Emergy and Nonmarket Value

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The purpose of this study is to better understand the differences and similarities between emergy and nonmarket economic valuation, when both are applied to value the same policies or development alternatives. The emdollar value of a good or service often exceeds the market value of the same good or service. This is true because the emdollar value of the good or service includes the market value plus the contributions of emergy from the environment. Furthermore, all goods and services have some input from the environment even though, in some cases, that input may be quite small. However, the relationship between emergy valuation and nonmarket valuation of the same product or service is somewhat more complicated. Nonmarket methods of valuation are of two kinds, (1) those that depend on some real expenditure or savings of money in a market and (2) those that are based on the considered judgment of people with regard to the manner in which they would be willing to spend their money. Examples of the former method are (1) determining the value of an environmental attraction through using the travel cost or the money paid to visit the attraction and (2) assessing the effects on hedonic value, for example by determining the differential price paid for houses by a lake compared to those further away from the water to obtain an estimate of the aesthetic value of the water view. The latter methods are usually based on surveys that ask about their willingness to pay for a product or service (contingent valuation) or choice experiments that infer value from people's willingness to make trade-offs that include cost as an attribute. In this study we assemble value estimates from the literature that were obtained using one or more of the nonmarket methods of valuation and compare them to similar products and services where the value of the product was determined using emergy methods. The emergy values for the products and services examined were converted to emdollars and then compared to the monetary values estimated for the same products and services using each nonmarket method and then by class of nonmarket method, i.e., based on real or hypothetical value.

Keywords: emergy evaluation; nonmarket value; travel cost; hedonic value; contingent valuation