Introduction

1 PURPOSE OF THIS MANUAL

This volume is a detailed statement of how to carry out economic valuation using ‘stated preference techniques’. Economic valuation refers to the assignment of monetary values to non-market goods and services, where the monetary values have a particular and precise meaning. Any economy provides a mix of marketed and non-marketed goods and services. A marketed good involves an explicit exchange between buyers and sellers and prices are ‘posted’ in the market place. A non-marketed good has no market, or it may have a limited, or ‘incomplete’, market. But, provided the relevant good contributes positively to human wellbeing, it has economic value. Similarly, a disservice or ‘bad’ has negative economic value – it detracts from human wellbeing. Broadly, there are two ways of uncovering the economic values attached to non-marketed goods and services and to bads: by seeing if they influence actual markets for some other good (known as revealed preference techniques) and by asking people what economic value they attach to those goods and services (known as stated preference techniques). This volume is concerned with the latter approach for eliciting economic values.

Examples of non-marketed goods and services are widespread: cleaner air, cleaner water, the provision of public open space, healthcare that is not sold through private markets, risk reduction policies and investments not provided privately, the provision of information as with the recorded heritage, the protection of cultural assets and so on. In the same vein, ‘bads’ would be instanced by such things as polluted air and water, loss of biological diversity, global warming, any activity inducing ill-health, and the destruction of cultural and recorded heritage.

The essence of the notion of economic value is that it measures the change in human wellbeing arising from the provision of a good or service. The notion of ‘wellbeing’ in turn reflects what individuals prefer. Wellbeing is therefore a preference-based concept. As this manual makes clear, wellbeing emanates from preference satisfaction, and preferences are regularly revealed in market places. Hence there is a logical link from preferences to willingness to pay. Essentially, willingness to pay (WTP) can be shown to be a measure of preference satisfaction and hence a measure of wellbeing. This link is explored in more detail in Chapter 1, but the historical background to it is that of the sub-discipline of welfare economics. More detail about the foundations
and contents of welfare economics can be found in any number of modern
texts (see, for example, Johansson, 1991; Boardman et al., 1996).

What is the justification for trying to assign economic values to such goods
and services? This is the subject of a very large literature. The current volume
is not intended to debate the question but, rather, to answer the question of
how one carries out economic valuation once it has been decided that it is
something that will aid rational decision-making. Nonetheless, some idea of
the driving forces for engaging in this valuation activity is required.

2 JUSTIFICATION FOR ASSIGNING ECONOMIC
VALUES TO NON-MARKET EFFECTS

All decision-making involves choices and all choices involve a sacrifice. If A
is chosen, B cannot be, if only because the resources allocated to A cannot
now be allocated to B. This notion of opportunity cost is fundamental to
decision-making. Opportunity cost is defined as the value of the thing that is
sacrificed by making a particular choice. The value of the resources allocated
to the option chosen (a policy, a project or a programme of action) is conven-
tionally measured in money terms. Money is fungible: it can be used for
many different things, it is divisible, and it can be used in discrete amounts.
Expressed as the cost of a particular action, a money value that reflects what
that money could secure in a market place also has another property: it is an
approximation of the economic value of that forgone choice. Hence choices
involve a comparison of the ‘worth’ of a given choice and the value of the
sacrificed choice, where the latter is usually expressed in terms of the cost of
making the given choice. The worth of the choice is therefore being com-
pared to the economic value of the alternative use of resources.

There are clearly many ways in which choices could be made. Choices
about alternative ways of saving lives, for example, could be made by com-
paring how many lives are saved with the cost of saving those lives. If policy
A saves 100 lives per year, policy B saves 50 lives per year and each policy
costs £1 million, the choice appears to be clear: A would be chosen because it
saves more lives or, put another way, the ‘cost per life saved’ is less under A
than it is under B. This would be an example of cost-effectiveness analysis,
and cost-effectiveness is fundamental to efficient decision-making. Resources
should not be allocated to a particular scheme for saving lives if more lives
could be saved by allocating the resources in a different way. But perhaps not
all lives are ‘equal’. Society may think that saving the lives of infants is more
important than saving the lives of old people. If so, different lives would have
to be ‘weighted’ to reflect this importance. The choice may be between
saving lives now or saving lives in the future. Again, lives may or may not be equally weighted according to when they are saved. The choice may also be between saving lives with different ‘qualities of living’ attached to them. Perhaps extending the life of person X by one year is regarded as being less important than extending the life of person Y by one year because person X’s extended life-year would have a low quality of existence.

