

Cost Benefit Analysis and the Value of Heritage

*Jeff Bennett*¹

Abstract

Benefits of historic heritage protection are enjoyed by the private owners of such assets, members of the public who visit and those in the broader community who simply enjoy the knowledge of its continued existence. Estimating the extent of those various components of value requires the application of a range of economic techniques that seek to gauge the strength of peoples' preferences. These techniques are based on two types of approaches. The first uses peoples' revelations of their preferences through their actions, typically in the purchase of heritage protection related goods and services in markets. Most notable of these techniques are the travel cost method and the hedonic pricing technique. The second involves people being asked to make statements about their preferences in surveys. The contingent valuation method and choice modelling are the most widely applied of this type of technique. In this presentation, the application of both types of techniques is described and demonstrated through recent Australian applications. Questions relating to the validity of the benefit estimates, particularly those derived from the stated preference techniques, are addressed. The policy significance of value estimates is also assessed. Given the paucity of heritage benefit value estimates, the importance of further development of the valuation techniques in the context of policy development is stressed.

Presentation

Cost Benefit Analysis (CBA) is a conceptual framework/tool that can be used to assess and prioritise investments by the community in the protection of heritage assets. For CBA to be implemented, the values of all the costs and all the benefits arising from an investment need to be estimated, added up and weighed up to give a net value.

Costs are more easily identified and measured than benefits. For instance, in terms of costs, it is comparatively easy to see what a property costs and what it costs to maintain and run it. The benefit side of the equation is more difficult to measure. Defining and measuring the benefits is really the cutting edge of the application of CBA in heritage contexts.

First the benefits of heritage protection need to be defined. They can be classified into 'use' and 'non use' values. Use values arise from contact with the asset such as living with it/in it, visiting it and recreating with it. So these are values associated with actually physically interacting with the heritage asset in some way. Non use values arise without contact. They are enjoyed by people who value the existence of the asset

¹ Professor of Environmental Management, Crawford School of Economics and Government, Australian national University. E: jeff.bennett@anu.edu.au

or from the satisfaction of passing the asset on to the next generation (the bequest value).

Benefits may be enjoyed by private persons or by society as a whole. It is most important to tease apart this divergence between the benefits that are enjoyed by the private owners including businesses and residential owners, and the benefits that are enjoyed by the wider population, particularly the non-use values that may be enjoyed by anyone. All the categories of benefits must be considered in order to estimate the value of heritage protection benefits.

Costs also have societal implications. There are opportunity costs of buying and maintaining heritage assets. This money could have been used for other end uses. If you decide to dedicate a property to its historical heritage use then you necessarily forgo other uses of the property. You can't ignore the development potential of the property and this is not just a loss to the owner but to society at large as well. The public will also bear a cost from any restriction to the development of the asset. That development is an opportunity foregone.

If the benefits of heritage protection can be shown to be public goods then there is some justification for governments to step in with policies to promote supply. But action is only warranted when the benefits of a policy can be demonstrated to be greater than the associated cost.

When there are fundamental difficulties in defining and defending property rights to the benefits of heritage protection the public goods characteristic of 'non-excludability' emerges. So-called externalities or spill-overs arise. This is where the private benefits arising from the heritage protection, those benefits that you can actually capture from ownership of the asset, are not enough incentive to provide the level of heritage protection that the community at large demands. This is where there is divergence between the private and the public benefits. There is an array of potential policy instruments, regulatory instruments right through to some market based instruments that can be used in these circumstances to supplement supply. These market based instruments are being extensively applied in the natural environment protection arena but seem to be slow to get off the ground in the heritage arena. There is abundant potential for application in heritage contexts.

Why do we need a cost benefit approach? Firstly the government needs to be able to justify its involvement. Market failure on its own does not mean governments have an automatic obligation to move in and do something. Governments need to justify their intervention by showing an improvement in the net social benefit.

Governments can use economic analysis through CBA to develop the policy actions and to assess management and planning options for the use of those assets to increase the net social benefit. However, to use CBA you must first go out and measure the benefits of actions so that they can be weighed against the costs of those actions.

It is important to realize that the focus of the analysis is at the margin. We are not interested in the value of the heritage asset *per se* but we are interested in the possibility of tweaking the management of that asset at the edge in order to improve the net social benefit obtained from that asset. We are looking at choices at the margin

– are the marginal benefits to society greater than the marginal costs to society if we move from the status quo?

It is also important not to get side tracked onto thinking about what is the overall benefit of heritage or what is the value of a specific heritage asset. The fundamental concept of benefit estimation must be put into practice especially when there are public good benefits involved because that is where there is justification for government intervention.

There has been a promising increase in the use of these benefit estimation applications in recent years. Since 2000 there have been a number of studies that give us good examples to work from. They have involved both use values and non-use values.

