

# 1. Introduction

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The hedonic approach sounds strange to non-English-speaking people because the connotation of hedonic is not clear. The origin of the word comes from hedonism in Greek philosophy. The Epicures are one of the leading examples of this school of philosophy. Hedonism is a synonym of the word 'pleasure'. More strictly we can refer to the Oxford English Dictionary (1999, second edition, CD-ROM version 2.0):

*Adj.* Of or relating to pleasure. (In first quot. applied to the Cyrenaic school of philosophers.) In wider use, chiefly in *Psychol.*: of, pertaining to, or involving pleasurable or painful sensations or feelings, considered as affects. Spec. *hedonic tone*, the degree of pleasantness or unpleasantness associated with an experience or state, esp. considered as a single quantity that can range from extreme pleasure to extreme pain.

We can find interesting examples, especially in psychology:

1901 *F. Stout Man. Psychol.* (ed. 2) i. i. 63 When we wish to say that pleasure or displeasure belongs to this or that mental process, we say that the process is pleasantly or unpleasantly toned. Hedonic-tone is a generic term for pleasure and the reverse, considered as attributes of this or that mental process. Anger has hedonic-tone, mostly of an unpleasant kind. *Ibid.* . . .

1932 G. Beebe-Center *Psychol. Pleasantness & Unpleasantness* i. 6 In the present volume . . . the general algebraic variable, whose positive values correspond to pleasantness and whose negative values correspond to unpleasantness, will be called hedonic-tone.

1940 *Jrnl. Exper. Psychol.* XXVI. 233 The oscillations of hedonic tone in his case are slight, and the tone rises continuously from the beginning, in spite of pain and fatigue, 227 While Ss worked Es took their tapping rate every minute . . . and in a number of cases called at stated intervals for a rating on a previously agreed hedonic scale. *Ibid.*

1952 D.J. O'Connor *John Locke* 51 By pleasure and pain Locke . . . is referring to what the psychologists nowadays call the hedonic tone of our experiences which can be roughly measured on a scale ranging from very pleasant through mildly pleasant, neutral, mildly unpleasant to very unpleasant.

1961 P.T. Young *Motivation & Emotion* v. 153 The sign, intensity, and temporal changes of affective processes can be represented upon the hedonic continuum.

The hedonic approach is a method of ascertaining the value of or the pleasure felt from attributes of a good. In contrast to conventional economic valuation, where the value of a good is calculated for the whole of the good, the hedonic approach regards a good as a set of attributes and considers the value of a good as a function of each attribute of that good.

For example,

$$\begin{aligned} \text{value of a good} = & (\text{value of attribute 1}) \\ & (\text{quantity of attribute 1}) + (\text{value of attribute 2}) \\ & (\text{quantity of attribute 2}) \end{aligned} \tag{1.1}$$

This value of an attribute is called an implicit price (a hedonic price) of the attribute, because it cannot be observed in a real market. We can estimate this price, however, by analysing the prices of a good that has different quantities of each attribute in the market.

The hedonic approach is defined as a method of finding out these implicit prices. The function, which determines the market price of a good by these attributes, is called the hedonic price function. The above formula is an example of the hedonic price function. Once the function is estimated, we can apply this method for three main purposes, namely, to construct the price index of a good, to evaluate the value of the attribute of a good, and to estimate the value of a good using the hedonic price function. The price index estimated by the hedonic approach is used, for example, for a computer, a car (Griliches, 1971), a telephone charge, housing prices (Bailey et al., 1963; Mills and Simenauer, 1996; Meese and Wallace, 1997 among others) and land prices (Hidano, 2000a). The most typical example is in the United States, where since 1986 the hedonic index has been used to estimate the deflator of a computer. As for the second

purpose, many studies have been carried out to value an environment by analysing space values, such as land, housing prices or rent, and to value skilled labour by investigating wages. The third example can be seen in forecasting space values, that is, housing and property price estimation.

The hedonic approach has very strong characteristics as an economic method. It is based upon revealed preferences of consumers and producers in actual markets. It also provides a simple procedure to achieve its purposes. As we shall explain in the text, the hedonic approach requires only the estimation of hedonic price function. The theoretical drawbacks of the method are that it assumes a perfect competition in the market with perfect information, and costless mobility of consumers and suppliers, that is, the openness of the market. But these assumptions are very common in most economic theories. It is sometimes claimed that the hedonic approach is only applicable in cases where policies produce a marginal impact on the market. This prevailing conception is not necessarily correct. We shall discuss this issue fully later in the book, since this idea is largely based upon a misunderstanding of the basic theory of the method.

