CAN GREEK PARKS PAY THEIR OWN WAY? ISSUES REVEALED FROM TWO CONTINGENT VALUATION STUDIES IN TWO GREEK PARKS

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ABSTRACT

Directing sufficient finance towards protected areas has always been a problem for effective management and all too often governments expect parks to be financially self-sustained. National Parks in Greece are severely under-funded and adopting an entry fee strategy is viewed as a realistic alternative in recovering some of the costs of managing Parks. The strategy of how to set fees and in which Parks, considers the pricing objective and information about the number of Park users and visitors' willingness to pay (WTP). Cost recovery is the main justification for admission charges to the Greek Parks. The findings of two contingent valuation studies are used to investigate the feasibility of imposing entry fees in all Greek Parks. Not all Parks are able to cover their costs, but results suggest that admission charges can help recover the cost of the most visited Parks. Most recreationists support reasonable fees for the Parks. Finally, some administrative improvements are proposed in order to reap the full benefits of a fee strategy.

RÉSUMÉ

Trouver des fonds suffisants pour les zones protégées a toujours été une entrave à la gestion efficace de ceux-ci. D'autant que trop souvent les gouvernements attendent des Parcs qu'ils soient financièrement autonomes. Les Parcs Nationaux grecs souffrent d'un sous financement sévère, et l'adoption d'un droit d'accès payant semble une alternative réaliste pour compenser les coûts de gestion. La stratégie pour établir le prix d'entrée prend en compte l'objectif de prix, ainsi que le nombre de visiteurs du Parc et le prix qu'ils sont prêts à payer. En Grèce, la compensation des coûts est la principale justification pour la mise en place d'un tel droit d'entrée. A ce sujet, on peut se baser sur les conclusions de deux études pour envisager la faisabilité de la mise en place d'un droit d'accès payant à tous les Parcs grecs. Il apparaît que tous les Parcs ne sont pas capables de compenser la totalité de leurs coûts, mais les résultats indiquent que ces droits d'entrée permettraient de couvrir les coûts des Parcs les plus visités. La plupart des visiteurs acceptent d'ailleurs la mise d'une taxe d'un prix raisonnable. Enfin, des améliorations administratives sont proposées pour tirer pleinement partie de cette nouvelle stratégie.

Identifying and establishing areas particularly valuable for nature conservation are fundamental, but not sufficient, steps in the process of protecting the natural resources.

Effective protection requires management; management in turn requires finance and this ultimately is a major constraint on efforts to manage National Parks for nature conservation.

The need for adequate financing has been underlined by Park managers throughout the world (Lindberg and Huber, 1993). The link between National Parks and economic development can be seen by governments as remote, a diversion of scarce funds, as expensive in the short-term and, given the potential for land-use conflicts with local government and local populations, as troublesome.

As a result, many countries find it difficult to justify the expenditure needed for protected area management, which may be accompanied by higher indirect costs at the local level, and by still higher local and regional opportunity costs. To overcome this bottleneck, IUCN produced guidelines for protected area managers to identify the array of benefits and therefore potential sources of funding (WCPA, 1998).

Many governments therefore, expect protected areas to "pay their own way". Some protected areas are in fact highly profitable, earning considerable foreign exchange for their countries (especially from tourism) (Tobias and Mendelson 1991; Moran, 1994).

What is not put forward when an economic analysis is sought is that while protected areas may be expensive, requiring an average of US$200,000 to $500,000 per year for a medium-sized area (McNeely, 1994), it is less expensive to protect their ecological integrity and manage the array of goods and services in the surrounding region than to replace them once their watershed, wildlife, and other environmental values have been lost. It is true that some of the benefits are difficult to treat using current concepts of economics and are not fully comprehended by decision-makers, thus reducing parks chances for state funding.

In recognising this difficulty, the IV World Congress on National Parks and Protected Areas identified concrete ways at the international as well as national level, to financially support protected areas (Phillips, 1992). A variety of methods for generating revenues in Parks exists today, ranging from those operating within the protected area itself (such as entry fees, user fees, concession fees and royalties), to those functioning at a larger scale (including state budgets, private sector and international assistance) (Dixon and Sherman, 1990). Admission charges and user fees have been recurrent suggestions to increase Parks' revenues in times of fiscal austerity. They have been particularly developed in the US parks where the first fee was levied in Rainier National Park as early as 1908, in the form of car entry per-

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mit (Harris and Driver, 1987). The important point about levying fees in National Parks is that it assures that those willing to pay the fee are allowed in and others are excluded. This outcome can also be used to help achieve some other management goals, like site restoration, which frequently occurs within the boundaries of nature areas. Thus, where ecological damage is of concern, pricing can be used to reduce the amount of use at the threatened site (Chase *et al.*, 1998).

This paper argues that levying admission fees at Greek National Parks could provide a sufficient source of finance for improving their management and for pursuing the Park's purposes with greater vigour. First, a useful theoretical framework of inputs and outputs to Greek National Parks is developed to identify factors to be considered in a fee system. Next, the paper discusses the results of two CVM studies carried out in two national parks, Vikos-Aoos and Mt. Olympus, and the applicability of pricing schemes in each park. The study also shows that charging admission fees has other important implications in addition to raising revenues, mainly associated with public opposition and issues of social equity. Finally, it concludes with a number of organisational suggestions need to be implemented before any entrance fee system is used.

