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Sites: Tourism Stimulus and its Economic Value**

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WORLD HERITAGE LISTING OF AUSTRALIAN NATURAL SITES: TOURISM STIMULUS AND ITS ECONOMIC VALUE

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ABSTRACT

Australia has 14 areas inscribed on the UNESCO World Heritage list, on the basis of their globally outstanding natural and in some cases also cultural values. Many regard listing as prestigious and believe that it acts as a signalling device like a brand name. But to what extent and in what ways does the extra prestige bestowed by this listing translate into increased economic value for listed properties? This article deals with two main aspects of World Heritage listing. First, examines the hypothesis that World Heritage listing increases tourist visitation numbers, and available international visitor time-series data are examined to provide empirical evidence. It is found that although visitor numbers are likely to increase as a result of World Heritage listing, the increase is not as large as is often perceived. Some properties continue to experience low visitation rates despite World Heritage listing, and reasons for this phenomenon are advanced. Likely reasons for the inequalities in growth patterns of visits to different World Heritage properties are highlighted. Secondly, the article considers how the economic value of the tourism stimulus provided by World Heritage listing can be measured in principle and relates this to economic impact analysis and total economic valuation. Important and new limitations to the use of the travel cost method in this context are identified.

WORLD HERITAGE LISTING OF AUSTRALIAN NATURAL SITES: TOURISM STIMULUS AND ITS ECONOMIC VALUE

1. INTRODUCTION

Australia is a party to the World Heritage Convention, and 14 of its natural properties have been included in the World Heritage (WH) list managed by UNESCO. Properties are nominated for WH listing by national governments, after which the UNESCO WH Committee applies rigorous procedures to determine whether a nominated property satisfies the required natural and/or cultural criteria for listing. A property is only accepted for listing if it is found to have 'values that are outstanding and universal' in importance and if it satisfies specified natural or cultural criteria or a mixture of these.

Australia's first WH properties – the Great Barrier Reef, Kakadu (first stage) and Willandra Lakes – were declared in 1981 while the most recent WH property – the Greater Blue Mountains – was declared in November 2000 (Environment Australia, 2000a). Australia has the highest number of WH listed natural properties in the world, which demonstrates the richness of the country's natural and geological assets. Some WH properties in Australia comprise both public and private property, some cover a vast area, and some are compact while others are composed of many fragments. For example, the Great Barrier Reef spreads over a distance of approximately 2,000 kilometres. The Central Eastern Rainforest Reserves of Australia (CERRA) property is spread over a wide area covering two states and is the most disjoint of Australia's WH properties, comprising of 44 distinct reserves ranging from 11 ha up to 122,110 ha (Pugh, 2001, p. 1). The Wet Tropics World Heritage Area comprises of 19 national parks, 31 state forests, five timber reserves and one aboriginal and islander reserve, extending from near Cooktown south to Townsville, a distance of approximately 450 km. The Tasmanian Wilderness is made up of a collection of national parks and nature reserves and covers approximately a quarter of Tasmania. The Australian Fossil Mammal properties (Naracoorte in South Australia and Riversleigh in Northwest Queensland), though small, straddle two states. Furthermore, Australian WH properties vary in terms of their degree of remoteness from Australia's capital cities. For example, the Greater Blue Mountains WH site is easy to access from Sydney, while Heard/McDonald and Macquarie Islands in the sub-Antarctic zone are distant from the Australian mainland and difficult to access.

This article discusses two main issues perceived as resulting from WH listing, namely World Heritage listing (1) promotes increased tourism and (2) raises the tourism economic value of natural sites because such listing acts as a signalling device. With regard to issue (1), the likely impacts of WH listing are examined conceptually and then available Bureau of Tourism Research (BTR) International Visitor time-series data are used to explore the consequences of such listing. Data for only international visitors are used because satisfactory time-series data for domestic visitors are not available. Issue (2) is discussed by considering the applicability of utilitarian welfare economics. Particular problems raised by attempting to apply the travel cost method (TCM) in this context are noted. Consideration of the experiential nature of many WH visits and the size and configuration of many of Australia's WH properties brings to light new limitations of TCM. These include its limitations as a revealed preference method for estimating demand for visits. Alternative measures of economic value are also discussed, such as economic impact, and the relevance of the Total Economic Value (TEV) concept is considered.

2. THE IMPACT OF WORLD HERITAGE LISTING ON VISITOR NUMBERS WITH SPECIAL REFERENCE TO AUSTRALIA

Locations of Australia's WH properties are indicated in Figure 1, and year of listing is reported in Table 1. All the properties relied heavily on natural criteria for their listings, although Aboriginal heritage is significant for four of these properties (for example, Uluru and the Queensland Wet Tropics). No properties have been listed solely on the grounds of cultural criteria. Queensland has the largest number of WH properties in Australia (five), two of which are shared with other states (New South Wales and South Australia).

FIGURE 1
LOCATION OF AUSTRALIA'S WORLD HERITAGE LISTED PROPERTIES

1 Heard and McDonald Islands (N)	7 Willandra Lakes Region (N&C)
2 Macquarie Island (N)	8 Shark Bay (N)
3 Tasmanian Wilderness (N&C)	9 Uluru (N&C)
4a Australian Fossil Mammal Properties (N)	10 Kakadu National Park (N&C)
4b Australian Fossil Mammal Properties (N)	11 Fraser Island (N)
5 Lord Howe Island (N)	12 Wet Tropics of Queensland (N)
6 Central Eastern Rainforest Reserves of Australia (N)	13 Great Barrier Reef (N)
	14 Blue Mountains (N)

