Economic Analysis of Investments in Cultural Heritage: Insights from Environmental Economics

Stefano Pagiola*
Environment Department, World Bank

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Introduction

1. Cultural heritage problems share many characteristics with problems encountered in environmental economics. Many of the services provided may not enter markets, or do so only indirectly and imperfectly. And many benefits are wholly intangible. Moreover, the nature of the benefits provided by cultural heritage sites is conceptually very similar to those provided by, for example, national parks. Whether aesthetic benefits are derived from buildings or trees and whether recreation benefits are derived from museum visits or fishing makes little difference to the valuation problem. This paper draws on recent advances in the field of environmental economics to discuss how a cost-benefit analysis of a project involving a cultural heritage site might be conducted.

2. **Objective of the analysis.** When we ask what the value of a cultural heritage site is, we are generally asking one of two related but different questions. First, we might be asking what the value of the entire site is, as an asset. Implicitly, we are asking how much worse off we would be if the site vanished tomorrow. This is the question we would ask if we were primarily interested in estimating our 'wealth', of which cultural heritage is one component. Second, we might be asking what the benefits or costs of actions that change the cultural heritage site in specified ways are. This is the question we would ask if we were considering undertaking a project which would improve (or which might damage) the site. In this context, the key issue is not the overall value of the site but the *change* in that value resulting from the project. This paper will focus on approaches to answering the second kind of question. While both questions are interesting and important, the second is more directly relevant to the evaluation of projects such as the World Bank might undertake.

3. **Cost-benefit vs cost-effectiveness.** In dealing with cultural heritage, one often encounters sites or artifacts that many people would argue are so valuable they should be conserved at all costs, because of their uniqueness or transcendent significance. In such cases, the appropriate approach to the analysis is one of *cost-effectiveness* rather than cost-benefit; that is, the issue becomes one of finding the cheapest and most effective way of achieving the conservation objective. The number and size of sites at which this approach is possible will likely be limited, however, by the scarcity of available conservation resources. Moreover, a cost-effectiveness approach becomes of little use when there is a broad range of choice on the degree and nature of improvements that might be undertaken. Uniqueness might justify some minimal level of protection and conservation, but additional expenditures are probably best subjected to cost-benefit tests. The discussion in this paper focuses on decisions for which cost-benefit analysis is the appropriate criterion.

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1818 H Str NW, Washington DC 20433, USA, Tel.202-458-2997, E-mail spagiola@worldbank.org

Categories of value

4. Cultural heritage sites differ from other sites because of their aesthetic, historical, cultural, and/or social significance. Cultural heritage projects will have a wide range of effects. Some of these will be directly related to the cultural heritage dimension of the site, others will not, while yet others will be mix of both. In similar circumstances, environmental economists generally take a comprehensive look at value, using the concept of **total economic value** (TEV).[1] Total economic value is usually decomposed into a number of categories of value. The breakdown and terminology vary slightly from analyst to analyst, but generally include (i) extractive, or consumptive, use value; (ii) non-extractive use value; and (iii) non-use value. The former two are generally referred to together as "use value". Each is often further subdivided into additional categories. By disaggregating the value of a cultural heritage site into various components, the problem generally becomes far more intelligible and tractable.

Extractive use value

5. Extractive use value derives from goods which can be extracted from the site. In the context of a forest, for example, extractive use value would be derived from timber, from harvest of minor forest products such as fruit, herbs, or mushrooms, and from hunting and fishing. This category of value is generally the easiest to measure, since it involves observable quantities of products whose prices can usually also be observed. Even when prices cannot be observed (for example, products harvested for home consumption), there are generally-accepted and reliable ways to estimate the value of the products (for example, by using the value of close substitutes or the cost of collection). In this area, the contribution of environmental economists has generally taken the form of predicting how either the quantities or the prices of goods extracted will change over time. Over-harvesting, for example, might result in a long-term reduction in the production of harvestable products. This category of use value appears to be of little relevance to the problems of cultural heritage sites and will not be discussed further.