The Greek National Park system - inputs and outputs

National Parks are the cornerstones of nature conservation in Greece. Ten National Parks have been established over an extended period between 1938 and 1974 covering in total a tiny 0.54% of the country's land area. All Parks are located in mountainous areas where some of the last remnants of Greek wilderness can be found. National Park is one of the three categories under statutory protection, established by the Law 996/1971, which remains today, largely unchanged. The founding law defined two zones for each Park, the core to provide strict protection to sensitive natural ecosystems and the periphery (buffer zone), of greater than or equal size to the core. The periphery enables the development of the resource base and land use to be organised so as to aid the fulfilment of the aims for which the core of the Park was created (Kassioumis, 1990); only five Parks have clearly designated buffer zones. National Parks are primarily set aside for conservation interests but are being increasingly furnished with recreational facilities as it is amongst the duties of the Park authorities to provide for public enjoyment (Government Gazette, 1971). A special Park authority solely responsible for their management does not exist in Greece and the main authority charged with the responsibility for nature conservation and administration of National Parks has been the Forest Service, for some 50 years, through its regional and local Forest Offices (Park Authorities). Scarce funding, insufficient staff, often inadequately trained in Park management, administrative and organisational inadequacies and lack of a specialised independent administrative body are detrimental to the effective protection of Greek nature (ICPMP, 1989). Cases, however, of excessive use and ecological degradation have not been recorded in Greek Parks. Parks are competing with the fields of agriculture and stock farming for funds the availability and magnitude of which largely relate to decisions taken at higher political level. Funds uncertainty thereby limits long term planning and has led to poor law enforcement and management. Pressures have been developing over the last few years that have put the ecological balance within Park biotopes at stake. Currently, the government and, hence, the statutory Park authorities, can't bear the full cost of managing Parks at an acceptable level according to their ecological significance. As a result there is only a nominal state presence at each Park.

Total management costs vary for each Park depending largely upon biophysical features and size, annual visitation use, intensity of protection measures and amount of maintenance work required to keep the Park in the desired state. The state is providing the funding through the Forest Office's budgets. Each Park budget hardly exceeds 6-7% of the respective Forest Office's budget. Parks costs include only maintenance costs of existing infrastructure, cost of providing new visitor amenities and labour wages. Administration cost, such as staff salaries are covered by Forest Office budgets. Initiating a fee scheme is believed to provide needed revenues to Park Authorities.

A graphic illustration of inputs (revenues) and outputs (costs) in Greek Parks in relation to the number of people visiting Greek Parks is given in **figure 1**. Fee revenues and state subsidies can generate inputs. With increasing levels of use, fee generated revenues are expected to show a proportional linear increase. State funding remains constant regardless of visitor use, but shows great variability between Parks. Combining state funds and fee revenues will follow the linear increase shown in figure 1 (Revenues). Cost on the other hand, represents the economic value to produce recreation facilities and maintain the infrastructure at a desired level. It includes the start-up costs, such as providing visitor facilities that should be borne regardless of the use levels, fire prevention, environmental degradation and congestion costs (Park cost in fig. 1). Environmental degradation and congestion costs are associated with excessive use levels after which incremental costs increase steeply as visitors impinge upon the ecological integrity of the natural resources as well as on the recreational experience of other visitors. In a National Park context, the excessive use levels defined as ecological and perceptual carrying capacity set the upper limit of the recreational development (Pigram 1983, Brotherton 1973). For example, above point Uc, either the ecolog-

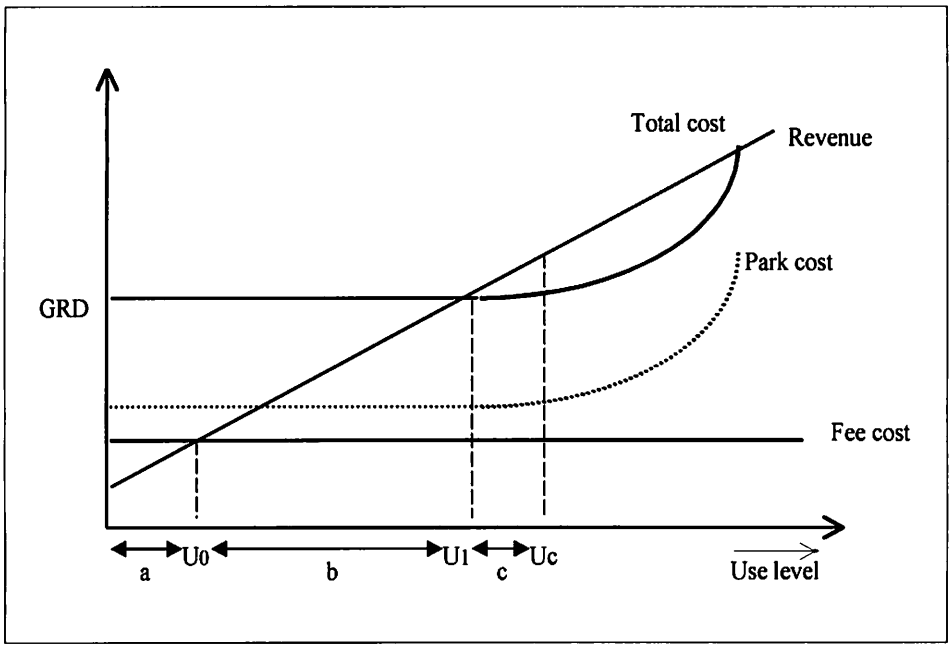


Figure 1 - Revenue and cost curves after adopting entry fee in a National Park.

ical or the perceptual carrying capacity or both are exceeded. Once these critical thresholds have been exceeded, the marginal cost, that is the cost for handling more visitors, increases substantially as special managerial techniques are required to mitigate the impact upon ecosystems or restore degraded sites. The magnitude of the cost incurred to the administrator, above this threshold, is a function of the remedial measures required and of the sensitivity of the flora and fauna species to man-induced disturbance. However, the interrelation between cost and revenue above these levels lies outside the present analysis. Levying an entry fee incurs an additional administrative cost to Parks which, we will assume for simplicity, is constant with varying numbers of visitors (Fee cost in fig. 1). Combining entry fee cost to Park cost produces the total cost curve (fig. 1).

