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Non-Market Valuation

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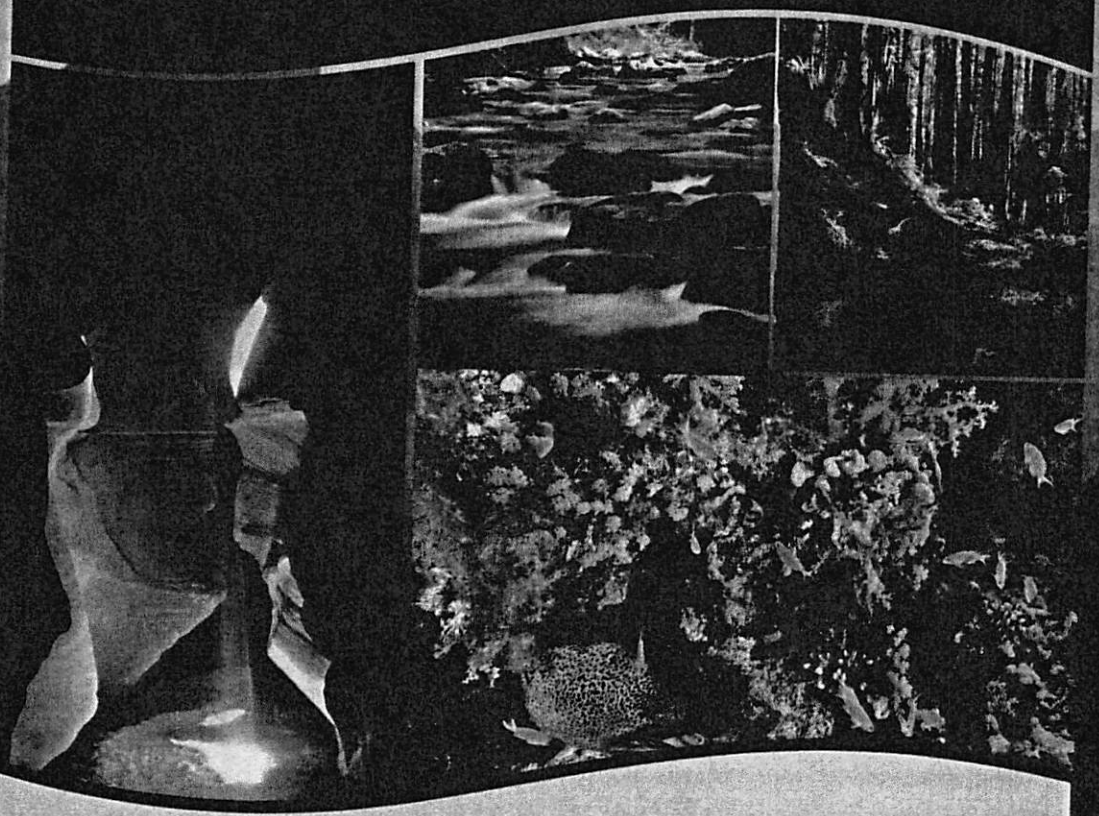
Environmental and Natural Resource ECONOMICS



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Nonmarket Valuation

Nonmarket valuation refers to a collection of methods used by economists to put monetary values on environmental goods. They are called nonmarket because the goods being valued are not traded in a market. This includes goods like cleaner air, safer drinking water, the closure of beaches, more wetland acreage, and so forth. Economists regard these as goods that matter to people just like cars, candy, and a baseball game. Nonmarket goods simply have no marketplace where people go to buy and sell the good.

Nonmarket values are used in benefit–cost analysis to evaluate government policies and programs and in natural resource damage assessment cases for assessing damages under environmental laws that penalize parties responsible for harming the environment. An example of a benefit–cost analysis is an evaluation of an environmental regulation such as the Clean Air Act. An example of a natural resource damage assessment case is the Exxon *Valdez* oil spill.

Most people are comfortable with putting monetary values on market goods like shoes, bagels, a carnival ride, etc., but not always on nonmarket environmental goods. But, economic principles and good public policy call for measuring environmental goods and services in monetary terms and economists have developed a variety of approaches for doing so. Some of the theories and techniques have been in use for over 50 years.