Non-extractive use value

6. Non-extractive use value derives from the services which the site provides. For example, wetlands often filter water, improving water quality for downstream users, and national parks provide opportunities for recreation. These services have value but do not require any good to be harvested. Some types of non-extractive use may, however, require someone's physical presence. For example, people can only take advantage of the recreational value provided by a forest by physically visiting it. Measuring non-extractive use value is often considerably more difficult than measuring extractive use value. The 'quantities' of the service being provided are often hard to measure. Moreover, many of these services often do not enter markets at all, so that their 'price' is also extremely difficult to establish. The aesthetic benefits provided by a landscape, for example, are non-rival in consumption, meaning that they can be enjoyed by many people without detracting from the enjoyment of others. (This is not true of all non-extractive services, however; recreational value is subject to congestion, for example.) A substantial part of environmental economics has been devoted to the problem of valuing such services, and a variety of methodologies have been developed in an effort to do so. This category of use value is very relevant to many aspects of cultural heritage sites, and will form a key part of the discussion that follows.

1. See, for example, Pearce and Warford [1993].

7. Among the non-extractive use values generally considered in environmental economics, those which are likely to have the most relevance to cultural heritage sites are aesthetic and recreational value.

(a) **Aesthetic value.** Aesthetic benefits are obtained when "the fact of sensory experience is separate from material effect on the body or possessions" [Graves, 1991]. Aesthetic effects differ from non-use value because they require a sensory experience. However, aesthetic benefits are often closely linked to physical ones.

(b) **Recreational value.** Although the recreational benefits provided by a site are generally considered together as a single source of value, they are in fact a result of a number of different services which a site might provide. The extent of recreational benefits depends on the nature, quantity, and quality of these services. Thus, a protected area might provide trails for hiking, areas for swimming, mooring points for fishing boats, and so on; the enjoyment derived by visitors from each of these will depend on such factors as the cleanliness of the water. Again, disaggregating the benefit into components eases the task of valuing it.

Non-use value

8. **Non-use value** derives from the benefits that a site may provide which do not involve using the site in any way. In many cases, the most important such benefit is **existence value**: the value that people derive from the knowledge that the site exists, even if they never plan to visit it. Thus, people place a value on the existence of blue whales even if they have never seen one and probably never will; if blue whales became extinct, many people would feel a definite sense of loss. Other aspects of non-use value include **option value**, which is the value obtained from maintaining the option of taking advantage of a site's use value at a later date (akin to an insurance policy), and **quasi-option value**, which derives from the possibility that even though a site appears un-important now, information received later might lead us to re-evaluate it. Non-use value is the most difficult type of value to estimate, since in most cases it is not, by definition, reflected in people's behavior and is thus wholly unobservable. This category of value also has obvious relevance for the assessment of cultural heritage sites.

Other benefits

9. **Environmental problems at the site.** In addition to helping evaluate the benefits provided *by* the site itself, environmental economics techniques can also be useful for evaluating the impact of changes in environmental problems *at* the site. Air and water pollution, for example, will affect the health of residents. To some extent, the benefits of actions to address these problems can be valued separately, just as they would if the site did not have cultural significance. In some cases, however, the impact of these problems will be closely intertwined with those of the cultural heritage site *per se*. The enjoyment derived by visitors, and hence their willingness to pay for it, will be adversely affected by air pollution, for example.

10. **Other benefits.** Some project activities are also likely to have impacts which are essentially unrelated to the cultural heritage nature of the site. Improving telephone lines, for example, will make communications easier for residents but is unlikely to either enhance or detract from cultural heritage *per se*. The benefits (or costs) of these activities should definitely be considered in the economic analysis, using standard techniques to evaluate them. In some cases, however, these other benefits are affected by their location in a cultural heritage site. The benefit of reducing the incidence and damage of fires will be higher, for example, if the buildings saved are architecturally important than if they are not, holding other factors such as the size of the building and their contents constant. Sometimes the standard techniques can allow for this. In the case of buildings saved from fire, for example, at least some of their architectural value is likely

to be embodied in their sale price. If property values are used to estimate the benefits of improved fire protection, therefore, architectural value will (at least partially) be accounted for.