At the use levels U_1, total revenues would equal total cost of providing the site and any further increase in usage will generate a surplus to the Park Authority (use level c in fig. 1). When use levels are between points Uo and U_1, total benefits will exceed fee administration cost and cover part of the running cost such as maintenance (use level b). Finally, when Park usage falls below the critical threshold point Uo admission fee scheme becomes economically inefficient because revenues will not be sufficient to cover the cost of charging fees (use level a). The Park then must be subsidised by revenues collected from other sources. Papageorgiou and Brotherton have noted that low levels of use can have an economic repercussion to the sustainable living of local communities, which might affect a Park's management regime (Papageorgiou and Brotherton, 1999).

One key issue related to the formulation of a pricing system, is how to balance economic appropriateness and social implications. In order to accomplish this task, two factors are identified to be essential in implementing a pricing policy as shown in the flow diagram in **figure 2**. Firstly, the economic efficiency of the fee system relating to the pricing objective, visitor base and the level of monetary support that the public is willing to provide. Secondly, the public's acceptance of the concept of paying entry fees and its emerging social equity issues. Cost recovery and revenue generation have become buzzwords in the halls of Park Authorities. Determining how low or high admission fees can be, depends on whether Park Authorities seek to recover the full cost, cover only a part of operating costs or generate a surplus. National Parks are public lands and their founding decrees have designated these areas, amongst other purposes, for public

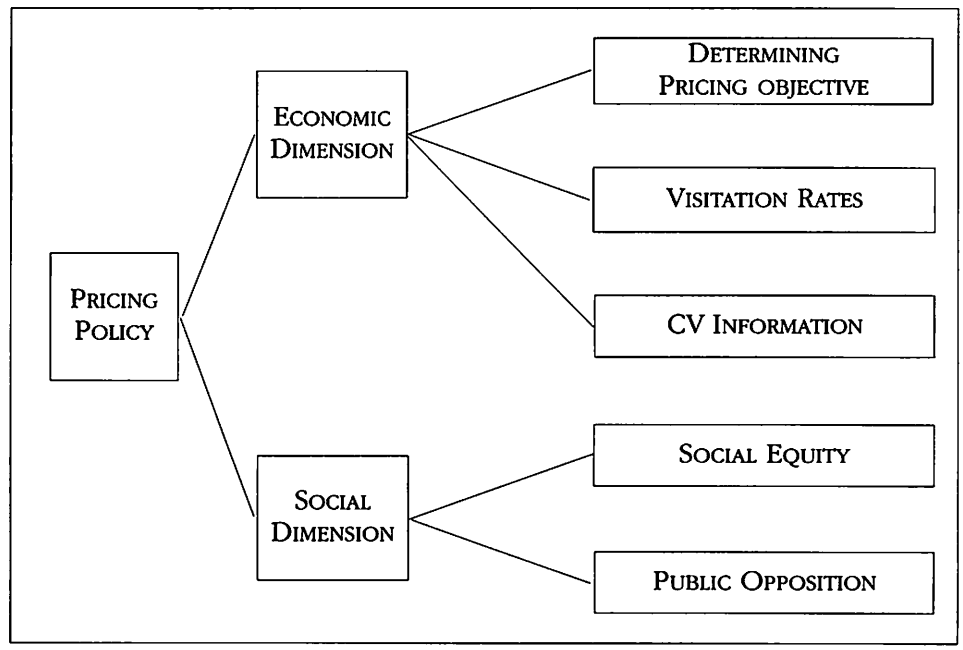


Figure 2 - Factors influencing the formation of a pricing policy for National Parks.

recreation and enjoyment. Designing an entry fee policy aimed at generating a sufficient surplus would therefore lie outside the scope of dedicated conservation bodies, such as the Forest Service. Developing a money-making approach will be faced with caution and may trigger public opposition. Cost recovery therefore, provides a more justified rationale for developing an entry fee strategy in Greek Parks. This objective could be well supported on grounds of fund scarcity for conservation purposes, but also funding equity between Parks. Park budgets between 1988 and 1993 inclusive, shown in **table 1**, clearly indicate a considerable variation from one park to another. Samaria holds a unique position within the system of Greek National Parks, as an entry fee mechanism was introduced in 1990, which has significantly augmented the Park's budget. It distinctly stands out now, as the most highly funded Park. After 1993, it becomes extremely difficult to make an assessment of the total budget devoted to National Parks, as all the areas appear to receive money from different sources, like EU funds, NGOs, etc., which sometimes exceed the Forestry Service resources available for the management of the areas. These funds are available for several projects supplementary to the core management of the areas, like conservation, protection, information, etc.

Table 1 ***Average budget of Greek Parks between 1988-1993 (in thousand Drs).***

	1988	1989	1990	1991	1992	1993	Average
Samaria	31.000	39.000	92.000	50.000	80.000	73.000	60.800
Mt. Olympus	14.000	25.000	20.000	31.000	40.000	27.000	26.300
Parnitha	-	-	-	-	12.000	12.500	12.000
Parnassos	-	-	-	-	10.000	10.000	10.000
Prespa	9.000	15.000	10.000	11.000	9.000	3.000	9.500
Oiti	14.500	2.000	4.000	2.500	9.500	13.500	7.600
Ainos	4.000	6.500	2.500	11.000	2.500	6.000	5.400
Sounio	4.000	4.000	5.000	5.000	6.000	8.000	5.300
Pindos	2.000	2.000	2.000	3.000	3.000	3.000	2.500
Vikos-Aoos	2.000	1.000	2.500	2.500	3.000	2.500	2.300

Table 2 ***WTP (in Drs) and aggregate value for Mt. Olympus and Vikos-Aoos Parks (1994 values).***

Present condition					
	Sample size	**Protest bids**	**Mean**	**SD**	**Aggregate value (Drs)**
Mt. Olympus	266	140	626	314.16	68 860 000
Vikos-Aoos	275	77	701	434.21	63 791 000
Improved condition					
	Sample size	**Protest bids**	**Mean**	**SD**	**Aggregate value (Drs)**
Mt. Olympus	259	117	629	313.67	69 190 000
Vikos-Aoos	250	81	791	488.25	71 981 000

