

**TOPIC AREA:** Assessment, Appraisal and Scenarios ( subset E.1)

**THE REALITIES OF USING ‘BENEFIT TRANSFERS’ IN TRANSPORT DECISION-  
MAKING**

Kenneth Button

*Professor of Public Policy, The Institute of Public Policy, George Mason University,  
Fairfax, VA 22030-4444, USA.*

and

Peter Nijkamp

*Professor of Economics, Department of Spatial Economics, Free University of  
Amsterdam, De Boelelaan 1105, NL-1081 HV Amsterdam, Netherlands.*

# THE REALITIES OF USING 'BENEFIT TRANSFERS' IN TRANSPORT DECISION-MAKING

Kenneth Button and Peter Nijkamp

## 1 INTRODUCTION

There is an increasing demand, often in the form of a statutory requirement, for transport decisions to be made in the light of some form of what may generically be called cost benefit analysis (CBA)<sup>1</sup>. The actual techniques may vary and often deviate quite significantly from the conventional economic concept of CBA but in all cases the procedures tend to be information intensive. In some cases standardized parameters are used, the COBA method long favored in the UK for trunk road appraisals being an example<sup>2</sup>, but often specific studies are performed. In these latter cases the studies are lengthy and generally financially costly. To reduce these problems there has been an increasing advocacy of 'benefit transfers'<sup>3</sup> being deployed. This involves taking parameters such as elasticities or valuations of externalities from one study and applying them to another.

This paper explores the validity of the benefit, or value, transfer approach from both a theoretical and an empirical perspective. In particular, it examines the extent to which it is legitimate to transfer parameters from one case and apply them to another and to isolate the conditions under which such transfers may sensibly be made.

It proceeds by looking at the underlying nature of benefit transfer and considers some of its advantages and limitations. The attention is focused on the various ways in which the input to benefit transfers may be derived and reviews the merits of each. This leads to a discussion of the possibilities of improving the ways information may be synthesized to arrive at more acceptable values for transfer.

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<sup>1</sup> This is not, however, without its critics – see Hoehn and Randall, 1989).

<sup>2</sup> Although COBA is only a partial form of CBA, see UK Department of Transport (1992).

<sup>3</sup> The term benefit transfer is used in this paper because of the origins of current procedures that are derived from work in the environmental field, although a more strict terminology would be value transfer.

## 2 BENEFIT AND VALUE TRANSFER

A relatively new methodology for environmental impact analysis – benefit or value transfer – has been seen to offer the potential to revolutionize how government and private industry approach the issue of environmental protection, with particularly important implications for geographical and regional perspectives on the topic. Benefit transfer can produce major efficiencies in the preparation of environmental impact statements, while at the same time enhance the ability of regulatory bodies to provide needed environmental safeguards.

The term benefit transfer was initially used in connection with the transfer of information about environmental benefits and costs from one situation, where original research was carried out, to another situation<sup>4</sup>. For example, a study of airport noise impacts on one community, that surrounding say Dulles International Airport in the Washington region, will generate information that might be applied to an environmental impact statement required for an airport extension in a comparable region, say, Seattle. The use of these types of benefit transfer could obviously save enormous amounts of research time, speed up decision making while, if properly handled, providing nearly as accurate information as if original research had been carried out<sup>5</sup>.

Such savings are particularly important since the cost of conducting research supporting policy formulation is increasing, in large measure because of the greater sophistication required in the research process. Fortunately, the information age in which we live permits more efficient use of research, through making it relatively easy to store and retrieve information when it is needed. Such retrieval is important not only because it can provide guidelines as to what is already known or what we still need to know, but also it can pinpoint procedures and techniques that offer the most effective ways for carrying out new research. At present, however, methods for reliable benefit transfers are far from fully developed<sup>6</sup>.

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<sup>4</sup> In some cases it is referred to under the more general title of value transfer. Brookshire and Neill (1992) define benefit transfers as, "...an application of a data set that was developed for one particular use to a quite distinct alternative application". Boyle and Bergstrom (1992) talk of "...the transfer of existing estimates of non-market values to a new study which is different from the study for which the values were originally estimated...(T)his is simply the application of secondary data to a new policy issue". This is the broad form of definition adopted in other studies, e.g. Opaluch and Mazzota (1992).