Trade-offs

11. The different categories of value do not necessarily increase together. Indeed, there may be important trade-offs between different types of value. For example, the infrastructure required to make recreational use of a site possible may have adverse aesthetic impacts; architectural constraints imposed to maintain the character of an urban cultural heritage site might prevent residents from making desired changes. Careful planning can reduce the extent of any trade-offs, but they usually cannot be entirely eliminated.

Benefits for whom?

12. It is very important to establish which groups would be affected by the project, and in what ways. The value placed on different aspects of cultural heritage often depends on preferences, which are likely to vary across groups. The value derived by a group will further depend on its members' exposure to the sources of value; even if their preferences are identical, for example, residents of a site will derive greater benefits than occasional visitors. The size of each group receiving benefits will determine the magnitude of total benefits. In addition, data collection is often most conveniently organized according to beneficiary group (especially in the case of survey techniques). At a minimum, the analysis generally needs to distinguish three groups:

(a) **Residents of the site.** Since residents live on the site, they are able to benefit from any use value year-round. They may also experience more directly any trade-offs between conflicting objectives at the site.

(b) **Visitors.** Since they visit the site, visitors also receive use benefits, although not necessarily the same ones as residents.

(c) **Others.** To the extent that they might visit the site, they have option value on its continued existence. To the extent that they do not, they only have existence value.

A finer breakdown is often useful. It may be useful to distinguish poor from rich residents, for example, or residents working at the site from those working elsewhere. Likewise, there may be different categories of visitors.[2]

13. Where the site is of international concern, distinguishing nationals from foreigners is often necessary, for two reasons. First, foreigners are likely to have different preferences from nationals and may, therefore, value the services provided by the site differently. Second, the benefits obtained by foreigners will only be partially captured by the nation in which the site is located. These issues are discussed further below.

14. For cultural heritage sites in developing countries, a useful minimal breakdown would probably consist of: residents, non-residents nationals, tourists, and others. Nationals, whether resident or not, probably place a similar value on the site's existence; only residents, however, receive any significant use value. If in-country tourism is significant, then national visitors should probably be added as a separate category. Among foreigners, tourists visit the site and thus receive some use value, part of which will be

2. Distinguishing different categories of visitors and estimating the value they derive from different aspects of the site may be particularly useful during project design, to aid in targeting project activities. Project planners, for example, may wish to encourage high-end, high-cost tourism rather than mass tourism.

captured in-country. Foreign non-visitors may well place a high value on the site's existence, but this will not be reflected in any benefits to the country unless they come in the form of grants.

15. **Incentive problems.** Distinguishing between different groups is also important because the distribution of costs and benefits is often uneven across groups, which will affect incentives to participate in or oppose the project. Ensuring that groups which are expected to play an important role in the project obtain positive benefits is likely to prove vital to successful implementation. Likewise, the economic analysis can help predict whether opposition is likely from groups which have the capability to stall or derail the project if they do not benefit from the project or are harmed by it.

16. **Distributional issues.** The uneven distribution of costs and benefits across groups may also have important equity considerations. In particular, poor people may not have the ability to oppose projects which penalize them.

Project effects

17. As in any cost-benefit analysis, the essential first step is to define what would happen with and without the proposed project, including any induced effects on private sector activity. Without a clear understanding of how the project would affect the site (for good or ill), no economic analysis is possible.