In addition to the hedonic approach, there are several other methods of identifying the value of environmental goods or benefits arising from the implementation of a public policy or project. Now we shall compare the characteristics of the hedonic approach from the viewpoint of evaluation. The evaluation methods can be classified according to who decides the value, that is, whether the method is based upon the preference of general consumers and producers, or is simply a reflection of a decision maker outside the market. Then the preferences can be divided into two types, that is revealed in the market or stated in a survey. Thus the methods can be classified as follows:

1. Preference of a consumer and a producer
  - a. Revealed preference
    - i. Conventional demand and supply approach (consumer and producer surplus)
    - ii. Production function approach
      - Travel cost method (for local public goods) (TCM)
      - Cost-avoidance approach (based upon households' or firms' behaviour)
    - iii. Hedonic approach (hedonic price method (HPM))

- b. Stated preference
  - i. Contingent valuation method (CVM)
  - ii. Conjoint analysis or other choice methods
- 2. Non-preference of a consumer or a producer
  - a. Damage cost
  - b. Countermeasure approach.

Table 1.1 compares selected valuation methods.

In order to discuss the characteristics of the different methods, we have to make clear what valuation is. Valuation, in this book, is the measurement of the value of environmental goods or the benefits of the projects and policies implemented. In the latter case, the value is clear that is, the increment of happiness (or utility) minus the increment of unhappiness due to the implementation of the public project or policy that is measurable by welfare measures such as equivalent valuation, or compensating valuation (see Chapters 3 and 9). The case of the value of environmental goods, however, is problematic. If we want to measure the value of a forest, which exists now, we have to decide in what situation we should value the forest. The approach taken in this book is to assume that the shadow project or policy is assumed hypothetically to produce a new forest under the condition that the forest should not exist. Alternatively the shadow project is assumed to destroy this forest. Then the welfare measures will be applicable to this forest evaluation as in the previous cases. This means that we can use the project or policy concept in estimating the environmental value of a good.

We should also comment on the differences of the methods used in environmental valuation. It is well known that methods of valuing environmental goods should be based upon consumer preference. In this respect, the hedonic approach (called HPM in environmental project evaluation), the travel cost method (TCM) and the contingent valuation method (CVM) or other constructed market techniques (Carson, 1991) are preferable. Among them, CVM should depend on a stated preference. HPM and TCM are based upon revealed preference. HPM, however, is a more promising approach than TCM in terms of its simplicity, its theoretical soundness and the cost of the evaluation.

Apart from this rather technical discussion, there is very strong criticism of the economic valuation of non-market goods. Schumacher, the author of *Small is Beautiful* (1973), is one of the leading proponents of the 'non-economic' view. He argues as follows:

*Table 1.1 Comparison of selected valuation methods*

Type of method	Basic assumption	Applicable goods, hypothetical or real	Degree of improvement by a project	Region affected by a project	Consideration of cost of a project
Contingent valuation method (CVM)	Respondent's honest opinion	Both	Basically small	Any	Usually not considered
Conjoint analysis and choice methods	Respondent's honest opinion	Both	Basically small	Any	Usually not considered
Travel cost method (TCM)	Single-purpose trip	Only real	Small	Small	Usually not considered
Hedonic approach (HPM)	Costless mobility	Only real	Not necessarily small	Not necessarily small	Considered

Table 1.1 (continued)

Type of method	Data type, difficulty and accuracy	Ease, accuracy of the analysis
Contingent valuation method (CVM)	Survey data, cost of a survey, subjective response	In the case of non-parametric estimation, the results are reliable because they are free from error distribution assumptions. But if the parametric estimations are applied, the results are highly dependent on model specifications
Conjoint analysis and choice methods	Very complicated survey is required, cost of a survey, subjective and unreliable responses because of the difficulty of a questionnaire	Many assumptions on distribution, and the functional form of the utility cause difficulty in interpreting the results, and unrobustness of the estimation
Travel cost method (TCM)	Survey data, cost of a survey, rather objective response but still stated data of behaviour	If the ordinal demand function is applied, the formation of demand function tends to be subjective and unrobust due to many factors related to trips to the sites. If the choice models are applied, the formations of alternative choices of sites and behaviours are very subjective and the functional form of utility is problematic. Much subjectivity is included in the analysis
Hedonic approach (HPM)	Market data, data is available from public or private organizations, basically quite objective	The functional form, the missing variables, and multicollinearities among explanatory variables are as problematic as other econometric analyses But the hedonic price function is easy to estimate and the transparency of the analysis is high