Use values are where you have direct contact with the good and because you have people interacting with the Heritage site you can look at the way people behave, in relation to this site and start to use their behaviour as a basis for estimating values. So considering people living at a site or people visiting a site you have their interaction with the site. You can start to look at the way in which people behave, analyse their interactions with the Heritage house they live in or the Heritage site that they are visiting. Those sorts of interactions between visitors, users and the site, and where there is some market involved, there is something being bought and sold that is associated with that interaction, and then we have some identifiable and measurable action. These actions are the basis for the revealed preferences techniques of benefit estimation.

Looking first at **owner's values**, these are private values, private benefits. So they must be considered in that context with regard to the private/public dichotomy. The question that must be asked is how are property prices affected by the Heritage status of a property? What we want to observe is the behaviour of people, in buying and selling properties and how that behaviour reflects the value that they place on the Heritage status of the property. This is the basis of the '**hedonic pricing technique**'.

To implement the hedonic pricing technique as much information on property sales as possible must be collected. Not just the prices that people are paying, but the houses that are being bought and sold must be characterised. How many bathrooms have they got? How many square metres is the house? How far is it from the nearest bus stop? All of the things that have an impact on the price of a house must be collected. Once all this information is available, a multiple regression equation is used to relate the price of the heritage property, against all of those factors, including its heritage status. The hypothesis that heritage status has an impact on the price of the property is then tested. The impact of the heritage status on the price of properties can be teased out and hence a value for that the maintenance of that heritage status can be inferred. But it is not as easy as it sounds.

These are the well accepted techniques, they are market based, everyone agrees that these techniques are fundamentally sound but they are not without their issues. What exactly does heritage status involve? It certainly may show something about the nice things about a property, but it also might embody some elements about the costs of heritage protection. For instance, if that heritage status stops it from being knocked down and a set of units being built in its place or if it even stops possible renovation

of the property in such a way that is attractive to the purchaser, that can have a tiering or a lessening impact on price. Therefore heritage status does not necessarily only capture the value that people have for whether it is an old property or not. There are all sorts of other things that might get associated with it. A lot of problems with this are specifically Australian, because the market is not all that thick and there are not a lot of observations in any particular time period. For example if the hedonic pricing study was for Longreach, there is probably only four or five properties being exchanged each year and trying to observe price changes of four or five properties, using 27 independent variables, becomes a little tricky, econometrically.

There are also some problems here in terms of collinear variables. This means that one of those explanatory variables might be related to another and might cause all sorts of statistical quirks to come about. There is some study being done on this specifically, David Throsby and Peter Abelson, supervised Vinitar Damodar's PhD thesis which as completed last year. Vinitar used hedonic pricing to look at the effect of heritage listing on house prices in the Ku-ring-ai Shire in Sydney and came up with a conclusion, that there was a 12 percent premium associated with the heritage status variable she developed. The Productivity Commission, for their inquiry, also did a couple of studies. One in Parramatta and one in Ku-ring-ai Shires and there they found no relationship between house price and Heritage status. What those studies found was that the heritage properties were in good locations and they were also spacious. So there was a problem of collinearity between those explanatory variables. Once those effects had been teased apart there was no impact of heritage status.

So what is the potential of these techniques? Are there possible applications in commercial sites? What is a pub in Sydney, with a heritage listing, worth relative to a pub that isn't? What about properties adjacent to Heritage sites? Is it just the properties themselves that attract a premium, or if you live next door to a nice old house, does that increase your property price? So there are some interesting issues still to be explored.

Now to visitor's value – the value not of owning the property, but visiting it. This value may involve some public good characteristics, where there is a State owned site, and we are interested to see what sort of surplus is being generated, what sort of net benefits are being generated from the protection of that site. What is done there, is to look at people's preferences for that site, through what they pay to get to the site. This is called the 'travel cost method'.

The travel cost method of establishing the value visitors place on a heritage asset requires the estimation of the visit rate. That is, how many times people are visiting the site and this is a function of the travel costs associated with getting there, plus all the associated demographic factors. This is called a trip generation function and we can use that to drive out a pseudo demand curve for a recreation site, for an historic heritage property. This has been done quite a lot particularly with National Parks. This technique therefore has an extensive record of application, somewhat in Australia, but more-so in the US. Despite having a good track record, again, it is not easy. A survey must be done. Visitors need to be asked where they come from and what they have spent. There are many issues associated with expense and accuracy.

Some of the conceptual issues that will be faced here are things such as: you might want to pay for petrol to get to the site, but what about your time? Is that a cost as well? Should you count people's time as a cost? What about substitute sites? If you are talking about an historic site, is there one next door? So the presence of a substitute can have an impact on value. A lot of these places that have been surveyed are not the sole reason for a visit. You have got people going to see one site after another, after another. This means that the travel costs need to be apportioned amongst multiple sites. There is also the issue of course that if it is a snap shot survey at one time of the year, then what happens in the rest of the year? So, there are all sorts of interesting challenges in terms of applying this travel cost method.

