TERM PAPER REPORT

VALUING OF NON-MARKETED PRODUCTS

By

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For course CE626……..

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ABSTRACT

This term paper outlines the major methods that are currently available for estimating economic values for non-marketed goods and services. It is like a review of the economic approach to valuation, which is based on total economic value framework. In addition to presenting the valuation approaches, this paper discusses the applicability of each method to valuing ecosystem approaches.

TABLE OF CONTENTS

INTRODUCTION

"Economic Value" refers not only to what people actually pay, but also includes what people are willing to pay (or give up). "Economic evaluation" means estimating what something is worth.

Example : you pay $25 for a snorkel trip that is worth $100 to you.

The true economic value of this trip is $100.

Value is most meaningful and measurable in terms of what people are willing and able to give up for the good or service. Value is anthropocentric (human-centered), and the process of valuation is utilitarian: Its purpose is to understand (and hopefully improve) the well-being of people. Oftentimes we lose something of value. In these cases, we can look at values as willingness to pay to avoid loss, or willingness to accept compensation for loss.

Estimating the economic values attached to non-marketed products goods and services. For this evaluation two methods can be used:

1. Revealed preference approach

2. Stated preference approach

REVEALED PREFERENCE APPROACH

Revealed preference approach reveals the way how a non-marketed product influences the market value of some other good. It means the value revealed through complementary market.

Example : Noise nuisance and its effect on house prices, the economic value of noise nuisance is reflected in housing prices. We can find houses cheaper in heavy noisy areas compared to houses in low noisy areas.

Estimating the economic values related to non-marketed products and services through revealed preference approach can be done by using two methods.

1. Direct measurement methods
2. Indirect measurement methods

2.1 : REVEALED PREFERENCE DIRECT MEASUREMENT METHODS

These methods establish financial values for non-marketed goods by relating the value of an equivalent marketed proxy good. These revealed preference direct measurement methods are broadly put in the following manner.

1. Productivity Change Method

2. Cost Of Illness Method

3. Human Capital Method

4. Opportunity Cost Method

5. Defensive Expenditure

6. Shadow Project Method

7. Substitute Cost Method

2.1.1 : Productivity Change Method

This method also known as net factor income or derived value method. In this method the value of a non-marketed product is estimated by making it an input in the production of a product with an established market value (commercial marketed goods).

Keeping all other factors are equal, the change in the value of a non-marketed product is estimated by simply relating the change in the value of marketed product, which was produced as an output.

Example 1 : If we consider river is an input in the production of marketed products like fish, we can estimate the value of a clean river. If altering the river changes the value of those marketed products, it is possible to infer the value of the river itself.

Example 2 : the quality of a non-marketed good may influence the output of a marketed product. The economic benefits of improved water quality can be estimated by the increased outputs from agricultural productivity.

2.1.2 : Cost Of Illness Method

This cost of illness (COI) method used to evaluate the economic values of non-marketed products through their impact on health. These studies helpful in estimating the value of money that could potentially saved by eradicating the diseases, which are causing health related issues. A comprehensive COI approach estimates the original economic output associated with an alter in health status that comprises of treatment costs and loss of productivity.

Example : The human capital approach used to estimate the monetary value in reduction of road accidents by assessing the increased value in GDP, whereas the COI approach would include estimates of the reduction in the costs of the emergency services and the reduction in suffering.

2.1.3 : Human Capital Method

Human capital method also known as the production loss method. It is a special case of productivity change method, applied to workforce or a human being. This approach works on macroeconomic vision on the role of person who is contributing to the activity of economic system. It measures the economic value of a product by estimating the value of the lost output as a result of it.

Example : the mortality effect is then valued through his/her productive contribution. The value of preventing a fatality at a given time is equal to the future productive loss evaluated as the discounted sum of the earnings that the individual would have otherwise earned.

2.1.4 : Opportunity Cost Method

Opportunity cost method estimates the value of a non-marketed product by assessing its economic value of it in its second-best employment.

Example : We can find some barren areas in forests, if we would use this land as a location for a new airport terminal (assuming this may be the second-best use of that land), we can estimate the value of that area by the income generated through airport. This implies that the value of a non-marketed product is at least equal to its opportunity cost.

2.1.5 : Defensive Expenditure Method

Defensive / control / prevention costs method applicable to the non-marketed products which causes negative effects. The economic value of such products are estimated by assessing how much society/people are willing to spent money to avoid/eradicate them. A value can be measured based on prevention, control/mitigation expenses. The estimates from this method should be treated as minimum values as consumers may be willing to spend more also.

Example 1 : increasing of noise along a truck road make local populous willing to spend much on double-glazing.

Example 2 : spending $1000 per ton to reduce pollutants in air by an industry, can infer that people in society treats those emissions to impose costs at least that high.

2.1.6 : Shadow Project Method

In this method, the value of a non-marketed product is analysed by estimating the cost of providing an alternative to the product somewhere else; simply, the expenditure of replacing the product.

Example : construction of a new harbour may destroy a coastal habitat, the value of this coastal habitat is measured by estimating the cost of producing the coastal habitat on another part of the coast.

2.1.7 : Substitute Cost Method

Substitute cost method analysis is similar to that of shadow project method, but it does not view at recreating that non-marketed product elsewhere, but it looks at substitutes that are already in existence.

This method basically requires three necessary condition :

- ✓ The substitute, should have identical function to the product being valued;

- ✓ The substitute, should be the least-cost alternatives ; and

- ✓ The substitute, should have demand.

Example : for construction of a certain railway line, if we block certain tributary into reservoir, might reduce the concentration of required mineral in the water supply. The value of tributary here is measured by estimating the cost required to add the minerals artificially.