18. **Without project.** The situation without the project might take a number of forms, but generally intervention is motivated by either (i) on-going decay; or (ii) poor conditions because of past decay. The decay might be physical (eg houses and infrastructure crumbling), aesthetic (for example, billboards and neon signs everywhere), or both. There might be loss of population, making the site an empty shell, or conversely there might be overpopulation leading to congestion. Unplanned development may be altering the character of the site substantially. Conditions for people living at the site and/or visiting it might be poor (for example, because of crowding, noise, or poor hygiene). The site might be vulnerable to disasters (for example, because of the difficulty of fighting fires). Some of these conditions (such as physical decay, poor living conditions, and vulnerability to fire) result in tangible economic costs, others result in a reduction in the cultural, historical, or aesthetic value of the site. The levels and rate of decay of different benefits probably vary considerably and need not be correlated. If the problem is one of on-going decay, it is important to have some sense of the rate of degradation. The consequences of each of these problems for the different sources of value generated by the site must be determined. For example, decaying housing will reduce the use value derived by residents and may adversely affect the aesthetic benefits of both residents and visitors; congestion will reduce the value of recreational benefits; noise and poor hygiene will reduce aesthetic and recreational benefits and increase morbidity.

19. **With project.** The project will consist of a number of activities. What needs to be established, however, is the impact that these activities will have on conditions at the site and hence on the various sources of value produced by the site. Presumably any proposed project would seek to either slow, arrest, or reverse degradation at the site. Benefits, therefore, might come in the form of either averted costs or increased benefits. The specific design of the project matters, since it determines which benefits increase, by how much, and who receives them. Trade-offs between objective should be noted and examined. Since benefits will not occur instantaneously, it is important to have a sense of the time horizon within which benefits will be obtained. Again, the specific improvement in various categories of value resulting from project activities must be determined.

20. **Project costs.** Two categories of costs must be considered when evaluating projects involving cultural heritage. The first is the cost of the proposed project activities. The second is the opportunity costs

of any activities that must be curtailed or modified because of the project. The costs of establishing a protected area, for example, is not limited to the cost of managing the area and protecting it from encroachment, but also the opportunity cost of forgone logging and use of the area for agriculture. Thus, if conservation of a cultural heritage site precludes development of that site for some alternative purpose (for example, construction of housing), then the opportunity cost of this forgone development should be included with project costs (based on the net present value of the benefits the development would have generated). If the forgone development can be relocated elsewhere, then only the difference in costs between building it at the cultural heritage site and building it elsewhere should be included.

Methodologies

21. As a result of previous exercise, the analyst should have at this point a list of expected project impacts, classified according to the type of value they are likely to affect and the beneficiary group. This section discusses several methods used by environmental economists to evaluate the benefits provided by a site which are likely to prove especially useful in the valuation of cultural heritage sites. The discussion of each technique is necessarily very brief. In each case, the basic principles of the technique, the assumptions and data required, and the use and interpretation of results is explained.[3]

22. Before proceeding, it is useful to distinguish among the methodologies in several ways. First, the methodologies differ in their intent. Some aim to measure values directly; others aim primarily at distinguishing the contribution of different dimensions of value. Both can be useful. For aspects of cultural heritage can only be measured directly, the first group of techniques is most appropriate. In other cases, however, what we need is a way to modify other measures of value to allow for the additional dimension provided by cultural heritage, as in the example given above of estimating the value of damage resulting from fire destroying a building. Second, the methodologies differ in whether they attempt to deduce valuation from observed behavior or rely on direct questioning of consumers.

Market-price methods

23. Although many benefits of cultural heritage sites do not enter markets, some do. The most obvious example is when visitors pay a fee to enter the site. The revenue generated from such fees provides a direct measure of the value people place on being able to visit the site. Some uses of cultural heritage sites have close substitutes which can be used to estimate the value of those uses. Thus, the value of using a historic building as a school might be estimated using the cost of the next-best way to obtain the necessary space (for example, the cost of building and equipping a suitable structure). Cultural heritage sites might also induce a variety of economic activities, again most obviously in the tourism industry (hotels, restaurants, shops). Standard techniques can be used to value these benefits. The difficulty generally arises in predicting the impact that changes in the cultural heritage site will have on the quantity of such services, not in estimating their value.