Table 3 ***Comprehensive overview of aggregate benefits, total costs and surplus or deficit in each Park.***

1 National Park	2 Number of visitors	3 Group	4 Aggregate benefits (million Drs)	5 Total cost (including fee cost, million Drs)	6 Surplus/deficit, (columns 3 -column 4 million Drs)
Samaria	300.000	I	360	60.80	+299.2
Mt. Olympus	110.000		48.44	31.3	+17.14
Vikos-Aoos	91.000		50.33	7.3	+43.03
Parnitha	70.000		34.30	17	+17.3
Parnassos	60.000		29.40	15	+14.4
Prespa	20.000	II	9.80	14.5	-4.7
Ainos	10.000		4.90	10.4	-5.5
Oiti	4.000		1.96	12.6	-10.64
Pindos	2.000		0.98	7.5	-6.52
Sounio	1.000		0.49	10.3	-9.81
Total	**687.000**				

A second consideration regarding pricing appropriateness should examine whether or not Parks receive adequate numbers of visitors to cover management costs through fee revenues. Greek Parks have many attributes in common, especially those related to biophysical features but they exhibit a variation in the number of visitors they receive annually. For the purpose of our study, visitation rates were obtained from Forest District offices through postal questionnaires with park managers. However, data for Mt. Olympus and Vikos-Aoos were provided by visitor counts, which took place during the visitor survey conducted with personal interviews with the visitors of these Parks in 1992 and 1994 respectively. Visitor numbers vary considerably between Parks, but a broad distinction may be drawn between the relatively heavily visited parks (Group I) and those receiving a small visitor bundle (Group II), as shown in columns 2 and 3 of **table 3**. The Parks receiving over 50 000 visitors per year are classified as heavily visited, whereas the less-visited Parks include those with annual visitor rates below 50 000. Large variations are apparent within each of the two Parks groups. Summing up the annual users of Parks assigned to the first group accounts for the great bulk of visitors, an overwhelming 96% of total Park users. Recreation studies in Vikos-Aoos, Mt. Olympus

and Parnassos have shown a temporal variation with Parks accommodating most recreationists in summer, Christmas, Easter and other holidays. Greek Parks in general, receive only a small number of visitors compared with Parks in other European countries (Pearce and Turner, 1990). Inadequate promotion, poor infrastructure and an environmental education that is still in infancy, may provide a possible explanation for the low use levels.

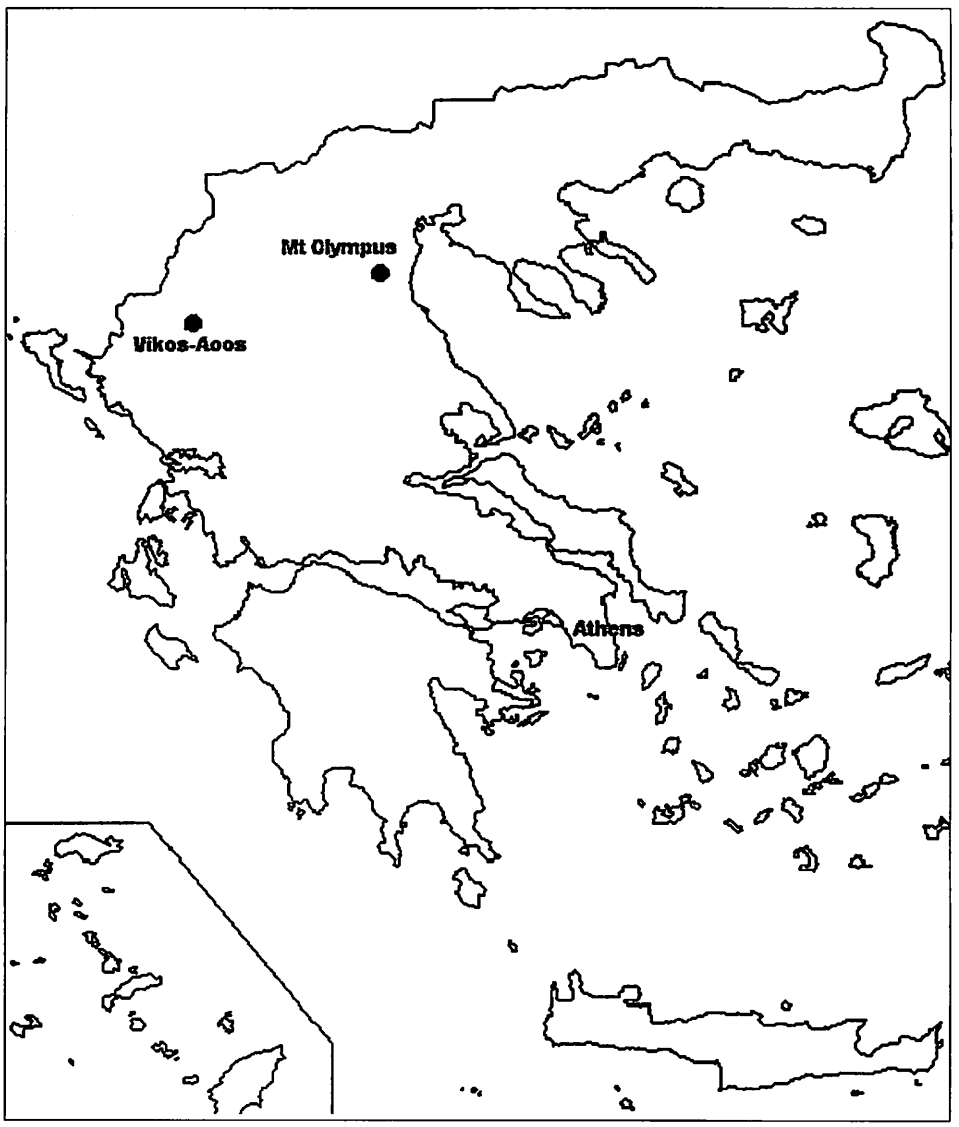


Figure 3 - Viskos-Aoos and Mt. Olympus National Parks.