(N) = natural. (C) = cultural.
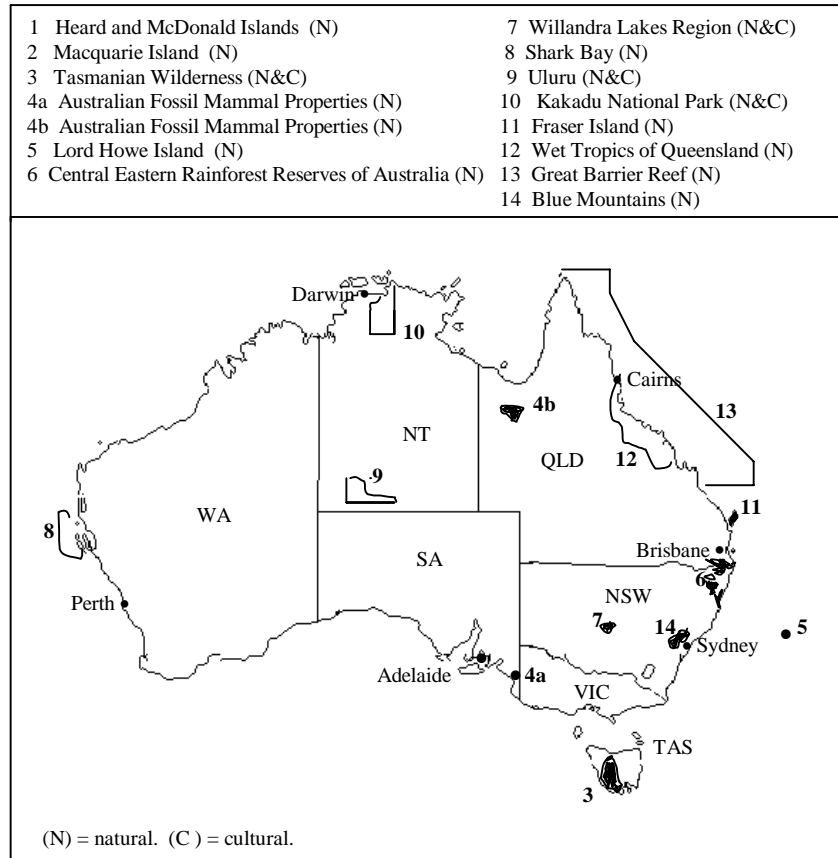
Source: Adapted from Environment Australia (2000b).
Note: Properties 1 and 2 are not shown because they are located far south of the Australian mainland. Heard and McDonald Islands are located 1500 km north of Antarctica and Macquarie Island is located 1500 km south-east of Australia. These islands highlight the remoteness of some of Australia's WH properties.

TABLE 1

AUSTRALIA'S WORLD HERITAGE LISTED PROPERTIES AND YEAR OF LISTING

Name of property		Year of initial listing and extension
1. Great Barrier Reef	(N)	1981
2. Kakadu National Park	(N and C)	1981 (stage 1)
		1987 (stage 2)
		1992 (stage 3)
3. Willandra Lakes Region	(N and C)	1981
4. Tasmanian Wilderness	(N and C)	1982
		1989 (extended)
5. Lord Howe Island Group	(N)	1982
6. Central Eastern Rainforest Reserves (Australian)	(N)	1986
		1994 (extended)
7. Uluru – Kata Tjuta National Park	(N and C)	1987
		1994
8. Wet Tropics of Queensland	(N)	1988
9. Shark Bay, Western Australia	(N)	1991
10. Fraser Island	(N)	1992
11. Australian Fossil Mammal Properties (Riversleigh/Naracoorte)	(N)	1994
12. Heard and McDonald Islands	(N)	1997
13. Macquarie Island	(N)	1997
14. Blue Mountains	(N)	2000

Source: Adapted from Environment Australia (2000b).

The possible impact of WH listing on demand for visits is illustrated in Figure 2(a) and (b). In Figure 2 (a) it is assumed that a property is inscribed on the WH list at time t_r. The number of visitors to the property might follow the time-path ABC in the absence of listing but diverge along BD if listing occurs. Other things unchanged, the difference between curves BD and BC provides an indication of the increasing demand for tourism to this protected area due to its WH listing. As time passes and with sustained and increased marketing of WH properties, visitor numbers can be expected to increase. Furthermore, it is also possible that after WH listing visitor numbers could show an instantaneous increase as shown in Figure 2(b). However, this trend is less likely than the former because it takes time for visitors to acquire information, plan visits and save for such visits which are not inexpensive. If an instantaneous increase were to be recorded, it is more likely to come from domestic rather than foreign visitors.

FIGURE 2
**HYPOTHETICAL TIME-PATHS FOR VISITS TO A PROTECTED AREA WITH
AND WITHOUT WH LISTING**
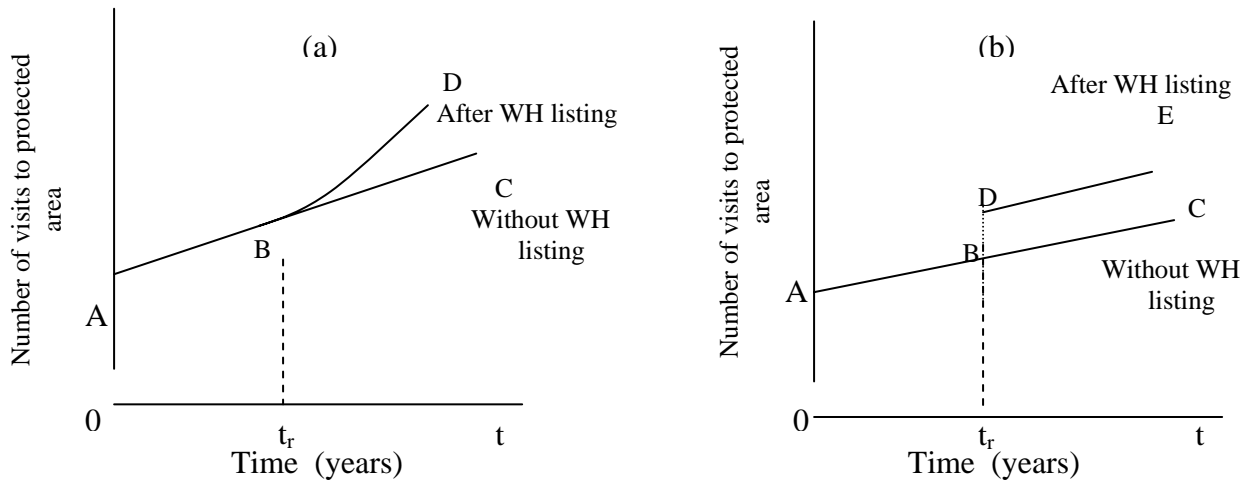
Time-series tourist data are now used to examine the consequence of listing. For this purpose, available data for WH properties and non-WH properties are compared to show tourism trends during a nine-year period. International visitor data compiled by BTR are used for this purpose. Although it is important to examine domestic visitor data as well, such data are not available as time series. Although the data presented in Table 2 are not complete, they are the only data available. Time-series data are available for well-established WH properties such as Kakadu, Uluru, Fraser Island and Shark Bay from 1991 to 1999. Time-series data for this period are also available for the Wet Tropics (Kuranda only) and Tasmanian Wilderness (Cradle Mountain NP and Huon Valley only) but are incomplete. This is because these WH properties are made up of a collection of national parks and reserves and data for all properties are difficult to obtain. There are numerous problems in gathering data in such situations. Other WH properties for which data are not available are, however, small and in most cases located in remote and inaccessible locations. The availability of time-series data for non-WH natural sites is also limited. Some data for particular sites such as the Rocks in Sydney are also available but are not included because they are not natural sites. Furthermore, some data for some non-WH natural sites are available only for the last two years. Since they are insufficient to show any trends such data have not been taken into account. The Greater Blue Mountains was declared a WH site only in 2000 and hence data for comparative purposes are not available. Domestic visitor data are available from the Domestic Visitor Survey conducted by BTR for the Blue Mountains and a few non-WH sites for the past two years. However, these data are insufficient for any comparative purposes.