So again, this is an important tool but it isn't easy and that probably explains why there aren't a lot of studies done. One was done for the Hartley Historic site by the New South Wales National Parks. They were able to estimate a value of about \$40 to \$50 a day, per visit. That can then be extrapolated from the survey sample drawn out to the total across a year to give a value of about \$1.1 to about \$1.5 million. It must be remembered that this value is surplus, it is a net value, and so it is if you like, a personal profit that people get from going to this site. People spend a lot of money to get there but this is above and beyond what they are spending to get there.

Many studies have been done in New South Wales National Parks estimating the regional impacts spending has in an area where they have a park or an historic site. But there is a need to be wary of that because it is spending, it is not surplus. A lot of economic activity can be generated by getting people to fill up sand bags and empty them and there are a lot of costs involved there - a lot of expenditure. But it doesn't do any good for society. So there is a need to be wary of equating expenditure with benefit. It is important to recognise that they are not the same thing.

There have not been a lot of travel cost studies done on heritage sites in Australia, so there are obviously opportunities to get out there and do it. Whilst there are these complexities, economics has also got a good track record in doing this sort of analysis, so don't be afraid of using this technique.

Now considering the 'non use' values: these are the values where there is no direct contact with the heritage asset. There are no revealed preferences or people's values showing to the rest of us through their doing something. These are really the strongest of those public good characteristics. Because there are no property rights over these values, there is no market to buy and sell and in which to observe people's attitudes/values. This is therefore really out on the edges of the public good justification for Heritage. There are some other cases where this sort of work comes to the fore such as passers-by. There might be difficulties in actually observing the interaction between people and the assets. In those circumstances, while strictly speaking they might be called use values, there is nothing that can be done to go out and track that use and get any sort of reasonable market handle on it. This then leads into what we call 'stated preference techniques'.

In situations where those indirect market transactions can't be used what must be done, and what economists have done as a profession over the last 40 years now, is to look at ways of asking people about their preferences. Psychologists talk about there being two ways to view preferences. One is to look at the way people act and the

other is to ask people how they would act. So the stated preference technique is all about asking people questions about their intentions in various hypothetical circumstances. The most commonly applied technique now is contingent valuation. A more recent derivative of contingent valuation is choice modelling and both will be discussed here.

What is contingent valuation? A lot of people think of contingent valuation as people going out into the general public and saying, "How much are you willing to pay to preserve property X?" That was the origin of contingent valuation, but economists have tried to come to terms with all the sorts of biases that that sort of questioning is likely to throw up. So the application of contingent valuation goes along this path: Here are two options to consider. There is the status quo situation which might be current levels of heritage protection. That level of protection comes free, at no further cost. Here is an alternative to the status quo and that involves more heritage protection, but it is going to come at a cost, possibly a fee or surcharge on your rates. The question that follows is: "Which would you vote for in a referendum on this issue, the status quo or the change?" So the sort of question that is asked in a contingent valuation exercise is very similar to that of a political referendum. There is a provision rule here that indicates there will only be a change if 50 percent of people agree.

The way the technique works operationally is that different people in the sample are given different costs of the change. Then the probability of people accepting the change or rejecting the change is looked at. And it is from the probability equation - the probability of saying yes or no to the change, being a function of the cost - that value estimates can be derived. Again, with respondents' socio economic characteristics we can tease apart the willingness to pay, on average from the survey sample. That is the essence of the most recent form of contingent evaluation.

This technique has been rigorously tested now thanks to the endless testing through things like the Exxon Valdez Oil Spill Case, where literally billions of dollars was resting on the capacity of economists to put a value on the forgone environmental benefits of Prince William Sound. A lot of work has gone into developing incentive compatibility - whether or not people will be subject to incentives to tell the truth or to reveal their preference. Contingent valuation involves a survey and necessarily involves going out and collecting information from people. There are going to be questions as with any survey, about the expense of it and the accuracy of it. This applies whether it is a survey about what sort of toilet paper you use or whether it is a survey about a heritage site. There are always going to be these questions. The incentive compatibility question is something on which economists have worked long and hard. Framing the question is another big issue. What is the appropriate context of the question that is asked? You can ask questions about which heritage protection level would be preferred at the national level, say more heritage protection, but it is going to have an effect on income tax levels i.e. pay a bit more income tax? Or you can be right down at the local level such as more sites protected locally but there's going to be an increase in your rates bill. So the context is really important in stressing the substitutes available and stressing the budget constraint that everyone faces. The budget constraints issue is a vexed one too - what sort of payment vehicle are you going to use? Is it a tax, is it a surcharge on a power bill, or is it a visitation fee? All these provide us with some challenges.