2.2 : REVEALED PREFERENCE INDIRECT MEASUREMENT METHODS

These indirect methods does not relate straightly at the market values of products to be proxies for the questions of non-marketed products. But, they catch the relationship about the changes that are occur in a non-marketed product and the cost of other marketed products. These methods actually workouts where non-marketed product influences the preferences of consumers about marketed products.

Methods which follow indirect measurement methods are

1. Travel cost method

2. Hedonic pricing method

3. Wage differential method

4. Random utility models

2.2.1 : Travel Cost Method (TCM)

A non-marketed product is estimated by assessing the all expenditures incurred by consumers in getting to it. By knowing the number of trips done by people to get to the product at various levels of travelling costs helpful in constructing the demand curve of the product. The constructed consumer surplus, the area beneath the demand curve, is the willingness of consumers to pay for the product, and so is its monetary value. TCM method

helps in evaluation of scenic, cultural and recreational site destinations.

Example : lakes, forests and cultural heritage sites.

Advantages of TCM :

❖ Relatively inexpensive method to evaluate

❖ It is based on actual behaviour rather than hypothetical scenarios.

❖ Closely associated to conventional economic valuation based on market costs.

Limitations of TCM :

❖ Technical wise and statistical wise, these models are complicated.

❖ It cannot be employed unless there is some easily observable behaviour used to reveal values.

❖ It does not deal properly with multi-purpose trips.

❖ It does not differentiate the trips made by the people through different mode of transport like bike, car, by foot etcetera,.

2.2.2: Hedonic Pricing Method

Used to measure the economic values of ecosystem or environmental services, which have direct impact on market prices. Mostly used to evaluate local environmental attributes that are responsible for the variations in housing prices. Economists can assess the implicit price of amenity which is responsible for the different prices of two same properties, which differ only with respect to a specific environmental issue, by comparing the behaviour of consumers and sellers. In general, so many variables contribute to the determination of property prices, so this method is not a straightforward one to estimate. To isolate the effect of non-marketed product, it is necessary to keep all the remaining factors constant.

It is necessary to make housing market to be competitive. Several factors such as existence of a pool, bedrooms count, the square footage, shopping markets, transportation like highways, the accessibility to nearby schools etcetera,. may also affect the housing prices. The price may also be affected by the proximity to, or quality of, environmental amenities. For example, if we keep all factors same, the difference in price between a three bed room house close to a coastal bay of outstanding natural beauty and an identical house in a similar area but without such a beauty is too high.

Advantages of hedonic pricing method :

- Basically this method techniques depends on observable data obtained from the real/actual behaviour of individuals.

- Property sales and its characteristics easily find through real estate services and municipal sources, which can easily related with other secondary data sources.

Disadvantages of hedonic pricing method :

- Majority of environmental problems cause only small effect on housing prices. For *Example* : purity of ground water.

- Even if these environmental effect is too high, it is not that much easy to measure them by assessing the econometric effects because of these variables might be correlated, affects housing prices.

  Example : greenery and air quality.

2.2.3 : The Wage Differential Method

Much similar to hedonic pricing method, but the wage differential method concentrates on wages instead of housing prices. This wage differential method assumes that wage rates influences much range of factors, covering safety too. Keeping all the remaining variables constant, the workers should ask higher wages for works involving higher risk. Therefore, the hedonic wage (economic value of safety) is resembling by the difference in wage rates between two professions that are almost similar in every walk, except in the degree of risk involved.

For this method to work, a certain criteria need to be satisfied :

- ✓ Firstly, the labour market like competitive and workers functions freely.

- ✓ There should be possible to isolate and estimate the degree of risk involved.

- ✓ It should be possible to compare the different risks involved.

- ✓ Finally, we should have complete information about the different types of risks involved.

If above criteria will satisfy, this method helpful in measuring of how much individuals give importance to safety and is important in the appraisal of many transport projects.

2.2.4 : Random Utility Models

Random utility models much alike travel cost methods, but they concentrate on the choices of recreationists among available alternative recreational sites rather than number of trips recreationists make to a given site in a season. This method is quite good when substitutes are available to the consumers so that the economist is estimating the value of the quality characteristics of one or more site choices. This method also has same advantages and disadvantages similar to travel cost method.

STATED PREFERENCE APPROACH

Stated preference approach based on constructed market, i.e. the economists ask people what economic value they attach to those goods and services. Simply, the economic value is unveiled through a hypothetical market based on questionnaires. The obvious way to estimate the value of a non-marketed product is through directly asking the individuals on their willingness-to-pay for a good or service. It also known as contingent valuation method, as it is a questionnaire-based approach or survey approach to the estimation of non-marketed goods and services. Stated preference approach involves the employment of questionnaires or some experimental ideas in measuring how much individuals value a non-marketed product. It simulates contingent market for non-marketed goods in which respondents are required to unveil their willingness to pay for changes in the products provision.

Example : residents may be asked how much they would be willing to pay for a certain improvement in air quality, or acceptable compensation for the loss of a recreational site. Such surveys must be carefully structured and interpreted to obtain accurate results.

Advantages :

> ➢ This approach results in reliable estimates as it follows economic utility theory.

> ➢ With careful surveys, design and implementation we can reduce many biases.

> ➢ The only best method to estimate non-use values associated with natural resources.

> ➢ Used successfully in a variety of situations.

Limitations :

> ➢ Measures of non-use values are difficult to validate externally.

> ➢ Unveiled stated preferences of willingness to pay might exceed actual feelings.

> ➢ Respondents may be not familiar with the products or services being estimated and not have sufficient basis for articulating their exact value. They may express a value for the satisfaction of giving rather than the value of the products or services in question.

> ➢ They may also fail to handle questions seriously because the financial implications of their responses are not binding.