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TABLE 2
NUMBERS OF INTERNATIONAL VISITORS TO SPECIFIED
WORLD HERITAGE PROPERTIES AND NON-WORLD HERITAGE PROPERTIES
IN AUSTRALIA, 1991 AND 1999 (000s), AND PERCENTAGE CHANGE

World Heritage listed properties	1991	1999	Change (%)
Fraser Island/Hervey Bay (Qld)*	75.03	158.72	111.53
Wet Tropics (Kuranda, Cairns) (Qld)	214.3	396.8	85.09
Kakadu NP (NT)	74.63	136.04	82.2
Uluru/Ayres Rock (NT)	147.30	268.42	82.22
Monkey Mia/Shark Bay (WA)	23.17	59.82	158.15
Cradle Mountain National Park (Tas)	17.98	43.16	140.04
Huon Valley (Tas)	17.31	18.63	7.64
Total	569.72	1081.59	89.84
Non-World Heritage listed properties			
Litchfield NP (NT)	25.53	62.50	144.82
Katherine/Katherine Gorge (NT)	54.99	95.60	73.84
Kings Canyon/Watarrka NP (NT)	31.42	136.04	332.94
The Pinnacles/Nambung NP (WA)	46.35	125.09	169.88
Kangaroo Island (SA)	25.25	63.82	152.69
Grampians NP (Vic)	35.34	89.07	152.00
Great Ocean Road, Twelve Apostles (Vic)	98.96	345.15	248.76
Phillip Island, Penguins Parade (Vic)	219.13	322.88	47.34
Total	**536.97**	**1240.15**	**130.95**

* Listed in 1992. Source: BTR Annual Reports, 1991 and 1999.

Even if data are available, an analysis of data for some WH properties pose several problems. This is because of the problem of possible double counting of visitors who visit more than one national park in the same WH listed area. For example, CERRA is made up of 50 separate reserves (Pugh, 2001, p. 2). If a tourist visits more than one reserve, there is the possibility that they could be counted more than once, inflating visitor figures. The same problems could arise for the Wet Tropics, Greater Blue Mountains, Tasmanian Wilderness and Great Barrier Reef. Table 2 reports visitation data for some WH and non-WH properties and the percentage increase between 1991 and 1999[1]. As the data reveal, WH listed properties experienced increases in international visitor numbers, but their percentage increases during the last nine years are mostly not as large as the percentage increases recorded by most of the non-WH properties. Even well-known WH properties such as

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[1] BTR data for properties published in its annual reports are expressed as a percentage of visitors to the respective states. In order to obtain annual visitor numbers to each site, the percentages for each site have been multiplied by the annual visitor numbers to the respective states.

Kakadu and Uluru national parks do no better than most non-WH properties listed in Table 2. Monkey Mia/Shark Bay is an exception.

It is interesting to note that with two exceptions, the WH properties in Table 2 were established before 1991. Furthermore, it should be mentioned that some visitors to WH properties are not influenced by the WH listing 'signalling' factor. This is because some visitors only learn after visiting a site that the property is WH listed. Some visitors' itineraries are also decided by their travel agents as a part of tour packages. Therefore, the number of visitors attracted to WH properties solely due to listing could be lower than the figures that are currently available. However, this is an aspect that needs to be investigated by a field survey. A natural increase in tourism numbers in the absence of listing as reflected at non-WH sites should also to be taken into account.

A comparison of yearly BTR international tourist visitation data also reveals a strong demand for non-WH properties. For example, in 1999 more than 300,000 foreigners visited each of Phillip Island/Penguin parade and the Greater Ocean Road/Twelve Apostles. Among the WH properties, Uluru, Kakadu and Fraser Island national parks have relatively high international visitor numbers, though well below 300,000 in each case. Kings Canyon/Watarrka NP has visitation figures similar to Kakadu NP. The Pinnacles/Nambung NP visitation rate in 1999 is close to that of Kakadu NP and the percentage increase in visitor numbers between 1991 and 1999 for Pinnacles/Nambung NP is greater than Uluru, Kakadu, and Fraser Island. BTR visitor data available for the Grampians NP, Flinders Rangers NP, West MacDonald Rangers NP and Rottnest Island public reserve from 1996 to 1999 (Table 3) also show strong yearly visitor growth rates for non-WH sites. What is clear from Table 2 is that in the early 1990s most WH properties had higher yearly international visitor numbers than non-WH sites. However, by the late 1990s visitation rates to non-WH sites had grown rapidly equalling or even exceeding those at WH sites.

TABLE 3
**ADDITIONAL DATA ON NUMBERS OF INTERNATIONAL VISITORS TO
WORLD HERITAGE PROPERTIES AND NON-WORLD HERITAGE PROPERTIES
IN AUSTRALIA, 1996 AND 1999 ('000s) AND CHANGES**

| World Heritage listed property	1996	1999	Change (%)
Naracoorte Caves, Penola, Coonawarra	11.87	12.76	7.51
Non-World Heritage listed properties			
Blue Mountains (NSW)*	831.90	811.02	-2.51
Rottnest Island (WA)	78.78	135.97	72.59
Flinders Ranges, Wilpena, Pound, Arkaroola (SA)	26.71	41.48	55.29
West MacDonald Ranges (NT)	NA	51.47	-
Grampians NP (VIC)	NA	89.07	-

* Blue Mountains was declared a WH property only at the end of 2000.
  Source: BTR Annual Reports, 1996 and 1999.