<sup>5</sup> Demand for valuation studies in the US rose at the federal level with the enactment of Executive Order 12291 that caused the Environmental Protection Agency to use benefit cost analysis to assess policy (Freeman, 1984). The European Union has also funded work in this field as part of its initiative to standardize the way environmental policy is appraised across member states.

<sup>6</sup> McConnell (1992) essentially argues that, at present, benefit transfer is rather more an art than a science and, "(t)here is no simple, acceptable way mechanically to transfer a model".

The underlying idea of benefit transfers is that one can take findings or parameters from one case study and adopt them to assist in policy making elsewhere. Benefit transfers involves deploying valuations based on primary data gathering in a specific study to estimate changes in consumer's surplus with regard to another policy.

The implicit assumption in doing this is that parameters derived in one location, at one time and for one type of policy making decision, can legitimately be employed in other decision making exercises. This implies that either is some common parameter applicable to all studies or at least one can explain variations between studies so that parameters taken from one exercise can adequately be modified to be used in a second exercise. If neither of these conditions hold, original independent analyses may be required for each case study.

The issue is one of degree. No modelling exercise produces a completely accurate picture, and benefit transfers are no exception. The practical point is whether benefit transfers provide sufficiently acceptable accuracy for the task at hand. Indeed, acceptance criteria is likely to differ quite considerable across a range of applications (Smith, 1992)<sup>7</sup>.

Conceptually, benefit transfer is not a particularly new idea, and economists have a long tradition of applying parameters such as demand elasticities in consumer analysis or input-output coefficients in macroeconomic policy assessments in work other than that from which they were initially derived. Even in public appraisal procedures where non-market factors are of importance, internationally benefit transfer has a long pedigree; in the UK's, Department of Transport's computerized COBA framework of road investment appraisal, for example, standardized values and parameters synthesized from previous studies are often included in the benefit cost calculus. This has included values for reduced risks of accidents, for travel time savings and for changes in vehicle operating costs. In the US, unit-day values were used as early as 1962 to evaluate recreational resources.

The recent interest in benefit transfer is mainly associated with more fully incorporating environmental externalities into the benefit cost framework. The issue is whether one can legitimately transfer non-market valuations of these externalities, particularly those valuations deploying stated preference (contingent) valuation techniques that have become a major focus of the literature (O'Doherty, 1995). This may be seen as a belated switch in emphasis from methodological concerns about intellectual legitimacy of alternative non-

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<sup>7</sup>. Brookshire (1992) offers some guidance as to the degree of accuracy required in estimated benefits and costs according to the use they are put to. These consideration may influence the extent to which benefit transfers may be deemed acceptable.

market evaluation techniques to questions of application and policy relevance of empirical findings.

While there have been important developments in evaluation methods in terms of revealed and stated preference methodologies, external environmental costs and benefits are often given only sparse and partial coverage in many benefit cost analyses. Increasing public concern about environmental implications of various policy options is leading to a broader approach to benefit cost analysis being sought. This is also taking place at a time when many inter-governmental (ranging from the European Union to World Bank), national and local agencies are being committed to the adoption of comprehensive appraisals of policy options and project proposals.

From a pragmatic perspective, benefit transfer has a number of attractions. In terms of financial expediency, taking parameters from one study or a synthesis of a set of previous studies and employing them more widely is much less costly than conducting separate evaluations for each individual decision made. Linked is a growing body of studies providing estimates of case specific parameters, and it appears sensible to see if they can usefully be mined for additional and useful insights (van den Bergh *et al*, 1997). Benefit transfer can also help streamline decision making. Deploying previously derived monetary valuations estimates of environmental externalities can significantly speed up what is often considered a lengthy process of information collection, collation, and analysis.

From a methodological viewpoint, benefit transfer may be seen to introduce a degree of consistency into decision making through the use of common parameters across studies. This may particularly relevant when the degree of accuracy in parameters does not have to be very high; as in the initial screening of projects. Luken *et al* (1992) for example, discuss benefit transfers in terms of establishing limits within which parameters may lie. It is also relevant when a large number of relatively standard but linked policy issues are being addressed.

Additional to public policy making, legal requirements to provide forms of compensation to those adversely affected by environmental degradation and legal processes often seek out evidence from earlier cases as precedents.