24. **Replacement cost.** The cost of replacing a good is often used as a proxy for its value. This approach has two problems, however. First, since cultural heritage sites are often thought to be essentially irreplaceable, replacement may not be possible. Where the site is only damaged, restoration cost might be

3. References to detailed sources on each technique are provided in footnotes to each. For a general survey of techniques used in valuing environmental benefits, see Dixon et al [1995]. For a more detailed exposition of the use of many of these techniques, see Hufschmidt et al [1983]. For a technical discussion of the economic theory behind many of these technique, see Braden and Kolstad [1991]. Hanemann [1992] provides a historical account of the development of several environmental valuation techniques.

used. Second, this measure begs the question. If the point of the exercise is to decide whether a site is worth restoring, using the restoration cost as a measure of value is clearly of little use. This measure may be appropriate for some critical aspects of the site, however, where the value might reasonably be thought to be extremely high. In such cases, however, the appropriate approach is one of cost-effectiveness rather than cost-benefit.

Travel cost[4]

25. **Basic principles.** The travel cost (TC) method is an example of a technique that attempts to deduce value from observed behavior. It uses information on visitors' total expenditure to visit a site to derive their demand curve for the site's services. The technique assumes that changes in total travel costs are equivalent to changes in admission fees. From this demand curve, the total benefit visitors obtain can be calculated. (It is important to note that the value of the site is *not* given by the total travel cost; this information is only used to derive the demand curve.)

26. **Applications.** The travel cost method was designed for and has been used extensively to value the benefits of recreation.[5]

27. **Data requirements.** Data on the travel costs of visitors are required. These are collected through surveys on the site.

28. **Limitations.** The travel cost method depends on numerous assumptions, many of which are problematic in the context of international tourism. The basic technique generally assumes that travel cost is proportional to distance from the site and that people living at the same distance from the site have identical preferences. Neither assumption is plausible in the case of international tourism. The technique also assumes a single-purpose trip and encounters difficulties when trips have multiple purposes. It should also be borne in mind that the resulting estimates are site-specific.

Hedonic methods[6]

29. Hedonic models have been widely used to examine the contribution of different attributes to prices for housing and to wage levels, including the contribution of environmental quality.

30. **Basic principles.** Many observed prices for goods are prices for bundles of attributes. For example, property values depend on physical attributes of the dwelling (such as number and size of rooms, amenities such as plumbing, condition); on the convenience of access to employment, shopping, and education; and on a number of less tangible factors such as environmental quality. Since each house will differ slightly from others, the influence of the various factors on its price can be broken down statistically, provided sufficient observations are available. This approach is of interest because many dimensions of cultural heritage are likely to be embodied in property values. An aesthetically pleasing home, for example, should sell for more than a plain one. Hedonic techniques allow this effect to be measured, holding other factors such as size and amenities constant. In essence, the technique estimates the implicit prices for various attributes, which

4. The theory and application of TC methods are described fully in Hufschmidt [1983]. For numerous examples of the application of TC methods to value recreational benefits in Europe, see Navrud [1992].

5. For a recent examples of the application of travel cost methods to environmental problems in developing countries, see Menkhaus and Lober [1996], on the valuation of tropical rainforests in Costa Rica.

6. Palmquist [1987] reviews the theory that forms the basis of hedonic estimation.

together make up the sale price. These prices can be used directly to estimate the impact of marginal changes. For non-marginal changes, additional steps are needed.

31. **Applications.** There have been several applications of hedonic techniques to the valuation of aesthetic benefits.[7] However, such applications are difficult because the technique relies on existing data and aesthetic attributes are rarely measured—or even measurable. The vast majority of applications, however, has been to the study of urban amenities.[8] Many of these have to been to problems likely to be encountered at cultural heritage sites, such as noise and air pollution.

32. **Data requirements.** Hedonic methods require observations of the prices of goods and of the attributes of these goods. To enable the effect of the many different factors to be distinguished, large data sets are needed.