Valuing National Parks

For the purpose of valuation, any National Park can be viewed as a carefully packaged bundle of features, combining natural amenities and developed facilities and each Park must be considered as an entity. There have been different approaches for valuing a recreation site and a National Park in particular (Hanley, 1990). The Travel Cost method (TC) seeks to infer the value that consumers place on a non-marketed good by combining travel expenditure and other visit related costs to reach the Park (Mitchell and Carson, 1989). Contingent valuation (CV) on the other hand, seeks to place a value on the benefits people derive from consuming a public good, in this case, visiting a National Park, by directly questioning a sample of users in order to obtain their maximum willingness to pay (WTP) to have the good, or willingness to accept compensation (WTA) to go without it (Rowe and Chestnut, 1983). CV methodology is surrounded by theoretical biases over the selection between WTP and willingness to accept (WTA) welfare (Shultz *et al.*, 1998) and certain limitations of the method when using it for determining entrance fees have been identified (DoE, 1991). However, the method is widely accepted for valuing non-market environmental goods (Hausman 1993, Bateman *et al.* 1994), and it can be a logically consistent and inexpensive way of estimating the economic values of such resources (Cobbing and Slee, 1994). Contingent valuation was applied in Vikos-Aoos and Mt. Olympus Parks with the aim of getting visitors to reveal their maximum willingness to pay an entrance fee, to gain access to the Parks. The two areas are state owned Parks, located in mountainous areas and are both highly valued for their diversified landscapes and wilderness characteristics (**figure 3**). Most of the land in these Parks supports an array of forest vegetation ranging from Mediterranean shrubs, prevalent at low altitudes, to sclerophyll forests and evergreen mixed forests at higher elevations. However, each Park offers a variety of differentiated attractions, rock formations, spectacular gorges and alpine lakes in the Vikos-Aoos case and sites of historical and mythological significance in the case of Mt. Olympus. Equally, their ecological importance has been widely recognised. Both contain important biotopes for wolf, roe deer, jackal, fox, wild boar and many rare and endemic plant species. Vikos-Aoos is also one of the last European strongholds of the brown bear (Papageorgiou, 1996). Both Parks have few access points and provide moderate recreational facilities and reward the intrepid recreationist with an essentially congestion-free wilderness experience. Visitor facilities found in both Parks are of the usual kind (hiking trails, viewpoints, etc.) focusing on visitor dispersal in the park and facilitating

their stay. Additional specialised activities, for example rafting and kayaking, often take place in the Vikos-Aoos Park, whereas climbing is very popular in Mt. Olympus, where four 4 refuges are located. The Parks however, differ from each other in significant ways, for example Vikos-Aoos is endowed with a number of villages lying within and in close vicinity to the Park and whose unique architectural and cultural elements are found nowhere else in Greece. This traditional local architecture and rich cultural heritage interact with the surrounding landscape creating a cultural landscape which has been valued for its biophysical and cultural qualities (Vakrou, 1993). In summary, the two Parks offer a variety in natural features, cultural elements and specialised activities but overall there is a considerable similarity of vegetation types, ecosystems and recreation facilities. Yet, the Parks occupy relatively small areas, compared to international National Park standards (4000 ha for Mt. Olympus and 3412 ha of core and 12 225 ha of buffer zone for Vikos-Aoos) and have been under the control of regional Forest Offices. Mt. Olympus is accessible within day-visit distance from Thessaloniki, while visitors from Athens have to engage in longer trips. By contrast, visitors to Vikos-Aoos from Greece's two major Greek towns have to travel greater distances. The Parks attract high tourist traffic, both Greek and foreign, reaching annually 110000 visitors for Mt. Olympus (Vakrou, 1993) and 91000 for Vikos-Aoos (Papageorgiou, 1996). The two studies were carried out in 1992 in Mt. Olympus and in 1994 in Vikos-Aoos (Papageorgiou and Vakrou, 1997). The application of the CV methodology for Vikos-Aoos and Mt. Olympus was aimed at estimating the economic value of National Parks as recreational commodities both in their present state and after improving the tourism infrastructure which constituted the improved state scenario. The improvement scenario was deemed necessary under the growing demand for improvements in recreation facilities and included a list of recreational facilities and services ranging from toilets, paths, signs information centres, first aid and litterbins. The CV in both cases employed an expressed preference approach to the direct estimation of these measures by asking visitors to state their willingness to pay an admission fee to gain access to the Park in its present condition. An open-ended question format was used to elicit visitor's bids in both cases. In both surveys, sub-questions were used to ascertain the motives for respondents expressing refusal to pay the admission charge. This made it possible to distinguish between true zero responses and protest bidders and provided a numerical measure of the latter. Both studies employed the same payment vehicle (WTP), addressed in an identical open-ended format for both hypothetical questions. Moreover, the partial overlap in survey periods, ensures that results are within comparable measures.