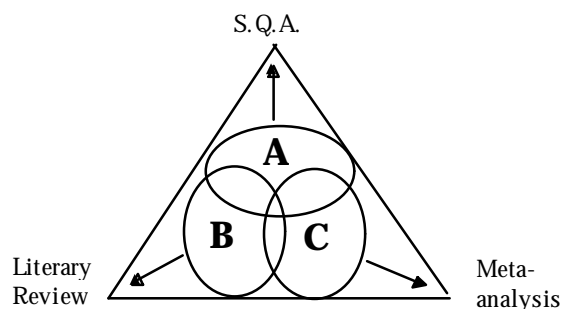
Benefit transfers, however, are not without their limitations. A central issue is the decision regarding which values can legitimately be transferred and which are study specific. In the latter case, benefit transfers may remain legitimate if appropriate adjustments can be made to allow for specificity in individual case studies. One criteria for deciding on the potential transferability of results is to examine the variability between previous case studies and to explore the extent to which that can be explained and allowed in subsequent transfers.

The benefit transfer studies that have been conducted to date have also not also produced consistent conclusions. In some instances it would appear that one can reasonable develop robust parameter estimates with a reasonable degree of generality from a set of previous studies (e.g. Smith and Huang, 1995; Smith and Haoru, 1990) but in other this seems to be less easily achieved (Johnson and Button, 1997; van den Berg *et al*, 1997). These differing conclusions may be the result of several factors. They may reflect for instance, differences in the quality of the meta-analysis *per se* and the techniques used. Alternatively they may reflect the ways in which the underlying set of case studies were selected. They may, also, however, reflect genuine differences in the quality of the underlying work in particular areas of environmental analysis and indicate that in some cases the use of transferring values may not be justified.

The identification of isolating those areas where benefit transfer is most valuable would seem an important one from a broader methodological perspective and also one that is central to the focusing of longer term research initiatives.

### 3 METHODOLOGIES

A critically important application of information storage and retrieval central to benefit transfer is the synthesis of previous findings. In practice, benefit transfer applications can be divided into three broad types: estimates based upon expert opinion; estimates based upon observed, revealed behavior; and estimates based upon stated, preference elicitation mechanisms (Brookshire and Neill, 1992)<sup>8</sup>. The distinctions, however, are somewhat blurred. Expert opinion, for example, is seldom formed in a vacuum but normally relies on judgments arrived at after assessing either revealed or stated preferences studies. The basis of these assessments are subjective and usually opaque. It is useful to consider, therefore, the attributes of each bearing in mind that in practice they tend to overlap (Figure 1)



**Figure 1.** Three faces of synthesis.

### **3.1.1 Literary reviews.**

The most widely used and longest established method for bringing together information from previous work is the literary review. The synthesizer produces a written text, supplemented by illustrative data of various kinds, in which findings of earlier studies are set out and compared, and judgments are made about the strength and quality of the various pieces of work being reviewed (Cooper, 1988).

A substantial problem with most such literary reviews is that they tend to be in the form of taxonomies of findings without any specific attempt to relate to the review's purposes. For instance, if the work is of an environmental economics orientation, it may provide lists of estimated price elasticities according to long or short term responsiveness, but no guidance is offered as to when any particular elasticity is relevant.

As well, there is often hidden subjectivity that tends to accompany a basic literary-type approach. Good reviews should indicate the position from which the reviewer is approaching a topic, rather than pretend that the exercise is totally value free (Cook and Leviton, 1980).

Additionally there is the problem that traditional reviewing, because it does not necessarily embrace sound statistical practice, is often scientifically unsound. A common problem is that, if a majority of studies come up with similar conclusions, these are accepted on a sort of voting basis, irrespective of the quality of the data used or reliability of techniques employed.

While literary reviews have weaknesses, their ability to handle a diversity of case studies of various sorts is of considerable value. Combining qualitative with intuitive findings is one of these virtues. A well-constructed literary review can also make explicit some of the key judgments the reviewer is making when selecting values and arguments.

### **3.1.2 Subjective quantitative assessment.**

In some cases, the most appropriate study technique may be to draw on the accumulated expertise of those knowledgeable in a subject area. Individuals working in a particular field often have good insights into 'ball-park' figures for important policy parameters, as well as ideas as to the direction these are likely to change over time. They are also often capable of giving some indication as to the importance of various policy responses.

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<sup>8</sup> Button (1998) provides an assessment of the pros and cons of each general approach and also highlights where each may have a comparative advantage.