33. **Limitations.** These techniques encounter numerous conceptual and practical problem. First, the technique assumes that markets work well, so that prices reflect consumers' willingness to pay for different attributes. This may not always be the case. In some cases, several markets operate simultaneously (for example, wage and housing markets), in which case the technique must be applied to both markets together to avoid mis-measuring the benefits. Second, the specific dimension of interest cannot always be clearly distinguished. While physical attributes are easy to observe and measure and so can easily be used as explanatory variables, this is seldom true of differences in less tangible attributes. Some attributes, such as location (inside or outside the site), can be observed and entered into the statistical estimation as explanatory variables, but they are often themselves bundles of attributes. Others, such as aesthetic quality, are highly subjective and have no obvious scale to permit quantitative comparison. In many cases, therefore, all that is possible is to measure the 'residual': the fraction of the price that is left unexplained after all measurable attributes are allowed for. Ascribing this residual solely to cultural value requires assuming that all other relevant attributes have been accounted for. Third, hedonic price techniques are extremely data-intensive, since large number of detailed observations are required. Finally, hedonic techniques have often proven to be extremely sensitive to model specification.

Contingent valuation[9]

34. **Basic principles.** Contingent valuation is carried out by asking consumers directly about their willingness-to-pay (WTP)[10] to obtain an environmental good. A detailed description of the good involved is provided, along with details about how it will be provided. The actual valuation can be obtained in a number of ways, such as asking respondents to name a figure, having them chose from a number of options, or

7. For a review, see Graves [1991].

8. See Bartik and Smith [1987] for a review.

9. A vast literature has developed on contingent valuation techniques. The standard text is Mitchell and Carson [1989]; for a more theoretical exposition, see Carson [1991]. The technique has long been controversial (see, for example, Hausman [1993]). A 'blue-ribbon' panel was organized by the US Department of Interior following controversy over the use of CV to value damages from the 1989 Exxon Valdez oil spill. The report of this panel (NOAA [1993]) is generally regarded as authoritative on appropriate use of the technique.

10. Two basic measures of the value consumers place on a good exist: their willingness to pay (WTP) to obtain it, and their willingness to accept compensation (WTA) for losing it. In practice, WTA usually turns out to be greater than WTP. Much of the environmental literature is devoted to analyzing the loss of environmental benefits, for which WTA is the theoretically correct measure. Nevertheless, many analysts use WTP for convenience or on the grounds that it is 'conservative.' In the case of the discussion here, in which interest focuses on investments which will increase benefits, WTP is the theoretically correct measure.

asking them whether they would pay a specific amount (in which case, follow-up questions with higher or lower amounts are often used).[11]

35. **Applications.** CV can, in principle, be used to value *any* environmental benefit. Moreover, since it is not limited to deducing preferences from available data, it can be targeted quite accurately to ask about the specific changes in benefits that the proposed project would result in.

(a) **Aesthetic benefits.** CV methods have long been used to examine aesthetic benefits; indeed, some of the earliest applications of CV were to aesthetic benefits. The need to describe the proposal being studied is particularly difficult in the case of aesthetic benefits (except perhaps when the benefits involved are purely visual, in which case photographs can be used). Since aesthetic attributes are difficult to measure, it is difficult to use hedonic techniques. Graves [1991] finds that CV has more to offer for the measurement of aesthetic benefits than hedonic techniques, since it (i) allows a sharper definition of aesthetic dimensions, (ii) generates data rather than relying on proxies; (iii) imposes few assumptions, except that intentions accurately reflect actions; and (iv) yields plausible results.

(b) **Existence value.** CV is especially important in the estimation of existence value, as it is the only way by which existence value can be measured, since by definition existence value will not be reflected in behavior.

(c) **Other benefits.** In developing countries CV has been used primarily to value publicly or privately provided goods such as water supply and sewerage in areas without existing services.[12]

36. **Data requirements.** A survey must be conducted. Because of the need to describe in detail the good being valued, interviews are often quite time-consuming. It is also very important that the questionnaire be extensively pre-tested to avoid various sources of bias (see below).