While cost-effectiveness is a critical ingredient of sensible decision-making, it can be seen that it quickly enters the realm of ‘weighting’, of assigning different degrees of importance to the indicator of effectiveness, in the above case to life-years.\(^1\)

The ‘saving life-years’ example is an instance of an instrumental approach to decision-making. The goal of policy is also related to some human objective, the procedure is anthropocentric. The notion of economic value is clearly anthropocentric and instrumental. An alternative philosophy might instead assign values to things ‘in themselves’ rather than because those things serve some human-oriented end (extending life, wellbeing and so on). There is a rich array of philosophical writing that argues for the assignment of intrinsic values to things. Intrinsic values might be attached to all things, living or otherwise, just to living things, to living sentient things, or to some sub classification of living sentient things, for example, animals.

Notions of intrinsic value are especially debated in the context of conserving biological diversity. For some, biodiversity – the ‘web of life’ – is so important that its value transcends the value of other things. Without biological diversity there can be no human existence. Hence the idea of ‘trading’ biodiversity against other things – which is explicit in instrumental approaches to value – is not acceptable to some people. But some form of ‘trade’ is unavoidable in a world of limited resources. Perhaps what those who refuse to consider such trades are saying is that the issue they are concerned with (for example, biodiversity) is extremely important and that its profile needs to be raised in public debate. Most people accept that hard choices have to be made, but even with that acceptance very fierce debates take place about how much diversity to save and which diverse areas of the planet should be conserved first.

Environmental philosophers who accept that there is a limited ‘conservation budget’ opt for some form of cost-effectiveness criterion. Thus, Norton (1987) argues that a cost-effectiveness criterion could be adopted based solely on what he calls formal criteria. Formal criteria involve rankings of species that do not have to refer to characteristics of the species in question (for example, their ‘attractiveness’ or ‘importance’). An index of species richness would be a formal ranking, but an index of richness where each species was weighted by some indicator of importance or its own characteristics (such as
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longevity) would be a substantive criterion. The essential difference, Norton argues, is that formal criteria involve no controversial value judgements, whereas substantive criteria do. A ranking of species by richness and endangerment would similarly be formal, not substantive, assuming that everyone can agree on what the indicators of threat are. A process of prioritising species conservation could therefore be ‘value free’. Norton suggests that rankings would remain value free even if they included taxonomic status. Human values would not enter the analysis because such measures of species distinctiveness are ‘scientific’. The goal of conservation would be to maintain the most diverse gene pool possible, which Norton sees as an end in itself, rather than as a means to an end such as human survival or human wellbeing. Norton regards this approach as being based solely on ‘ecological value’, a scientific measure of value.

In fact, this approach may not be very distinct from the cost-effectiveness approach. The goal could be restated as one of maximising the expected value of diversity, where ‘value’ refers to ecological value. The term ‘expected value’ denotes the probability-weighted value of species, where the probabilities in question are those of extinction of a given species. Such a goal is strongly identified in the economics literature as one of maximising option value, which refers to the value that a species might have for human-kind in the future. Individuals would be willing to pay to conserve that species not because they make ‘use’ of it now but because they (and future generations) may make use of it later on. It seems more likely that a set of species containing more genetic distance than another set will have a higher option value. Survival probabilities are also maximised because species that are genetically similar are likely to have similar resistance to threats.

One other reason for supposing that approaches based on intrinsic value may not differ substantively from approaches based on economic value is that preferences may themselves be influenced by intrinsic values. Individuals may confer value on something for its own sake. If that something does not have a ‘voice’ in decision-making, individuals may opt to act as that voice. One attractive feature of stated preference techniques to determining economic value is that they permit the motives for preferences to be uncovered. In the biodiversity context, those motives often appear to be consistent with some notion of intrinsic value. Some environmental philosophers acknowledge this fact by referring to weak anthropocentrism, human-oriented values that reflect motivations that include concerns for other species and living systems.