It is interesting to note here that properties close to major cities such as Fraser Island NP (approximately 350 km north of Brisbane) and the Pinnacles/Nambung NP (approximately 175 km north of Perth) have experienced high growth rates. Available BTR data (Table 3) reveal that the Greater Blue Mountains area, which is approximately 100 kilometres north-west of Sydney, attracted large numbers of visitors during and before 1999. The number of visitors is well in excess of that to any other of the properties listed in Table 2 and 3 although a slight decrease has been recorded during the last few years. The large figures are explained to a certain extent by the fact that Sydney is an important port of entry and departure for tourists[2] and the Blue Mountains is in close proximity.

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[2] Australian Bureau of Statistics (2001) data show that Sydney airport is by far the most important airport for passengers arriving and departing Australia. For example, in 1999, more than 7 M passengers travelled via the Sydney airport compared to 2.6, 2.3 and 1.4 M passengers for Melbourne, Brisbane and Perth respectively. Only 156,058 visitors travelled through Darwin airport. The figure for Cairns is 660,659.

FIGURE 3
ANNUAL NUMBER OF VISITORS TO AUSTRALIA'S WORLD
HERITAGE PROPERTIES PER YEAR IN THE MID 1990s[3]
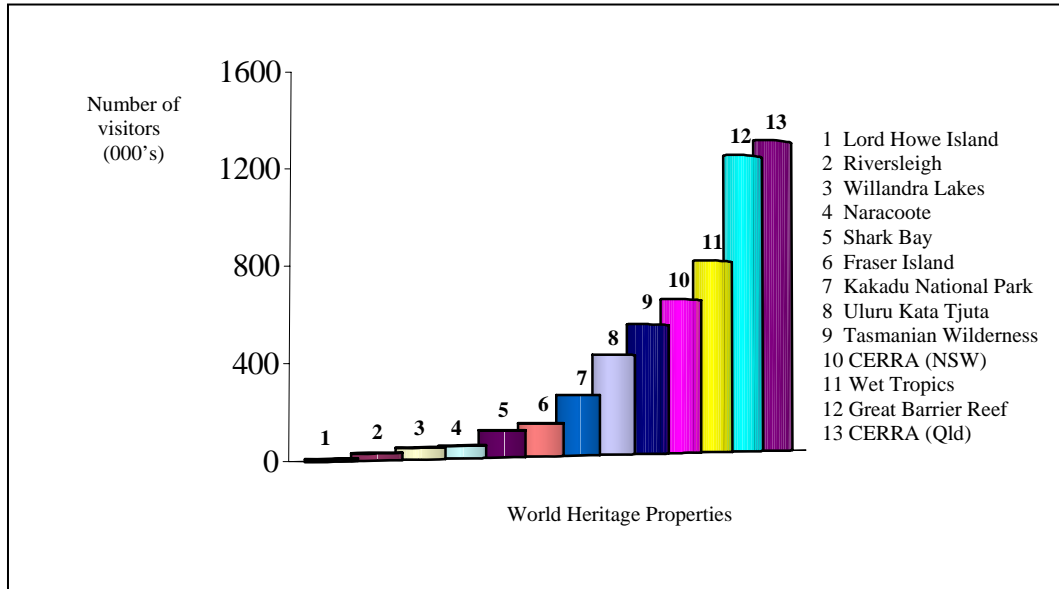
Source: Adapted from Thorsell and Duffy (1997, p. 7).

Data presented in *Australia's World Heritage* by Thorsell and Duffy (1997) reported in Figure 3 illustrates this point. For example, the Willandra Lakes region has few visitors, whereas CERRA, particularly the Queensland section, has a relatively high number of visitors. Figure 3 indicates that visitation to many properties (for example, Willandra Lakes region which was declared a WH site in 1981) remains quite low while numbers for some others are very high (for example, CERRA which was declared a WH site in 1986). BTR data for Naracoorte (Table 3) also show that the number of foreigners visiting this property were quite low in 1996 and 1999.

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[3] Visitor numbers shown include both domestic and international tourists. Neither the years nor the source have been cited by Thorsell and Duffy and are assumed to be the figures for the mid-1990s. There is no other source (except for BTR) from which data for WH sites can be obtained. There is a paucity of data in this area despite the importance of WH listed properties as claimed by some government departments.

3. LIKELY REASONS FOR SLUGGISH GROWTH IN VISITS TO WH LISTED AUSTRALIAN PROPERTIES

It is possible to list several likely reasons why WH properties do not appear to have larger percentage increases in tourist numbers than selected non-WH properties (see Tables 2 and 3). These are likely reasons that can be verified only by a survey of visitors to WH properties and non-WH properties.

(a) It is likely that tourist numbers have grown due to WH listing but not as much as claimed by some government departments. For instance, the World Heritage Unit, Department of the Environment, Sport and Territories (1995) - now known as Australian Heritage Commission, in the Department of Environment and Heritage, was of the view that WH listing has 'resulted in greatly increased visitation from overseas and within Australia' (p. 56).

(b) It is important to bear in mind that many WH listed properties were marketed long before acknowledgement as 'areas of outstanding value' through World Heritage listing. In such a case WH listing has only a minimal impact.

(c) It is possible that visitor numbers to some WH sites grew rapidly soon after WH listing in the 1980s and began to stabilise in the 1990s. BTR data are not available for the 1980s to examine whether this was the case. However, it should be pointed out that although Fraser Island and Shark Bay (declared as WH properties in the early 1990s) experienced large increases in international visitor numbers up to 1999, many non-WH properties, too, recorded large increases in visitor numbers during this period (Table 2). The Willandra Lakes region, declared a WH property in 1981, still experiences low visitor numbers (Figure 3)[4].