The simple questionnaire is a common method of getting at this information and is a well established synthesizing tool (Oppenheim, 1992). Improvements in sophistication of this technique may occur through, for example, the way in which samples of experts are drawn up, and the way in which issues are raised<sup>9</sup>.

Delphi techniques have been developed to introduce a degree of interaction in situations where respondents' answers may be influenced by the views of others. Arriving at a consensus in such efforts can be difficult, and a degree of judgment is required in deciding when the repeated questioning process should be ended (Ono, 1994; Shields *et al*, 1987).

A major problem with such Subject Quantitative Assessments is their sensitivity to the selection of the panel of experts being consulted. Different categories of experts - e.g., academic and bureaucrats - can have fundamentally different views. For example, in the case of environmental policy, economists tend to favor fiscal instruments, whereas administrators tend to prefer command-and-control policy tools (Frey *et al*, 1985). A stratified sample may be logical, but this only limits the known bias that accompanies such sampling.

### **3.1.3 Meta-analysis.**

A final approach to the synthesis of analytic studies - and the one which perhaps provides the highest degree of analytical rigor - is meta-analysis<sup>10</sup>. It is, in simple terms, the use of formal statistical techniques to sum up a body of separate but similar studies. Glass [1976] provides a widely accepted formal definition:

Meta-analysis refers to the analysis of analysis ... the statistical analysis of a large collection of analysis resulting from individual studies for the purpose of integrating the findings. It connotes a rigorous alternative to the casual, narrative discussion of research studies which typify our attempt to make sense of the rapidly expanding research literature.

Used correctly, the meta-analytical approach can delve beneath the elaborate combinations of statistical procedures used in the modern sciences to isolate core assumptions or parameters (Hunter *et al*, 1982). Appropriate application of meta-analysis can, therefore, help to improve our understanding of economic analysis. It can enable us to make better use of prior information and knowledge. It can also help to remove some of the subjectivity from analysis and from forecasting, or at least make judgments more transparent, and lead to

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<sup>9</sup> An recent example of this approach in the context of sustainable development is Nijkamp *et al* (1997)

<sup>10</sup> Sturtevant *et al* (1995) specifically look at issues concerning the use of meta-analysis for benefit transfer exercises.



greater clarity as to where future efforts in environmental economic analysis can most gainfully be deployed. Finally, it may offer initial insights into phenomena of which no specific study has yet been conducted. It can thus help to pinpoint scientific, ethical and political biases in existing studies and provide more focused valuations of economic costs and benefits.

Meta-analysis can, therefore, help in the development of uniform structures for valuation and assessment, while at the same time providing researchers with a framework for standardization of research organization and output presentation. The concept of meta-analysis has an established pedigree in the natural sciences and in such social sciences as psychology, but its application in the field of economics has been comparatively limited. There has, in the context of urban environmental issue, been attention focused on the hedonic property-value models for estimating the marginal willingness of people to pay for reduction in the local concentration of specific air pollutants.

There has been meta-analyses of hedonic wage model studies, which assess values of life derived from wage compensation for different levels of risk encountered in various working conditions, has been performed. Studies using this approach consider measures of risk of death and exclude risks of injury. Recreational benefit losses have also been examined in some detail.

Table 1 offers a more comprehensive list of the meta-analytical studies that have been completed in the inter-related areas of environmental, regional, urban and transport economics<sup>11</sup>.

Four types of constraints are evident when trying to apply statistical meta-analysis to economic studies:

- In the medical field, where meta-analysis has most widely been applied, there is considerably more standardization in the way results are reported than in economics, and this difference is particularly pronounced in newer fields or where the range of topics under review has been the subject of rapid expansion, such as environmental economics.
- There is a tendency in economics and related areas only for positive results to be published, making it difficult to incorporate quite legitimate negative results in any overview. This limitation may be even more relevant for environmental economics, because it has relatively fewer specialized journals for dissemination of research results.