It is hardly an exaggeration to say that, with increasing affluence, economics has moved into the very center of public concern, and economic performance, economic growth, economic expansion, and so forth have become the abiding interest, if not the obsession, of all modern societies. In the current vocabulary of condemnation there are few words as final and conclusive as the word 'uneconomic'. If an activity has been branded as uneconomic, its right to existence is not merely questioned but energetically denied. Anything that is found to be an impediment to economic growth is a shameful thing and if people cling to it, they are thought of as either saboteurs or fools. Call a thing immoral or ugly, soul destroying or a degradation of man, a peril to the peace of the world or to the well-being of future generations; as long as you have not really shown it to be 'uneconomic' you have not really questioned its right to exist, grow, and prosper. But what does it mean when we say something is uneconomic? I am not asking what most people mean when they say this; because that is clear enough they simply mean that it is like an illness: You are better off without it. The economist is supposed to be able to diagnose the illness and then, with luck and skill, remove it. Admittedly, economists often disagree among each other about the diagnosis and, even more frequently, about the cure; but that merely proves that the subject matter is uncommonly difficult and economists, like other humans, are fallible. No, I am asking what it means, what sort of meaning the method of economics actually produces. And the answer to this question cannot be in doubt: something is uneconomic when it fails to earn an adequate profit in terms of money. (pp. 37–8)

Schumacher is mistaken here, however, because in economics any happiness or utility can be considered as economic goods and services. We shall discuss this point later. Schumacher continues:

The method of economics does not, and cannot, produce any other meaning. Numerous attempts have been made to obscure this fact, and they have caused a very great deal of confusion, but the fact remains. Society, or a group or an individual within society, may decide to hang on to an activity or asset for non-economic reasons – social, aesthetic, moral, or political – but this does in no way alter its uneconomic character. The judgment of economics, in other words, is an extremely fragmentary judgment; out of the large number of aspects which in real life have to be seen and judged together before a decision can be taken, economics supplies only one – whether a thing yields a money profit to those who undertake it or not.

Do not overlook the words 'to those who undertake it'. It is a great error to assume, for instance, that the methodology of economics is normally applied to determine whether an activity carried on by a group within society yields a profit to society as a whole . . .

However that may be, about the fragmentary nature of the judgments

of economics there can be no doubt whatever. Even within the narrow compass of the economic calculus, these judgments are necessarily and methodologically more weight to the short than the long term, because in the long term, as Keynes put it with cheerful brutality, we are all dead. And then, second, they are based upon a definition of cost which excludes all free goods; that is to say, the entire God-given environment, except for those parts of it that have been privately appropriated. This means that an activity can be economic although it plays hell with the environment, and that a competing activity, if at some cost it protects and conserves the environment, will be uneconomic.

Economics, moreover, deals with goods in accordance with their market value and not in accordance with what they really are . . . (pp. 38–9)

Schumacher greatly criticized the concept of ‘market’ as a place of devils. What’s wrong with market value? If the market value should not reveal the real value, the problem is due to the lack of information of participants in the market or the lack of the power of enforcement on those who can enjoy services without paying appropriate costs, that is, free riders, or those who leave the market, such as polluters. But the market, itself, is not at odds with the former case. It is not a problem of market mechanism but a problem of how to utilize a market efficiently. We should emphasize the role of market to distinguish the quality of goods used by consumers. Thus the market is not a place of devils but a place of humans, since only humans can give a value of quality. However, Schumacher claims:

In the market place, for practical reasons, innumerable qualitative distinctions which are of vital importance for man and society are suppressed; they are not allowed to surface.

Thus the reign of quality celebrates its greatest triumphs in ‘The Market’. Everything is equated with everything else. To equate things means to give them a price and thus to make them exchangeable. To the extent that economic thinking is based on the market, it takes the sacredness out of life, because there can be nothing sacred in something that has a price. Not surprisingly, therefore, if economic thinking pervades the whole of society, even simple non-economic values like beauty, health, or cleanliness can survive only if they prove to be ‘economic’. (p. 41)

Is Schumacher’s opinion relevant to the case of valuation of local public goods? With local public goods, it is possible for consumers to have the choice between different options. The hedonic approach, as we shall see, provides an answer to the question.