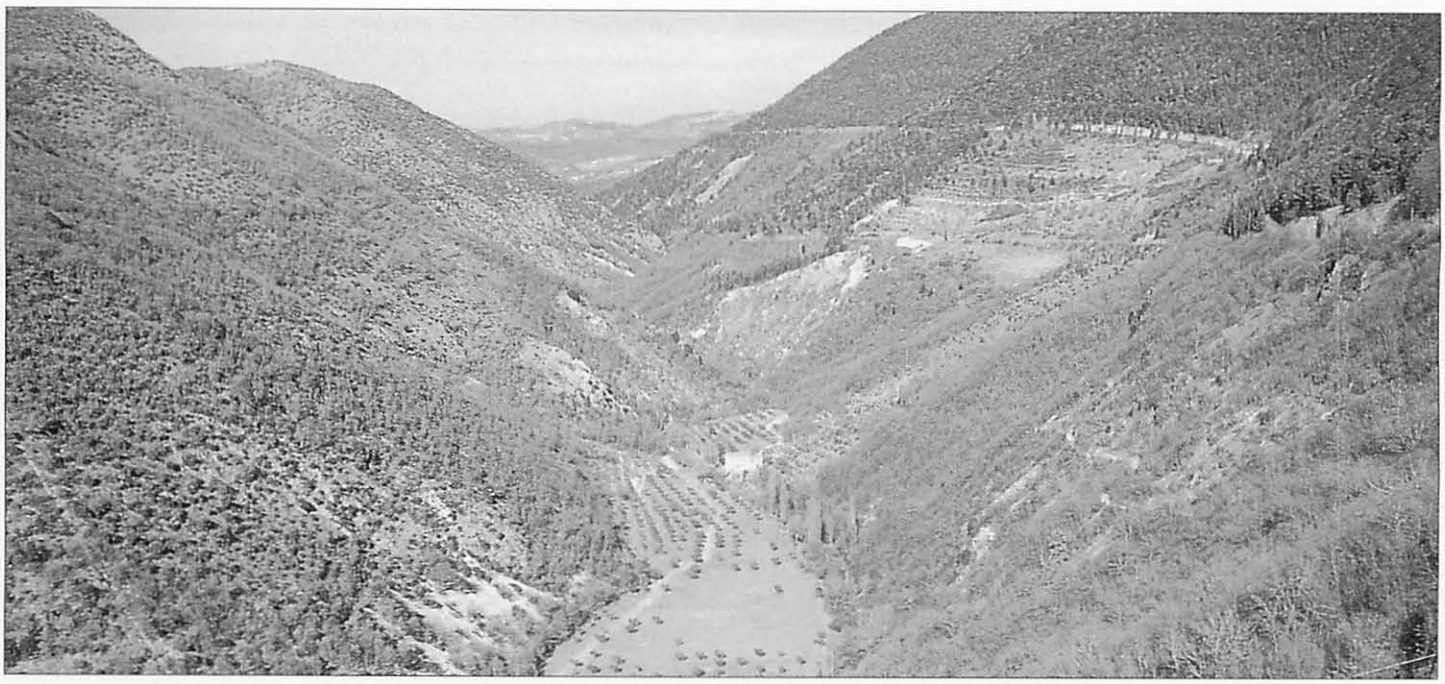
Both studies indicated a strong general support for the introduction of a fee scheme, as nearly 70% of respondents, in both cases, said they would be willing to pay entry fees to gain access to the Parks. A wide range of bids was produced in both studies, respondents overestimated or under-estimated their true bidding indicating some level of strategic behaviour. Trimming data by removing all anomalous or extremely small and big bids has been common practice to reveal the true WTP (Bateman *et al.*, 1994). The results of both contingent valuation exercises are given in **table 2**. As can be seen, the WTP for Vikos-Aoos Park, in its present state, averages 701 Drs ($2.48) compared to 626 Drs ($2.22) for Mt. Olympus. The second question produced a higher mean WTP value of 791 Drs ($2.80) to enter the Vikos-Aoos Park. Respective mean WTP for Mt. Olympus showed only a marginal increase to 629 DRS ($2.23). Mt. Olympus average bids have been corrected to 1994 prices using the relevant mean inflation rates for the two-year period. A t-test revealed statistical differences between mean WTP values for each question between Parks at the 5% level, leading to the conclusion that Vikos-Aoos visitors tend to evaluate more highly the recreational benefits they derive from their visit, as compared to visitors to Mt. Olympus. The additional value that Park users allocate to Vikos-Aoos may sug-

gest the existence of a functional relationship between WTP and features that this Park provides. Summing up the satisfaction of all individuals produces an aggregate welfare measure for each Park and the usual convention is to multiply the average WTP by the total number of visitors. Taking the estimations of 110 000 for Mt. Olympus and 91 000 for Vikos-Aoos, the aggregate WTP measure amounts to 68 860 000 Drs ($244 184) for Mt. Olympus and 63 791 000 Drs ($226 209) for Vikos-Aoos in their present condition. Higher mean bids for the improvement scenario, in both Parks, produce higher aggregate welfare by 12.8% for Vikos-Aoos Park (71.9 million Drs or $254 964) but only by 0.47% for Mt. Olympus (69.2 million Drs or $245 035) as shown in **table 1**. The fact that higher aggregate benefits accrued to Vikos-Aoos Park for the improved state is due to significantly higher mean WTP. Improving parks infrastructure, according to the scenario given to respondents, was found to be a significant management mean only for Vikos-Aoos users. Perhaps the insignificant increase in the Mt. Olympus mean WTP between the two questions reflects respondents' high appreciation of the natural condition of the Park. It appears to be a central component of their recreational product regardless of the level of facility provision. As Vikos-Aoos has a significant built environment, more facilities seem to be appreciated, while Mt. Olympus, as a far less developed and wilder area, mostly attract visitors' attention towards its protection and strict conservation.