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<sup>11</sup> The use of meta analysis in economics has been surveyed generally by Button and Jongma (1995), in transport related environmental concerns in Button (1995) and Button and Kerr (1996), and in environmental economics more specifically by van den Berg *et al* (1997). Its use in environmental policy assessment is considered in Button and Nijkamp (1997)

- There are numerous consultancy studies undertaken in economics, by both the public and private sectors, that are not accessible for strict statistics-based meta-analysis. The result is the inevitable exclusion of a body of valuable information. In addition, problems of confidentiality are likely to arise in competitive markets, where information can confer market power, as well as in cases where release may lead to public concern. Even if these studies are made public, findings are often not presented objectively or in their entirety but rather are used as a vehicle of policy advocacy.
- In terms of need for similarity in output measures, there are areas where methodological problems exist in comparing economic impacts. This tends to be a particular problem when qualitative factors are involved or diverse units are used.
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**Table 1** Meta-analysis in environmental regional, urban and transport economics

Subject Area	Meta-Analysis
1. Urban pollution valuation	Smith (1989), Smith and Huang (1993), Smith and Huang (1995), Schwartz (1994) van den Bergh <i>et al.</i> (1997)
2. Recreational benefits	Smith and Kaoru (1990), Walsh <i>et al</i> (1989)
3. Recreational fishing	Sturtevant <i>et al.</i> (1995)
4. Valuation of life estimates	van den Bergh <i>et al.</i> (1997)
5. Contingent valuation versus revealed preference	Carson <i>et al.</i> (1996)
6. Noise nuisance	Nelson (1980), Button (1995), van den Bergh <i>et al.</i> (1997)
7. Congestion	Waters (1993), Button and Kerr (1996)
8. Internal validity of contingent valuation and visibility improvement	Smith and Osborne (1996)
9. Multiplier effects of tourism	van den Bergh <i>et al.</i> (1997)
10. Transport issues	van den Bergh <i>et al.</i> (1997)
11. Price elasticity of demand in travel cost method studies	Smith and Kaoru (1990)

*Source:* developed from van den Bergh and Button (1997)

One possible framework for looking at the potential deployment of meta-analysis and its ultimate usefulness in environmental economics is through stage-wise procedures. Thus, each of the following stages allows for a comparison between different environmental policy studies:

1. A description and definition of the problems which may arise at a scientific or policy level, and, if possible, a selection of the relevant problem and case-study areas.

2. A formulation of concrete research issues for which the investigation is supposed to contribute to solving the problems defined in the previous stage.
3. A choice of relevant scientific theory for structuring the problem of stage (1) and scoping the research issues of stage (2), thus linking the study to existing literature.
4. A description of relevant economic and environmental systems, policy options and instruments, spatial and temporal aspects and so on, by collecting data and other information on the particular case.
5. Preparation of an applied study: combining or linking theory (stage 3) and data (stage 4), possibly via statistical or other methods.
6. Formulation of environmental indicators, policies and instruments for the case study.
7. Here we may include a number of the following types of investigations: system behavior analysis; impact analysis; monetary or multi-criteria evaluation.
8. Providing indicators on the quality of the study, or performing some sort of sensitivity analysis.
9. Conclusions concerning the initial problem and issues.

The differences and similarities between case studies are both important.

Seldom do two studies differ in only one significant feature. It is always difficult, therefore, to compare them in terms of only one or a very limited number of features. To give an idea of the factors which contribute to the originality and specificity of particular case studies, one only has to consider a couple of elements. With regard to data characteristics, the size of sample, quality, time or period and cross-section properties are relevant. In addition, exogenous or omitted factors are important, and these may include socio-economic, political, cultural, geographic, environmental or temporal ingredients. These various elements can be used to obtain quick insight into essential characteristics of a case study, and allow for a systematic comparison with similar studies.

Before such meta-analytical comparisons can be carried out, some important methodological questions must be answered. First, and of particular importance in the study of environmental parameters in fields that involves geography and regional considerations, it will be necessary to develop tools that can compensate for geographic, demographic, and economic differences between regions<sup>12</sup>.

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<sup>12</sup> Technically this involves seeking out moderator variables that reflect these differences in the parameters to be transferred. Meta-regression (Stanley and Jarrell, 1989) is the most widely used approach to meta-analysis and there are ways of reflecting such non-immediately quantifiable differences in such a framework (Amemiya, 1981) but the task is often not easy. Van den Berg *et al* (1997) has experimented with alternative methodologies.