(d) Although listing has an 'icon' attraction there are other factors that influence visitors' decision-making. Distances to properties, costs involved, family size, age of family and the season (especially the hot weather) are likely to affect visitors' decision- making. As

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[4] While it is argued by some sectors such as tourist operators that WH listing would increase visitation numbers, organizations such as the Australian Conservation Foundation argue that WH listing should result in more protection for WH sites which could curtail tourist numbers to WH sites. It must be pointed out that increasing or reducing tourist visitor numbers to WH sites is not the criteria on which WH sites are listed. However, WH listing of a property increases federal government funding and may enable environmental pressure groups to press for more protection such as limiting access to certain parts of protected WH areas or restricting certain activities in certain areas such as on the GBR. However, restricting access or limiting certain activities in protected areas has been in existence even before WH listing and is not restricted to WH properties only.

can be seen from the data, properties that are close to major cities have larger visitation numbers than those that are not. Even zoos and aquariums attract large visitor numbers because they are either located in or close to cities. Such visits are mainly family outings with children involved. These trips are also much easier to make than journeys to national parks. Furthermore, properties close to special attractions such as whale watching at Hervey Bay, Kuranda (special attractions such as the rainforest skyrail, scenic railway) and the Gold Coast tourist attractions create increased demand to visit Fraser Island, some Wet Tropics national parks and reserves (e.g. Barron Falls, Daintree, Cape Tribulation NPs) and CERRA (Queensland component) respectively. For example, Lamington NP which is part of CERRA and is approximately 125 km south of Brisbane is a popular tourist destination that would attract foreign (also Australian) tourists, with or without heritage listing. At Kuranda, the special tourist (not WH related) attractions (for example, attractions such as the Kuranda scenic railway and the butterfly farm catering to family groups with easy access) bring visitors to the area and it is unlikely that the majority of visitors were influenced to visit by the WH 'signalling' effect. However, no empirical study has been conducted to determine whether WH listing is a significant influence or not.

(e) Similarly, properties that are located close to the ocean where there are attractive beaches such as GBR, Fraser Island, Monkey Mia/Shark Bay and some WH listed national parks and reserves in the Wet Tropics have relatively larger tourist visitation numbers (see Table 2). Non-WH properties, too, benefit from these special features. This is another aspect that is yet to be empirically examined.

(f) Tourists' purpose of visits (for example, holiday, business and visiting friends and relatives) also need to be taken into account. Mere WH listing does not guarantee visits. However, one of the purposes for a visit might be to see a place people have heard much about such as a WH listed site.

(g) Properties are declared as WH properties for their 'outstanding universal natural or cultural values'. However, this is a factor that is likely to interest mostly the 'specialist' tourist rather than the 'generalists'. 'Specialist' tourists are fewer in numbers than 'generalists'. An example can be cited. The Greater Blue Mountains WH area boasts of giving refuge to 114 endemic plant species found nowhere else on Earth (Environment Australia, 2000c). This was one of the main reasons for its declaration as a WH property. Obviously, the majority of the 900,000 international visitors in 1999 to the Greater Blue Mountains did not visit to see the rare plants. In this case the rare plants would have

interested mainly the 'specialists' rather than the 'generalists'. Furthermore, the publicity arising from WH listing is more likely to inform generalists than specialists. For a discussion on the 'specialist' and 'generalist' visitors in the context of wildlife specialists and wildlife generalists, see Duffus and Dearden (1990).

(h) Uluru (which attracts large numbers of visitors) has a geological phenomenon found nowhere else in Australia or elsewhere. In other words, there are no close 'substitute' properties. Because of its distance, tour operators combine visits to other properties (mainly natural) that are close. Hence, value is added. This may explain why national parks in close proximity to well-known WH properties have also recorded increases in visitor numbers (see Table 2).

(i) Some WH properties have limitations placed on visitor numbers (for example, Lord Howe Island) and some properties are too remote (for example, Heard and McDonald Islands) for the average visitor, who is a 'non-specialist' visitor. In such instances, WH listing does not increase tourist numbers significantly.

4. SUBSTITUTION AND COMPLEMENTARY EFFECTS OF LISTING

The above analysis considers only the effect of WH listing on the number of visits to the listed property itself. However, is conceivable that observed increases in demand to visit a property because of its WH listing may be at the expense of visits to other protected areas, i.e. a substitution effect may be present. One would have to consider the size of this effect to ascertain to what extent net visitation rates to protected areas as a whole alter as a result of WH listing. Furthermore, the geographical pattern of the substitution may vary – only some protected areas may lose visitors to WH areas[5].

Another possibility is complementarity. The WH listing of a protected area may not only increase demand to visit this protected area but may also increase demand to visit other areas. It is possible that these effects are different for Australian and for international travelers, i.e foreign visitors may exhibit a different demand response rate for WH listing in comparison to Australians. Furthermore, one popular WH site can increase the demand for other WH properties located close by.

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[5] It should be pointed out that WH listing in Australia may also result in foreign visitors substituting Australia for other destinations.

From the data available, it is difficult to measure substitution or complementary effects resulting from WH listing. The limited data indicate that the demand for non-WH properties is high despite the existence of 14 WH properties. It is possible that there is some substitution effect but this is likely to be small. It is likely that the substitution effects may be confined to areas close to cities while WH properties in remote Australia complement non-WH properties in their region. Complementary benefits may accrue to some national parks that are located close to WH properties. This is especially so for non-WH properties in remote and interior locations. For example, Litchfield National Park in close proximity to Kakadu, and national parks near Uluru may receive complementary benefits because of their proximity. Without the presence of close-by WH listed properties marketed internationally, these unlisted properties may not have as many tourist visits as currently experienced. Data need to be collected to show whether visitors also cover lesser-known parks during journeys to popular national parks such as Kakadu and Uluru. In fact, many tourist operators offer tour packages to WH areas that also cover neighbouring national parks and reserves. Examples include Kakadu and Uluru national parks. It appears that Kakadu NP complements Litchfield NP located approximately 125 km to the west and Katherine Gorge located approximately 50 km to the south. Kings Canyon/Watarrka NP benefits by being located relatively close (approximately 125 km north) to Uluru. It is possible that non-WH properties may also complement other national parks and reserves, but such an examination is beyond the scope of this article. It is most likely (although the necessary data for comparison purposes are unavailable) that the Great Barrier Reef raises demand for some WH listed national parks and reserves in the Wet Tropics (e.g. Barron Falls and surrounding areas) and vice versa. These two WH areas run parallel for hundreds of miles and in some instances the distance between them is only a few kilometres.

5. MEASURING THE ECONOMIC VALUE OF WORLD HERITAGE LISTING OF A NATURAL AREA: MEASURES FROM WELFARE ECONOMICS

As mentioned above, WH listing of a natural area acts as a signalling device and may stimulate tourist visits, even though, ostensibly, the tourism potential of a property is an incidental consideration in its listing. Indeed, some listed properties such as Willandra Lakes and Heard and McDonald Islands may have little tourist potential. Nevertheless, many government bodies (e.g. Environment Australia), politicians and tourist operators claim or believe that WH listing acts as a stimulus to tourism visits to most properties when they are

listed. Where this is so, the demand curve for visits to the natural areas is shifted upward. Using standard economic theory, this movement might provide one basis for measuring the increase in the touristic economic value of a natural area as a consequence of its listing as a WH property.