37. **Limitations.** CV methods have been the subject of severe criticism by some analysts. Critics argue that responses are likely fail to reflect respondents' true valuation because respondents do not take the exercise seriously, because of various sources of bias (in the questionnaire, by the interviewer, by the respondent), or because of misunderstandings over what is being asked. The pattern of responses has often seemed to be in conflict with the tenets of rational choice. Moreover, when CV is used to estimate existence value, the results cannot be validated by cross-checking with other evidence. Despite these criticisms, CV has been widely used and it is generally accepted that it can provide useful and reliable information as long as certain procedures are followed: the questionnaire should fully inform respondents of the particular good being valued (including possible substitutes), of the proposed change, and of the way in which payment would hypothetically be collected. Respondents must also be reminded of their budget constraints. Where possible, the CV instrument should lean towards conservatism. This is especially important since CV methods are often thought to over-estimate benefits.

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11. The blue ribbon panel on CV [NOAA, 1993] recommended that respondents be asked whether they are willing to pay specific amounts, since this approximates a referendum question. The panel thought that familiarity with responding to this type of question in referenda increased the likelihood that respondents would answer appropriately. This rationale may not be as compelling in a developing country context.

12. For example, Whittington, Lauria, and Mu [1991] use CV methods to estimate consumers' WTP for piped water in Onitsha, Nigeria.

Benefits transfer[13]

38. Benefits transfer is not a methodology per se, but rather refers to the use of estimates obtained (by whatever method) in one context to estimate values in a different context. For example, an estimate of the benefit obtained by tourists viewing wildlife in one park might be used to estimate the benefit obtained from viewing wildlife in a different park. Benefits transfer has been the subject of considerable controversy in the economics literature. A consensus seems to be emerging that benefit transfer can provide valid and reliable estimates under certain conditions. These include that the commodity or service being valued is identical at the site where the estimates were made and the site where they are applied; and that the populations affected have identical characteristics. Since cultural heritage sites are often unique, these conditions seem to hold out little hope for successful benefits transfer. Yet there may be many aspects for which the conditions could plausibly be thought to hold, especially when considering benefits associated with international tourism. Since tourists at one site are likely to be drawn from the same pool of potential tourists as those at another site, it seems reasonable to assume they would place similar values on similar services. Thus, while this approach is probably of little use in valuing unique aspects of the site, it could be used for more generalized aspects such as landscape. Of course, the original estimates being transferred must themselves be reliable for any attempt at transfer to be meaningful.

Overview

39. The choice of technique depends on the specific problem being studied. Except in very simple situations, however, it is likely that a variety of techniques will be necessary to estimate the full range of benefits. Moreover, where substantial investments are contemplated, it might be desirable to cross-check estimates by deriving them from multiple sources. When bringing together the results of multiple techniques, two important points should be borne in mind:

(a) **Under-estimation.** Inevitably, some types of value will prove impossible to estimate using any of the available techniques, either because of lack of data or because of the difficulty of extracting the desired information from them. To this extent, and estimates of value will under-estimate the total value; the estimates of project benefits will, therefore, be conservative.

(b) **Double-counting.** The likelihood that total benefits will be under-estimated because some benefits cannot be measured is well-recognized. Less well recognized is the opposite danger: that benefits (even if accurately measured) might be over-estimated because some benefits are counted twice. An example will illustrate the problem. Suppose that the project aims to reduce air pollution at the site by relocating or shutting down polluting activities. The benefit of this reduction could be estimated by predicting the reduction in the prevalence of respiratory illnesses and valued using the reduction in treatment costs. At the same time, suppose that a hedonic technique is used to estimate the value of overall environmental quality. Since air pollution is part of environmental quality, treating these two estimates as though they described separate problems and adding the corresponding benefits together would be inaccurate.

13. A special issue of the Water Resources Research was devoted to benefits transfer, and provides the best available overview of the conceptual and empirical issues involved; see Brookshire and Nell [1992] and the following papers in that issue.