To take the example given at the beginning of the paper, because of atmospheric differences between Seattle and Washington a given level of aircraft engine noise will likely be distributed in different patterns. Because of demographic differences, the populations of the two regions will likely have different attitudes about how annoying airport noise is. And because of economic differences, different dollar values will likely need to be placed on the negative impact of noise pollution. Thus, mechanisms for dealing with these three general areas of analysis - geography, demography, and economics - will need to be developed.

A second methodological issue confronting meta-analysis is whether to transfer the data itself, or the underlying algorithms (Loomis, 1992). To take the above example of airport noise, we could transfer raw data about the impact of airport noise on the population, or we could transfer the algorithms for calculating such impacts. Transfer of the data itself, adjusting only for obvious differences in population size and distribution, would appear to be the more efficient application of benefit transfer, since the intermediate step of deriving impact data from algorithms would be avoided. But transfer of the algorithms would permit adjustments to be made for geographical, demographic, and economic differences before generating the impact data. Thus, where there are notable differences between regions, transfer of algorithms may be preferable to data transfer.

A third methodological issue with meta-analysis is scale: can data developed for a region of one size be applied to a significantly larger or smaller region? Suppose, for example, that an EIS were prepared for the construction of a length of four-lane highway across the state of Nebraska. To what extent would the findings of this study - with regard to impact on flora, fauna, water flows, and migratory birds - be relevant to a considerably smaller region, say a county the size of Montgomery County, Maryland? Even after adjusting for obvious differences in size, it may be that the larger region is better about to accommodate environmental disruption than the smaller region. Analytic tools are required to deal with this issue.

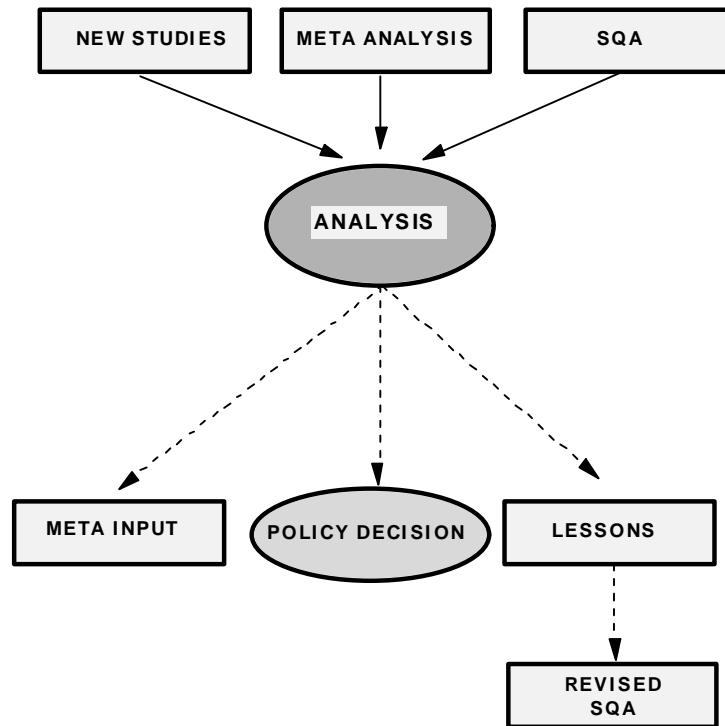
To summarize, benefit transfer holds the promise of achieving major efficiencies in environmental impact studies - through three basic types synthesis: classical literature reviews, subjective quantitative assessments, and meta-analysis. Meta-analysis holds the greatest promise for methodological rigor, but presents a host of issues which must be addressed.

#### **4 ARE THE APPROACHES INDEPENDENT?**

While there are three broad methods for bringing together inputs for benefit transfer exercises in practice a combination of these, together with new, site

specific research, forms the basis for inputs to the final analysis (Figure 2). Setting aside the detailed problems associated with the various individual forms of information input, there are, however, problems with this.

**Figure 2** Information data and concept inputs and outputs



- The inputs from the various synthesis analysis (meta-analysis, reviews and SQA) may not be directly comparable. In particular, meta-analysis tends to be limited because at present it is most powerful when applied to bodies of revealed preference work whereas one of the strengths of SQA is that it can be used within a stated preference framework. Further, in theory any new analysis should be conducted independently of previous work but this is difficult if the aim is to produce parameters that are directly comparable.
- There are feed-back loops in the system with the results of one analysis feeding on into the next set of meta-analytical studies and also influencing the views of experts who may become involved in subsequent SQA exercises.