The field of economics laying out the theoretical foundations for nonmarket and market valuation is called welfare economics. The theory holds that a person's economic value for a good (market or nonmarket) is his or her willingness to pay for that good. This stands to reason, because it reflects what a person is willing to give up in terms of purchasing power over other goods and services for the good in question. Willingness to accept payment is also theoretically acceptable as a measure of value but it has proven to be more difficult in application and so has seen less use.

A few things are worth noting. First, economic values measured using willingness to pay are based on individuals' preferences for a good, not an expert's judgment of value. Second, only people matter in economic value. Flora and fauna matter but only to the extent that people have a willingness to pay to protect nature. Third, since the values are in monetary terms they can be compared with costs and values of other nonmarket goods. This common metric is extremely valuable for policy evaluation.

The goal in valuation then is to find a measure of willingness to pay for the good in question. In the case of market goods this is considerably easier, because we observe what people are willing to pay in actual markets. In the case of nonmarket goods, the task is more difficult, because we have either no observation or only indirect observation in markets. For example, where do we go to observe people buying (and hence making known their willing to pay for) cleaner air?

Economists have devised several approaches for valuing nonmarket environmental goods. Most are classified in one of two broad methodologies: revealed preference (RP) or stated preference (SP). Revealed preference methods use observable behavioral data to make inferences about willingness to pay. For example, people reveal willingness to pay for the environment in how far they travel to visit a recreation site or in how much more they pay for a house if it is located near a lake or if they pay to filter their drinking water. With RP methods analysts use data on actions such as these taken by people to infer economic values.

The common RP methodologies are: the travel cost method for valuing recreational uses of the environment; the hedonic price method for valuing clean air, hazardous waste sites, risk of death, and landscape amenities; and the averting behavior method used to value risk of death and sickness and a variety of other environmental goods.

Stated preference methods, unlike RP methods, are not based on observed behavior. Instead, an analyst constructs a survey in which people are directly or indirectly asked their willingness to pay for an environmental good. Or, alternatively are asked how they might behave vis-a-vis the use of some environmental goods, which, in turn, allows the analyst to infer value. State preference surveys are sometimes simply called willingness-to-pay surveys.

The primary appeal of RP over SP studies is that RP values are based on actual willingness to pay by people in a market-like setting. SP studies, on the other hand, are based on responses to questions in a hypothetical survey where money is not actually paid by individuals. It is one thing to say you are willing to pay $100 to preserve an old growth forest in a survey where circumstances are hypothetical, and quite another to actually pay $100 out of your pocket to visit the site or donate to a fund to protect the site. Actual payment counts for a lot among many economists who tend to treat observed behavior as hard evidence for value.

The advantage of SP studies is that they may be designed to value almost anything. In many policy settings there is no observable behavior that can be used to infer values. For example, one may wish to value the restoration of a river in an urban area where the target level of cleanliness has not been realized in the recent past. How much will fishing and swimming increase on the river? We cannot say for sure because we have not observed people facing such conditions. The most important area where willingness to pay is unobtainable using RP analysis is for estimating the passive use value of an environmental good. Passive use value refers to willingness of people to pay for a good, such as protecting the Grand Canyon or preserving an endangered species, but have no intention of ever using the good (visiting the Grand Canyon or viewing the endangered species). Stated preference analysis is the only approach possible.

The common SP methods are the contingent valuation method, choice experiments, and contingent behavior analysis.

Finally, a growing area in nonmarket valuation is the combining of RP and SP data to take advantage of the strengths of both approaches. This allows the analysis to have grounding in actual behavior offered by RP studies along with the reach of SP studies for valuing goods wherein actual behavior is not observed in market or market-like data.

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See also: Averting Behavior; Benefit–Cost Analysis; Choice Experiments; Contingent Behavior; Contingent Valuation; Exxon *Valdez* Oil Spill; Hedonic Price Method; Passive Use Value; Travel Cost Method; Welfare

Further Reading

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Nonpoint Source Pollution

Pollution that originates from specific, well-defined sources such as sewage outfalls and smokestacks is typically called point source pollution, whereas pollution that comes from diffuse sources such as parking lots and agricultural fields is typically called nonpoint source pollution. Although intuitive, contradictions in distinguishing point and nonpoint source pollution exist. For example, economists typically think of vehicle emissions, which originate from specific, well-defined tail pipes, as a *nonpoint* source problem. The U.S. Environmental Protection Agency (EPA) classifies large animal feeding operations, which tend to dispose of their waste by spreading it on agricultural fields, as *point* sources.