Only length of stay was found to be an influential factor for both parks at both situations at the 5% significance level. It seems that wandering around to discover the Park's qualities have been very rewarding experience to visitors and the additional time spent onsite has enhanced their enjoyment. In addition to duration, there is weak evidence, in the Vikos-Aoos case, that older visitors tend to offer a lower admission fee. The results raise the point of discrimination of Park users by age. This could give rise to multi-tiered pricing concepts where fees vary by visitor category. Although it has been criticised on grounds of social discrimination (Laarman and Gregersen, 1996), multi-tiered pricing is pursuing equity issues in the case of National Parks, as derived by the pricing objective explained above. Similar results were not observed in the Mt. Olympus contingent valuation exercise. Income was not found to be a significant determinant in either Park. A possible explanation may be the fact that visitors regard entry fee to be only a minor expenditure compared to the total cost of the trip to reach Parks. Public attitudes about fees are important for at least two reasons: first, the acceptability to decision-makers of the pricing Parks concept would be enhanced if users supported the fee schemes. Second, strong opposition might imply noncompliance and alter adversely the visitation pattern and any prior calculation of efficient pricing policy. The contingent valuation studies provided a framework of responses in Vikos-Aoos and Mt. Olympus, that is likely to occur in other Parks, and allowed a number of useful conclusions to be drawn. A total of 30% respondents in Mt. Olympus and 28% in Vikos-Aoos were unwilling to pay an entrance fee for the areas in their present condition. Results show that charging for access to National Parks touches fundamental questions regarding an expectation of free access, nature being envisaged as a public asset that should be readily and freely available to everybody who desires to use it. A significant amount of protest is also lodged for reasons concerning state mistrust of reinvesting revenues back to Parks. Some concern, involved perception by some respondents that entry fee would constitute double taxation (Vakrou, 1993). Results for those who refused to pay to gain access, after a variety of facilities has been improved, indicated differences in the relative significance of answers when compared with the Park in its present state. Overall, the proportion of fee opponents has remained the same (29%) but breaking down the results in each Park, shows that protest bidders were reduced in Mt. Olympus (26%), while they increased in Vikos-Aoos (32%). A strong shift towards resenting Park improvements occurred (29%) in both cases. Park development is not viewed as compatible with the character of Parks, instead visitors prefer them in a condition as natural as possible. It is notable that concern over revenue management was increased (17%). One important point attached to the analysis of protests, is that all comments referring to the ethical dimension of nature are driven by a direct opposition of the respondent towards the hypothetical market itself, while other groups of opponents state objections that are mostly associated with the management of the Parks.

Initiating an entry fee system in Greek Parks

The success of charging fees in Greek Parks could well hinge upon compliance of Park Authorities with the pricing objective. Entry fee economic appropriateness should be examined given the use levels at the time the surveys took place. Contingent valuation findings suggest that aggregate benefits exceed Mt. Olympus budget by 2.6 times and Vikos-Aoos budget by a stunning 31.2 times. In both cases, fee revenues would pay off the total management cost and even produce a substantial surplus to Park Authorities. Aggregate benefits are produced on the basis of visit rates of a situation where no fees are charged thereby providing an overestimation. Results of public protest in the two contingent valuation exercises identified a sizeable 30% of fee opponents. Admission charges may have little effect on the decision of visitors who feel that the site is unique, or that there are very few, if any substitute sites. In contrast, those who consider the fee too high are priced out and would respond to the fee charge by switching to



another area. This possibility may decrease further the number of visitors but this study provided no evidence of the drop in visits. However, assuming that all fee opponents refuse to visit the Park again, annual visitation figures will drop 30% causing an equivalent 30% drop in expected revenues.

Aggregate benefits are then found to be 50.35 million Drs for Vikos-Aoos and 48.44 million for Mt. Olympus (table 3), still exceeding by 21.9 times and 1.84 times the respective Park budgets.

Administration cost required to implement the fee scheme reached 5m Drs in Samaria Park in 1993 (personal communication) and this figure is used, in the present analysis, as surrogate entry fee cost for all Parks. With entry fee costs added to Park management costs, shown in column 5 in table 3, findings from the two case studies imply that pricing in these Parks could be self-supportive and generate sufficient surplus. The magnitude of surplus is calculated as the difference between aggregate benefits (column 4) and total Park cost (column 5).

A comprehensive overview of economic feasibility in all Parks is possible by extrapolating revenues to the remaining Parks by using the average WTP for Vikos-Aoos and Mt. Olympus as surrogate price to other Parks. The use of surrogate prices does not take into account the variability of natural characteristics among other Parks. Notwithstanding despite the inherent weaknesses the aim of the application of the WTP of the survey in Greek Parks is twofold: firstly, to attempt to estimate the value of recreation in all Parks and secondly, the financial self-sufficiency of Parks is believed to help raise the much needed political commitment for nature conservation in Greece. Thus, average WTP, rounded down to 700 Drs for the improved state, is multiplied by the annual number of visitors, in each of the remaining Parks, to estimate anticipated revenues and results are shown in table 3. A 30% visitor drop and 5m Drs entry fee cost are calculated for each Park. Regarding Samaria, aggregate benefits and total costs for 1993 were provided by the Chania Forest District office. Considering the signs of surplus/deficit column in table 3, it becomes clear that initiating a pricing system in Mt. Olympus, Vikos-Aoos, Parnitha and Parnassos Parks produces a substantial surplus (111.87 million Drs in total). This surplus figure can provide concrete justification for the proposed fee system in these Parks when examined in strict monetary terms. Referring to figure 1, the above Parks lie in use level c Prespa, Enos, Iti, Pindos and Sounio generate relatively small revenues that are used up to cover only part of total Park costs. Results indicate that revenues in Prespa, can cover the fee administration cost [column 4, table 3, fee revenues >5m.Drs (fee cost)] but only a part of the management cost (use level b), whereas for Ainos, Oiti, Pindos and Sounio fee revenues are below fee cost (use level a). Results demonstrate the significance of visitor number as the prime determinant factor in pricing Greek Parks. Certainly there is some visitation level below which self-sufficiency becomes an unaffordable luxury. Initiating a fee system will improve the management of the most visited Parks, but not necessarily of the most valuable ones.

