas of natural interest)
  - Use of revealed preferences (more robust)