Tourism

40. Many cultural heritage sites are important tourist destinations. Although the methodologies used to value benefits derived by tourists and residents are the same, several complications arise. The economic theory implicit in most valuation techniques assumes that any benefit to a member of a society is counted the same; when the total benefit of a project is calculated, it does not matter who receives a benefit as long as somebody does. In fact, any transactions which are simply transfers from one member of society to another (for example, any taxes paid by citizens to their government, and any subsidies paid by governments to their citizens) are explicitly excluded from the analysis.[14] This assumption carries through in the methodologies discussed here. The travel cost method, for example, estimates the total benefit obtained by visitors to a recreational site. Since the technique was developed in the US to examine the benefits of publically-provided sites visited primarily by US citizens, it did not matter that most of the benefits were not in fact captured by the site. As long as US citizens could be shown to benefit, the rationale for US government provision of these services was clear. Similarly, CV measures how much consumers are willing to pay, not what they actually pay. Again, the implicit assumption is that respondents are citizens of the country in which the benefit is being provided. When many beneficiaries are not citizens, however, counting all benefits as accruing to the society undertaking the project is incorrect, since many of these benefits will be enjoyed by non-members. Only that fraction of benefits which is captured locally should be counted when computing the returns to the project. From the point of view of the country, any benefits which are not captured locally are an externality. In the same way, project analysis for other activities which have significant global benefits, such as carbon sequestration or biodiversity conservation, notes but *does not count* these benefits, unless grants are received (for example, from GEF) for that purpose. This clearly creates the possibility that, from a global perspective, investment in cultural heritage will be too low.

41. In light of this problem, the results of CV and TC methods must be re-interpreted when they are applied to foreign tourists. What they show is the total benefit the tourists receive, not what the country receives. However, these estimates indicate the potential benefit that the country could receive. This information is extremely important in setting the level of entrance fees or tourist taxes aimed at capturing the benefits locally.[15]

Bringing the pieces together

42. For any given project the first step, as discussed above, is to have a clear sense of what would happen with and without the project. The various effects are then classified in terms of what kind of benefit is involved. The project costs are then calculated, including any opportunity costs. Since most costs depend directly on project activities, they are generally very well known.

43. The process of evaluating the benefits of the project then begins by estimating the value of the benefits which are *easiest* to measure—usually various kinds of extractive use values, or any benefit which is measured primarily with market-based techniques. If these benefits alone are sufficient to justify the project costs (according to some agreed criteria for what constitutes 'sufficient'), then the analysis can stop. There would be little point in spending further effort to measure things which are difficult to measure, since the decision to undertake the project would not change. Any additional benefits are noted qualitatively, but

14. For a discussion, see any project analysis textbook, for example Gittinger [1982].

15. Because foreign tourists are generally both willing and able to pay substantially more to visit cultural heritage sites, calls are often made for separate pricing schemes, with lower rates for nationals or for certain target groups (such as schoolchildren).

not measured. If the benefits that are easy to measure are insufficient to justify the project by themselves, then efforts are made to measure the next-hardest category of value—usually various kinds of non-extractive use values. Again, the process stops as soon as sufficient benefits are found to justify the project. If all categories of benefits have been measured as well as possible and the project is still not justified, then the project is abandoned or modified so as to be cheaper or more effective.

44. More commonly, however, there will often prove to be some categories of value which simply cannot be estimated from available data. If these categories of value are nevertheless thought to be important, what is one to do? The general approach is to subtract all benefits that have already been identified from project costs, to arrive at an estimate of the costs which still need to be covered. This estimate provides a lower bound for the value of what the un-measured benefits would have to be for the project to be justified. It thus provides a specific metric to which decision-makers can subjectively compare their perception of what the unmeasured values might be, if only they could be measured. If this number is small, it might be thought likely that the un-measured values exceed it and the project can proceed. If this number is very large, on the other hand, then it may be preferable to postpone undertaking the project until additional data is obtained to provide a better estimate of the still unquantified benefits. Of course, 'small' and 'large' will necessarily be subjective judgements, although they might be informed by comparisons to other cases.

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