An important fundamental question is to examine ways in which decision-making frameworks may be developed that help to minimize these types of linkage problems. Considerable information is lost because, for example, the

frameworks under which meta-analysis is conducted is not compatible with the SQA work that is undertaken. It is also often not clear in meta-analysis the extent to which the studies examined are independent of each other - more consistent methods of presenting results may help resolve this type of problem.

One way forward may be to make better use of expert opinion in terms of selecting the studies to use in a meta-analysis. This can be done by drawing up a list of potential case studies and then subjecting this to a selection procedure involving experts in the field. Their role essentially to assess the quality of the studies available. These assessments would then either form the basis making a final selection of cases to be the subject of a meta-analysis or they may form the basis of a weighting scheme that gives differential emphasis to cases in the analysis<sup>13</sup>. These refinements would also remove some of the bias inherent when just one analyst chooses the set of case studies<sup>14</sup>.

## 5 EVIDENCE

What is the available evidence concerning the validity of benefit transfer procedures? There are few if any *ex post* studies looking at how successful benefit transfers have been. One reason for this is the natural reluctance of policy makers to look at past actions too closely, but more specifically there are problems of defining a counterfactual against which one can compare the benefit transfers; what would a new study have produced if it had been undertaken in place of the transfer exercise.

What is possible is to look at the quality of the parameters or functions that are the subject of benefit transferee exercises. In other words, "What do we know about the reliability of these parameters?" Some judgment on this can be made by looking at studies that have been completed ostensibly with the aim of producing inputs for benefit transfer exercises.

The wide range of meta-analytical studies found in van den Berg *et al* (1997) indicate the difficulties of extracting reliable parameters from a set of transport case studies. In some areas, such as traffic restraint policies, the models seeking to explore the effectiveness parameters of alternative straggles provide an explanatory power of over 75 per cent while those dealing with valuation of noise nuisance offer explanation levels of around 70 per cent.

But on the other hand, defining a common parameter explaining the link between transport and economic development yields a model that can only explain just over 30 per cent and the ability to come up with a view on a

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<sup>13</sup> The process may be enhanced if combined with the application of Delphi techniques.

<sup>14</sup> The analysis may also be strengthened by more rigorous sifting of the case studies reviewed prior to their adoption in a meta-analysis e.g. see Tukey (1977)

common transfer value for travel time savings valuations can be given only a little more confidence.

One area where meta-analysis does seem to indicate that benefit transfer may be a viable exercise is with respect to valuations of recreational amenity (Smith and Kaora, 1990).

The important point is that for meta-analysis, SQA and benefit transfer to become more widely accepted there is the need for greater consistency in findings and in the power of the underlying techniques for conducting the synergy work. With low explanatory power it is easy, and legitimate in many instances, for those not liking the values used in a benefit transfer case not only to point to the lack of supporting evidence for the transfer value but also to argue that their position is different to the case examined.

## **6 CONCLUSIONS**

Transport decisions are difficult to make in a world where while on the one hand deregulation and privatization is leading to increased commercialization, on the other hand public pressure is demanding wider social accountability. In spheres where non-commercial considerations still play a central role, the emergence of cost-benefit analysis and its variants offer a tractable methodology but also one that can be time consuming and expensive to use. There are also issues about the consistency of cost benefit analysis approaches across different case studies. It is not surprising in these circumstances that people are seeking short cuts.

Making better use of prior information is one such 'economy' measure. Benefit transfers are not new but they are gaining greater recognition as a viable tool in policy analysis. They meet some of the challenges posed by the need for quicker and cheaper analysis. They are not, however, without a variety of intellectual limitations and their record to date in some areas has not always been very satisfactory. This should not, though, be seen as a reason for dismissing them as very useful additions to the tool-kit that can be brought to bear on public decision making. There may be topics or particular situations where benefit transfer offers little help, but equally there would seem to be other circumstances when it can provide a very real input into transport decision making processes.

To gain wider support, however, it is important that there is greater confidence in the ways the values for transfer are derived. To date the results of conventional reviews, meta-analysis, SQA and the like have not always been very convincing for a variety of reasons. Frequently they do not produce a clear set of parameters and where statistical analysis is adopted the confidence levels

are often low. There is a need to develop the methodologies underlying the values used in benefit transfer if it is to gain a more general acceptance.

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