A relevant valuation theory in this case is utilitarian-based welfare economics such as that developed by Marshall (1890) and Pigou (1925). This theory uses monetary values for consumers' surplus plus producers' surplus to measure economic welfare. Increases in the sum of these values indicate a rise in economic welfare. While this approach is subject to several theoretical limitations, it has nevertheless been widely applied to the economic valuations of outdoor recreational sites and national parks and to social choices about land use. For instance, the theory implies that considering only the economic value of visits to a natural area[6], it is socially optimal to protect the area if the total economic surplus generated as a result of visits exceeds the maximum economic surplus from its best alternative economic use. Even if entry to the protected area is free and no income is generated by these visits, its conservation and use by tourists or recreationists may constitute its best economic use.

Using Figure 4, consider now specifically how this standard type of theory might be applied to assessing the increase in social welfare (economic value) generated by WH listing of a natural area. In Figure 4, D_1D_1 is assumed to be the demand curve for visits to a natural area in the absence of WH listing and D_2D_2 is assumed to be the demand curve with such listing. The difference between these two curves reflects the stimulus to the demand for visits provided by WH listing. However, there are also likely to be some costs in managing a natural area to cater for visitors. For illustrative purposes, the marginal costs of catering for visitors is shown by line AC.

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[6] This assumes that tourism or recreation are the only values of the natural areas concerned. However, as discussed elsewhere, such use-value is likely to only be a part of its total economic value.

FIGURE 4
**DIAGRAM TO ILLUSTRATE EXTRA ECONOMIC VALUE GENERATED BY WH
LISTING OF A NATURAL AREA**
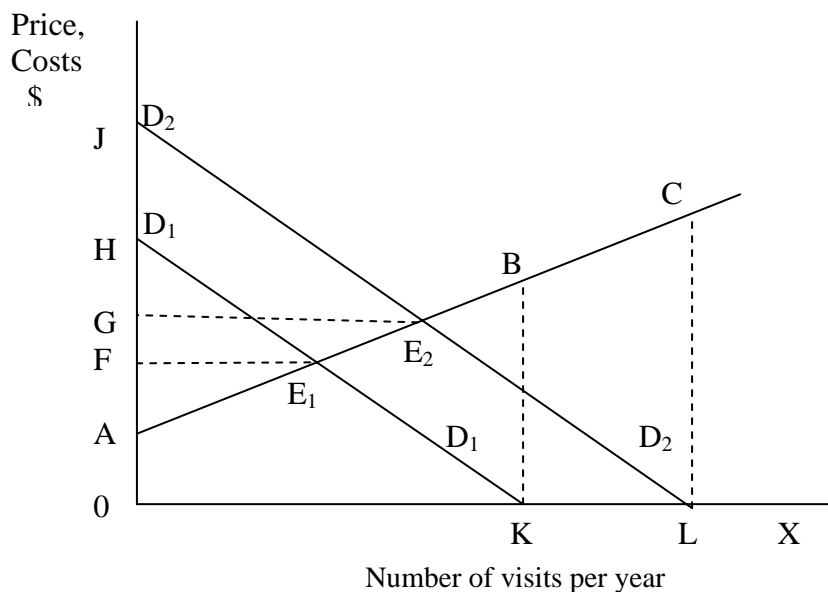
The impact on economic welfare (economic value) of WH listing depends on policies on the pricing of entry to the natural area. If marginal cost pricing prevails and the situation shown in Figure 4 applies, the price of entry to the natural area rises from 0F before listing to 0G after listing. Consequently, the increase in total economic surplus (rise in consumers' surplus plus producers' surplus) due to listing is equivalent to the area of trapezium HE_1E_2J.

On the other hand, if entry to the natural area is free, and if the non-listed demand situation prevails, a deadweight social loss equivalent to the area of triangle E_1KB prevails. The consequence of listing, however, is to increase the area of this deadweight loss to an amount equal to the area of triangle E_2LC. Hence, total social deadweight loss rises by an amount equivalent to the area of trapezium KLCB. It is possible that the area of this trapezium can exceed that of trapezium HE_1E_2J. It is more likely to do so the steeper is the marginal costs curve. When this occurs it implies that the extra social cost of visits exceeds the extra social benefits, and economic value is reduced by WH listing. This would, however, not be so if the marginal cost of catering for visits is zero, and it is less likely to be so the closer such costs are to zero. If entry is free, the economic surplus of WH listing is HKLJ.

Note that this result holds independently of any environmental damages, resulting in spillover or external costs, caused by visitors. For example, tourist visits may degrade the environment

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of a protected area and reduce its TEV (cf. Wen and Tisdell, 2001, Ch.7). However, the source of the previously mentioned reduction in economic value basically arises from the failure to adopt marginal cost pricing.

This could give rise to a major national economic burden from WH listed areas, especially if the majority of visitors are foreigners. Foreign visitors will appropriate consumers' surplus and possibly contribute little via taxation for funding the cost of visitor management of the natural area. However, the type of analysis presented in Figure 4 does not distinguish between demand from foreign visitors and from domestic visitors. Such a distinction is necessary if national economic benefits are to be distinguished from global economic benefits (cf. Dwyer and Forsyth, 1993; Clarke and Ng, 1993). Despite this, most standard economic analysis of this subject matter focuses on global economic benefits.

6. CONCEPTUAL PROBLEMS OF MEASUREMENT AND THE TRAVEL COST METHOD

A major challenge is to estimate the demand curves for visits to a natural area empirically. TCM is widely used for this purpose even though many limitations of it have been noted in the literature.

It has been pointed out in the literature that the TCM method of estimating demand is a revealed preference method (see, for example, Asafu-Adjaye, 2000, p. 105). This observation raises another issue which does not seem to have been canvassed in the relevant literature, namely, in many cases the travel involved is assumed to be based on anticipated utility not actual utility subsequently obtained at the attraction.

In neoclassical welfare economics, anticipated and actual satisfaction derived by the consumer by consuming a commodity do not differ because the consumer is assumed to be fully informed. Demand before consumption is assumed to be just the same as demand with hindsight and so no disappointment and no unexpected bonus of utility occurs ex post.