If intrinsic values are regarded as the ‘right’ notion of value, and if it is not accepted that their reflection in human preferences is, in some sense, ‘enough’, then the question arises as to how intrinsic values can be entered into a
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Since intrinsic values are not measurable, they tend to take on a zero-one characteristic. Something either has intrinsic value or it doesn’t – there are no gradations of intrinsic value (although note the discussion of biodiversity value above). The answer to ‘how much’ of the good possessing intrinsic value should be provided could be approached in various ways. It might be as much as can be afforded – a notion that does imply trade-offs, it could be as much as there is and no less, as much as is consistent with the political process, or it could be some amount consistent with a notion like the precautionary principle or ‘safe minimum standards’. Since such rules are actually embodied in some legislation, they are not ‘academic’ concerns. Some of the rules have an ‘objective’ element, that is, there is some attempt to provide criteria for what should be achieved, but some stress the acceptability of the process of decision-making, so that whatever emerges from that ‘right’ process is itself right. Some rules are consistent with a preference-oriented system (for example, a process-based rule that stresses public participation), some may not be (for example, how much precaution to take may be left to expert judgement).

Clearly, there are differences of view about how best to approach decision-making, and the extent to which formal procedures, such as economic valuation, should be embodied in that decision-making. It is not part of this manual to debate these alternative views, nor to pronounce on the ‘right’ approach in such a debate. The manual deals with the economic approach (and then only that part relying on stated preferences) because it does have several attractions. The resulting measure of value can be compared to the notion of resource cost, which itself is an approximation of economic value. The approach is explicit in addressing the issue of opportunity cost, whereas notions of intrinsic value face more difficulty in this respect since intrinsic value may reside in the option that is sacrificed through choice – offending the view of some that trade-offs cannot be made. Economic value also permits a choice to be made as to whether any of the available alternatives is acceptable (the economic value of the gains from the choice must exceed the cost), whereas cost-effectiveness approaches do not permit this option to be taken. Economic value is preference-determined, and preferences matter in any democratic society.

But others may take a different view. Perhaps individuals are not always good judges of their own wellbeing. Economic values reflect not only preferences but also the wealth/income of those expressing the preferences, as in any market system. Perhaps some things cannot be dealt with by the measuring rod of money. Perhaps some policies and actions are simply ‘right’ and are not to be judged by their consequences for human wellbeing. The debate has continued for many hundreds of years and it will not be resolved in this
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manual, if at all. This manual takes as its starting point the argument that preference-oriented instrumental value is important.

3 A GUIDE TO THE MANUAL

The structure of the manual is set out in the ‘map’ in Figure 0.1. The manual is organised in three parts:

- Part I: Concepts
- Part II: Stated Preference Techniques
- Part III: Further Issues.

Before the main elements of the manual on stated preference are presented, Part I sets out the conceptual background to economic or monetary valuation of non-market effects (Chapter 1) and some guidelines that those who commission valuation studies should follow (Chapter 2). Because the conduct of professional stated preference studies involves considerable expertise, it is important that those who commission the studies are able to identify that expertise and ensure that it is embodied in the design of questionnaires and in the econometric processing of the results. Many of the recommendations are common to the commissioning of any consultancy, but some are specific to stated preference studies because of the need to minimise biases in individuals’ responses and to maximise validity and reliability. Chapter 2 concludes with an outline of the typical workplan for a stated preference study.

The eight chapters in Part II of the manual follow the order of the workplan presented in Chapter 2. Chapter 3 begins with the issue of which technique to apply to which problem. There are no very clear rules because stated preference techniques can, in principle, be applied to any object of valuation. But certain techniques are likely to be more successful in some applications than in others and Chapter 3 suggests some general guidance. The issue of ‘standing’ is also discussed. Standing refers to the establishment of whose preferences count in an economic valuation study, for example, nationals only or nationals and overseas residents? The answer to this question can greatly affect the final results, as the sample responses are aggregated over the population with standing. The issues of standing and sampling are the first steps in any study and must be established clearly at the outset. Finally, Chapter 3 looks at the selection of the sample to be given the questionnaire.