Vinitar Damodar did a contingent valuation study in her PhD. What she did was to use the hedonic pricing technique to look at private values and then looked at the contingent valuation to look at the public values associated with the. Vinitar looked at a Heritage levy on rates as the payment vehicle and asked people what they would be willing to pay, over a two year period, to complete the Shire's Heritage program. This is a demonstration of the potential of this sort of technique to be used in this case in a local shire type application.

Choice modelling is similar to contingent valuation with some extra complexities. In contingent valuation people are just given that one choice, a Referendum choice, do you want this or that? In choice modelling what we do is we ask people a sequence of choices with multiple options in each choice. In each question, they are asked to make a choice, perhaps not between one and two options, but maybe three or four options and each of those options are described by the characteristics of the theme that is under examination. So, in terms of a heritage question, it might be the age composition, it might be the quality of the asset, all the things that might describe the heritage asset being examined. Within a choice question each option has various levels of those attributes. One of the attributes is a cost attribute and what is being done there in making choices, as the respondents make choices between these multiple options, with all of these attributes varying in their levels, is you observe the way that people trade-off the attributes of heritage protection. With one of those attributes being money you can start to tease apart the trade-offs that people are willing to make, between money and more heritage protection as described in all the various ways. What is revealed is this process is the relative importance that the respondents place on all of these different attributes. So the difference between contingent valuation and choice modelling is that whilst with contingent valuation you get one value estimate and it is the value estimate associated with one particular combination of heritage outcomes, with choice modelling you basically get estimates of the value each of these characteristics of heritage contributes to the whole. Whilst the questioning is more complex, the outcomes, the output, of the choice modelling exercise, are richer, in terms of the information you get. The results give the willingness to pay for increases in each attribute. These are called the implicit prices that people are willing to pay for an increase in a specific characteristic of heritage. Then all those characteristics can be bundled together to show what sort of value you get by moving from the status quo bundle to this new bundle.

Choice modelling is more complex than contingent valuation, but it gives a great deal more detail. Some of the complexities are very similar to contingent valuation because you are still in the framework of a hypothetical scenario that you have put to people and are you are asking them to make these decisions. There are some questionnaire complexities that are added on to contingent valuation and also some modelling complexities.

A few of the valuation outcomes from the Allen Consulting Study show the sort of thing that this particular choice modelling application was able to do. \$5.53 is the amount on average per respondent per annum people are willing to pay per additional 1000 Heritage places protected. For a one percent increase in the proportion of places in good condition people are willing to pay \$1.35. The will pay \$3.60 for a one percent increase in the proportion of places that are accessible. Bundle, some of these

attributes together provides an estimate of the value of a movement from this situation currently, to another improved circumstance. Then of course the values are extrapolated across the population.

A second application is one that was done by Andy Choi as a PhD piece of research in conjunction with Bennett at ANU. Andy was working with Canberra University and with the National Museum and Old Parliament House. This case is a good example of the confusion between values on average or aggregates versus at the margin. What the people at Old Parliament House wanted was the value of Old Parliament House as a Heritage site? This is an irrelevant question in terms of managing the site. So the issue is really more about managing heritage and how you can use these sorts of techniques to tease apart or to develop strategies for better management. One of the things that concerns heritage management is whether you should show the real thing or use replicas. In fact the outcome of the Choi study was that people want to have replicas. They want to be able to touch and feel things, rather than be removed from them. Another question is the length of temporary exhibitions. Whether the exhibitions from OPH are travelling? These are some of the attributes that Choi used. The National Museum, a different heritage asset, had different attributes: The number of items conserved, What goes on there? So that gave some strategies for the management.

So this is a very different study from the Allen Study. The Allen Study is all about framing the big picture, whereas this one is about managing the assets of an historic place. It points to the need for more of these site specific case studies to be completed in order for some generalisations regarding values to be developed. Choice modelling hasn't been used a lot to try to tease out the sorts of management strategies that will improve the way that an asset is used. So there is a lot of potential there too.

In conclusion, two messages. I would argue that the issue of estimating benefits of heritage protection is really important. It is at the heart of the economist's ability to employ cost benefit analysis in this context but also in lots of other contexts where it is important in natural heritage, and in health, education, etc.

Second, whenever you are dealing with public goods, you have got to be able to talk about what is the marginal benefit of an increase in supply of this good. So it is really at the heart of the issue that we are dealing with, but it is not for the faint hearted. It is complex and it is not just the stated preference questions that are complex, there are also issues in the revealed preferences indicated by the fact that those two studies that have been done using stated preference techniques have been PhD theses. They are at the frontier of developing these techniques. The great thing is that now we have got something happening and we are starting to build up the level of confidence with which these techniques are being used.