Now this may be a reasonable assumption as far as run-of–the-mill commodities are concerned. But it is likely to be false as far as experiential commodities are concerned. These are commodities that cannot be sampled beforehand and about which considerable residual uncertainty exists prior to their purchase and consumption. Many holiday journeys, especially to new natural areas for the visitor, fall into this category. The degree of uncertainty prior to the travel event for overseas tourists may be greater than for domestic tourists, and is greater for visits to some types of tourist attractions than to others[7]. Naturally this uncertainty will be less for visitors making repeat visits to sites than for first-time visitors. However, the majority of visitors to most WH listed sites are likely to visit these only once. Hence, considerable scope exists for their demand curves for visits based on anticipations (their ex ante demand curves) to differ substantially from their demand curves that would or do prevail with hindsight (their ex post demand curve)[8]. Presumably, ex post curves, since they are based on greater knowledge, come closest to satisfying the conditions assumed in neoclassical welfare economics. Nonetheless, they will only coincide with the ex ante demand curves as identified by TCM in special circumstances. If the ex ante demand curves exceed those ex post, the economic value of a natural area used for visits will be overestimated by TCM-based demand curve. On the other hand if the ex ante demand curves are less than those ex post then the opposite will prevail. Note that this is not just a conceptual and practical problem for measuring the economic value of WH listed sites, but applies also to many other tourist sites and attractions.

As mentioned above, the TCM is commonly used for estimating the recreational and tourism value of an outdoor area. In fact it is the most widely used recreation and valuation technique for this purpose (Bateman et al., 1996). This technique has been used in Australia to determine the value of many recreational properties. These include studies by Hundloe et al., 1990 (Fraser Island), Knapman and Stanley, 1993 (Kakadu), Stoeckl, 1994 (Hinchinbrook Island), Beal, 1995a (Canarvon Gorge), Beal, 1995b (Girraween), Bennett, 1996 (Dorrigo and Gibraltar Range), Herath, 1999 (Lake Mokoan) and Ward, forthcoming (Fraser Island). However, the TCM is subject to a number of limitations, especially when a journey is for multiple purposes rather than for a single purpose. This is likely to be a particular problem in the case of international visitors. Application of TCM in such circumstances is liable to

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[7] This problem may, for example, be least for local outdoor recreational attractions frequented mainly by local domestic residents.

overestimate the value of any particular site visited during the journey if the cost of the whole journey is taken as an indicator of the willingness of the visitor to pay to visit the individual site. This involves a misuse of the technique. Ward (forthcoming) has suggested that if a property is not the principle destination of visitors, the recreational point of origin might be used to calculate travel distance rather than the home point of origin. While this method might create a bias in the opposite direction, it has the advantage of providing conservative estimates. This is always not an advantage.

In addition, some of the other commonly cited problems of the TCM are worth mentioning since they, too, have to be considered when using the technique in WH properties. Some of these issues are: problems arising in measuring the economic value of time; deciding how to apportion the travelling costs of a party across individual members of that party; non-paying visitors and statistical problems[9] (Hanley, 1989; Hanley and Spash, 1993, p.86; Turner et al., 1994).

7. SIZE AND CONFIGURATION OF SOME WH LISTED PROPERTIES LIMIT APPLICATION OF TCM

In Australia, the scattered and disjointed nature of some WH listed properties and the vastness of many limit the practical application of TCM for estimating the demand for visits. TCM treats the tourist attraction as a point rather than a large area.

Many of Australia's WH listed properties comprise a collection of national park and reserves spread over a large and geographically diffuse area. For example, CERRA is large and is diffused in two states, namely, Queensland and New South Wales. The Australian Fossil Mammal property is also located in two states (Queensland and South Australia) but is small.

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[8] Tisdell and Wilson (2001) have noted the importance of this distinction in relation to tourism based on turtle watching. For most tourists, turtle watching is an experiential commodity.
[9] Hanley and Spash (1993, p. 90) state that the dependent variable can be both 'censored and truncated'. They point out that 'truncation means that as only visitors to the site are recorded, there is no information on the determinants of the decision to visit the site. Also visits are only recorded during the sampling period and may thus incorrectly describe the preferences of those visiting at other times of year. Censored means that less than one visit cannot possibly be observed. This implies that the dependent variable (visits) is censored at one, and that Ordinary Least Squares estimates of demand parameters will be biased (Smith and Desvouges, 1986)'.

Even through many WH properties do not extend beyond one state, they often still cover vast areas such as the Great Barrier Reef WH Area, Greater Blue Mountains, Tasmanian Wilderness and may be disjoint. For example, the Tasmanian Wilderness and the Wet Tropics are made up of many national parks and reserves as is CERRA.

The following problems can, therefore, arise in applying TCM in such circumstances:

(1) Because there are many entry points to several WH properties, it is difficult to sample visitors to these representatively.

(2) Different parts of a large or scattered property may have substantially different values, and this will be concealed by aggregation.

(3) Valuation cannot be based on a single entry point to the property and much travel may take place within the property itself, as (for example) in the case of the Great Barrier Reef WH area[10]. This can lead to serious under-valuation if only expenditure to reach the borders of the property are taken into account.

It seems that application of TCM in such cases is being stretched beyond the limits for which it was originally designed.

8. ECONOMIC IMPACT AS AN ALTERNATIVE MEASURE OF ECONOMIC VALUE

Discussions of economic impact of an event normally focus on its influence on incomes or employment including income and employment multipliers rather than on economic welfare as measured in neoclassical welfare economics and considered above (cf. for example, Archer, 1989; Fletcher, 1989; Johnson and Moore, 1993; West, 1993). Changes in the latter may not be in the same direction as the variations in the former. For example, WH listing of a property may have a very favourable impact on local income and employment but economic welfare, as measured in terms of neoclassical economics, may fall. The favourable economic impacts locally could be brought about, for instance, by government subsidies for the management and promotion of a WH site. However, there can be occasions when increased economic welfare and favourable economic impacts locally go hand in hand. Further research is needed to identify such cases.

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[10] When a property is very large, it is unreasonable to treat it as a point as is done using TCM.