The manual then divides with the next chapters (Chapters 4 and 5) being allocated to contingent valuation and later chapters (Chapters 6 and 7) being devoted to choice modelling. It is important to recognise that the design of a
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The foundations of economic valuation
Chapter 1
Commissioning a stated preference study
Chapter 2

PART II: Stated Preference Techniques
Population, sample and survey mode
Chapter 3
Designing a contingent valuation questionnaire
Chapter 4
Designing a choice modelling questionnaire
Chapter 6
Analysis of contingent valuation data
Chapter 5
Analysis of choice modelling data
Chapter 7
Validity and reliability
Chapter 8
Aggregation
Chapter 9
Reporting
Chapter 10

PART III: Further Issues
Combining revealed and stated preference techniques
Chapter 11
Cautions, caveats and future directions
Chapter 12

Figure 0.1 The ‘map’ of the manual
contingent valuation questionnaire has many features in common with the design of a choice modelling questionnaire, so that Chapter 6, for example, is not independent of Chapter 4. Similarly, when it comes to analysing the results, there are many common features to the required econometrics. These links from Chapter 4 to Chapter 6 and from Chapter 5 to Chapter 7 are shown in Figure 0.1 with dotted arrows.

Assessing the validity and reliability of the results of a contingent valuation study is addressed in Chapter 8. This is a detailed chapter because of the central importance of the issue. Stated preference techniques are applied precisely because there are no ‘real’ markets to refer to. Hence the important issue of just how much credibility can be given to stated answers has to be addressed. Much of Chapter 8 is also relevant to assessing the validity and reliability of choice modelling, hence the sequential arrow from Chapter 7 to Chapter 8 in Figure 0.1. Note that most validity issues need to be considered when designing the questionnaire. Therefore, there are some overlaps between Chapters 4 and 8.

Chapter 9 addresses the issue of aggregation. In significant part, aggregation involves returning to the issue of sampling, since biases in sampling will have considerable implications for the validity of the results derived from aggregation. But other issues arise as well (for example, the population over which positive non-use values might be expected to hold). Chapter 10 outlines the requirements for state-of-the-art reporting of the process and results of a stated preference study.

Chapter 11 presents the ways in which revealed and stated preference techniques can be combined. Finally, some cautions and caveats presented in Chapter 12 are at the centre of some of the current debate over stated preference techniques and some readers may find it helpful to read parts of this chapter early on.

Each chapter begins with a summary of the issues covered in that chapter and a copy of Figure 0.1 to highlight where the chapter fits in within the overall structure of the manual.

In addition to the chapters presented in Figure 0.1, the manual contains several annexes:

- Annex 1.1: the links between stated preference and benefits transfer;
- Annex 1.2: use of stated preference in UK environmental policy: the case of the aggregates levy;
- Annex 1.3: basic principles of discounting;
- Annex 4.1: writing survey questions;
- Annex 5.1: econometric estimation of the bid function;
- Annex 5.2: estimating mean and median WTP; and
Annex 11.1: random utility models combining stated preference and revealed preference data.

The list of references and the glossary can be found at the end of the manual. Terms that appear in the glossary are written in italic throughout the manual.

NOTES

1. The extensive literature on QALYS (quality adjusted life years) and DALYS (disability adjusted life years) deals with this issue of how to weight life years. In each case a life year is weighted by a factor representing how individuals assess the quality of that life year.
2. The ‘no less than there is’ rule is familiar in environmental economics as ‘strong sustainability’.
3. The precautionary principle has many interpretations but it would basically urge protection of any resource with unknown but potentially high value (however measured), sometimes irrespective of cost, sometimes at some acceptable cost. The safe minimum standards approach argues that the object with unknown value should be conserved unless the social cost of conservation is, in some sense, ‘too high’.