9.   TOTAL ECONOMIC VALUE OF PROPERTIES

The tourist value of a property as measured by the neoclassical method of estimating and adding consumer and producer surplus provides an estimate of the direct use value of a property for tourist and recreational purposes. Often this is the only direct use value of a protected area, even though it does not represent the TEV of the area. The concept of TEV is more comprehensive and accounts for both the economic use and non-use values of a property. Nevertheless, TEV is utilitarian in nature and in many respects can be regarded primarily as a more comprehensive restatement of the neoclassical theory of economic valuation (cf. Tisdell and Wen, 1997).

The tourism value of world heritage properties is generally less than their TEV and in many cases substantially less because tourism economic value relates only to direct economic value, whereas TEV consists of all use and non-use values. Use values consist of direct, indirect and option values while non-use values include bequest and existence values (Pearce, 1993). Use values (direct) can be consumptive, non-consumptive or both. An example of a non-consumptive use (direct value) of a property is tourism[11]. Examples of a consumptive use (direct value) of a property are sustainable timber extraction (for example, some private and timber reserves of WH properties of the Wet Tropics), non-timber (forest products) extraction (for example, aboriginal use of plants and animals for food and medicinal purposes in the WH listed Wet Tropics, Tasmanian Wilderness and Kakadu) and grazing (for example, Willandra Lakes region). Fishing, such as on the Great Barrier Reef, also falls into this category. The indirect (use) values of a property include nutrient cycling and watershed protection. An option value is a value that can be used in the future by an individual (categorized as a use value) or a value that can be used by an individual's descendents (including existing children) in the future, which is then categorised under non-use values. Such values are known as bequest values. Existence values are non-use values. Apart from the failure of the analysis presented in Figure 4 to capture the indirect use values of a property, it fails to capture non-use or passive use values (Turner et al., 1994). These include option values, existence values and bequest values.

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[11] However, it should be mentioned that not all tourism is non-consumptive. Apart from nature-based tourism some tourists travel to experience gastronomic delights and shopping. Furthermore, even though a visitor to a WH site may engage in non-consumptive tourism on site, his/her journey would, nearly in all cases, result in burning fossil fuels.

Studies of the TEV of Australian World Heritage properties are not common. Some early studies using the Contingent Valuation Method were carried out for Fraser Island (Hundloe et al., 1990) and Coronation Hill of Kakadu Conservation Zone which is now part of WH listed Kakadu NP (Imber et al., 1991). The latter study proved to be highly controversial. It should also be pointed out that the distinction between indirect or non-consumptive values (such as recreation) and non-use values is not clear. This has lead to the replacement of the term 'non-use values' with 'passive use values', which seems to distinguish better the difference between use and non-use values (Turner et al., 1994). Passive use values are non-use values. It must be pointed out that the above discussion is mainly relevant for the valuation of natural assets. Modifications have to be made to the existing valuation techniques when valuing cultural assets. The valuation process becomes even more complicated when both natural and cultural assets are involved.

In this study, possible changes in TEV as a result of the WH listing of a property are not analysed. Only the tourist and recreational component of TEV is considered. Furthermore, research is required to assess possible consequences on TEV of WH listing of a property. However, it is clear that listing makes it more likely that the non-use values of a property will be conserved[12]. In that sense, listing can add to the economic value of a property. In fact, the prime reason for listing many properties seems to be to enhance their economic value in this respect.

10. CONCLUDING OBSERVATIONS

This article examined two main areas that are associated with or relevant to WH listing, an increase in tourist numbers to WH properties and what economic values are of interest in relation to WH listing. This is because WH listing is considered prestigious and acts as a signalling device just as a brand name does. Only properties that are considered truly outstanding in terms of their natural or cultural heritage or both are listed. Examination of BTR data reveals that although visitor numbers are likely to increase from listing, there is unlikely to be a large percentage increase. Furthermore, some properties continue to experience low visitor numbers despite WH listing. It seems that different properties display different degrees of tourist demand response as a result of WH listing. This article has

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[12] Unfortunately, WH listing does not provide a cast-iron guarantee that non-use values will be conserved, as is clear from Nichols (2001).

speculated on some of the factors likely to influence the dynamics of response to listing. To some extent, socio-economic factors have an influence. The absolute response is likely to be smaller for those properties that are costly and time-consuming to reach and for those that do not involve journeys with multiple attractions. However, it must be pointed out that if not for world heritage listing, visitor numbers to these properties could well be less than the current figures.

Although data on incomes and employment creation from WH listing are not available, some of the issues involved in relation to the economic impact of heritage listing were discussed. In this connection the concept of TEV has some relevance to WH listing, although difficulties arise from such valuation. An increase in demand for WH properties results in larger consumer surpluses to visitors. The consumers' surplus in the eyes of many 'laymen' is not perceived as economic value because it has no direct economic impact. From their point of view the economic value of an increase in tourism as a result of heritage listing is likely to depend on the economic impact of this increase. Although the current evidence shows that the effects of WH listing is not as large as generally thought, further work needs to be undertaken in the form of case studies at selected WH and non-WH properties to identify the underlying factors that influence visits to protected areas. Only such a study could identify the real extent of the 'signalling' effect and estimate the local and perhaps the regional economic impact of WH listing.

It is clear that considerable care is needed before claiming that WH listing of a natural area adds to economic value. Cases can occur where social economic welfare based on tourist demand is actually reduced by such a listing, especially if marginal cost pricing of visits is not practised. Furthermore, if the extra visitors in this case are mostly from overseas this may add to the *national* economic welfare loss. Because many visits to most WH properties are experiential in nature, problems arise in applying neoclassical economic theory for valuation because ex ante and ex post demand curves are liable to diverge. In turn, this restricts the scope for using estimated demand curves for visits generated by TCM. There are problems in using these to estimate economic values because they are estimates of the ex post demand curve. They often fail to reveal the ex post demand curve. In addition, the vast geographical areas over which several of Australia's WH properties spread, as well as in some cases their fragmented nature, further limit the scope for applying the TCM as a basis for determining the economic value of WH properties.

Note that the above discussion has concentrated on touristic and recreational economic values from WH listing. It has not attempted to consider the possible consequences of listing of all aspects of TEV. For example, the analysis provides limited attention to the consequences of listing for non-use values. The latter may in fact be the most important economic values for some WH properties, for example, Heard Island and MacDonald Island. On the other had, politicians and public servants have frequently stressed that WH listing of natural areas provides a boost to tourist and recreational use of these natural areas and has positive economic consequences. This article shows that while this is sometimes true, it is not always the case, even for those areas which are attractive for tourism and recreation.

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