Ideally, the value of the consumption bundle, the recreational experience itself, to the visitor is approximated by the amount that the visitor is willing to pay to gain

access to this experience. Thus, an entry fee set at a price higher than the average WTP will generate a residual difference that is the Park authority's surplus and which accounts for pure benefits. Park authorities in Samaria charge a price of 1200 Drs ($4.2) almost twice the average WTP calculated by the CV exercises presented above. The substantially higher aggregate revenues observed in Samaria Park are mainly the result of the higher fee and a comparatively higher visitor base. However, no visitor attitude study towards fee level has been conducted to assess public opposition. The Samaria experience can't be used to draw guidelines for other Parks, as Samaria users are clearly distinguished from other Park users in two significant ways. Firstly, foreigners, who can afford a significantly higher fee, vastly dominate visitor composition. For foreigners, entry fees have only a negligible effect given the high cost of international travel. Second, visitors to Samaria are not nature-motivated, they are rather sightseeing tickers brought by package tour operators.

Thus, this large-scale tourist approach can hardly be defended on grounds of ecotouristic development. Fee size exhibited a 200% raise between 1990, the year that its implementation started, and 1993. Further, Samaria constitutes an additional attraction in the intensely tourist oriented economy of Crete. Whether or not conservation purposes are more efficiently served in Samaria compared to other Parks, remains questionable and a topic for further research.

The substantial surplus produced in the Vikos-Aoos and Mt. Olympus case studies permits to set admission charges below the WTP calculated by the CV studies. This is consistent to pricing objectives for revenues equalling total cost, as discussed above. The minimum fee size under current visitor pressure is given by:

Management cost + fee cost = visitor numbers × fee size

Note that management cost for each Park equals the state subsidy available to each Park. Thus the equation can be presented as follows:

Fee size = (Management cost + fee cost) / (number of visitors)

Inserting number of visitors, Park cost and fee collection cost for Vikos-Aoos and Mt. Olympus into the last equation, the minimum fee size to ensure cost recovery in the above Parks at their present situations is found to be 285 Drs ($1) for Mt. Olympus and only 80 Drs ($0.30) for Vikos-Aoos. Setting fee size at any price between maximum WTP calculated by CV and minimum size to secure cost recovery fulfils the pricing objective and helps reduce public opposition.

This study has shown that not all Parks are able to meet their total costs. A substantial surplus is produced in some of them whereas some others are still incurring a deficit. Therefore, an emerging issue related to efficient Park management is how revenues from some Parks could be distributed to cover costs in other Parks. Adopting an entry fee scheme should be followed by a number of organisational improvements at regional and national scale. As McNeely notes, prior experience reveals cases where sudden cash flow into the park system did more harm than good, especially when other organisational improvements were not planned and executed alongside. These improvements constitute a necessary precondition for the materialisation and effective functioning of pricing policies. A central planning and administrative agency to oversee the protected area system with planning and execution (enforcement) powers is the basis for the new financial regime and such an agency can ensure the reinvestment of revenues to the Parks. Most importantly, setting up a separate fund dealing exclusively with National Park issues, would reduce the competition with agriculture and forestry and could channel financial resources to those Parks where entry fees can't be economically justified.

Arguably, the affluent Parks could subsidise, through the common fund, the less affluent ones in a kind of "park solidarity". Gaining greater support by recreationists is believed to be vital in enhancing public acceptability in general. Of fundamental importance in reducing public opposition and gaining support for such a scheme, is to furnish Parks with educational facilities. Cost recovery charges are self-explanatory. The approach is straightforward to explain and defend in concept. A fee strategy should go hand in hand with an education strategy, as people act rationally when presented with justifiable reasons for paying fees. We interpret this to mean that fees could be better accepted and that compliance could be adequate if the fees are used for Park management (and hence are returned to Park authorities) and if the users are informed of this. Similar programs have been successful in reducing negative reaction to fees in a US park campground. In addition, if revenues are earmarked for use at the recreation site, the public is more supportive of fees than if the revenues are returned to the general government.

Conclusions

In times of financial austerity for the Greek National Parks, pricing can be a powerful tool, that can significantly increase Park revenues and improve management practices. However, the need to recover as much of the Park's cost as possible from visitors should be treated with care, as it could be misinterpreted as a business approach by Park users. Setting fees is a two-edged sword falling between economic efficiency and business attitude. Pressure to generate revenues could be an unfortunate distraction and may lead to public protest. Such an approach is also resented in the light of

public enjoyment of nature and is bound by legislative requirements for preserving the natural resources rather than exploiting them. There is no question that the use of the results of two contingent valuation studies to develop a pricing scheme for Parks, remains a challenge. Setting entrance fees at a price equalling average WTP for Vikos-Aoos and Mt. Olympus supports the self-sufficiency notion for Parks, but results show unambiguously that revenues are substantially higher than management cost, only for five Greek Parks. Fee policy should consider setting prices below the average WTP in order to seek greater social support. In the policy decision context, the economic efficiency of pricing makes a strong case for serious consideration of a National Park fee system. National Parks exhibit a similar array of natural attributes but are considerably differentiated by total annual visitation. In this respect, the performance of the pricing system in Parks such as Prespa, Ainos, Oiti Pindos and Sounio has produced poor results. Cost recovery can be pursued in these Parks by directing excess revenues from highly visited Parks to less visited ones. Most importantly, Park authorities must establish an independent fund for Parks and Nature Reserves to ensure that sufficient funding is directed towards less visited Parks. Fees set higher than average WTP, may be taken by the visitors to signify an exploitative money-making attitude and thus raise opposition. Fees should be set lower than average WTP to comply with management objectives, make Parks more self-sufficient and enhance social acceptability.

The results presented above make a strong case for serious consideration of a National Park fee system. Finally, initiation of admission charges for all Greek parks will work in two ways.

Firstly, the initiation of fee systems can't be the total fiscal salvation for all Greek parks, but could trigger public reaction and enhance political commitment for improvements to the system as a whole. Secondly, starting off with some parks will necessitate the reorganisation of the forestry service and improvement of its park administration role, in order to reap the full benefits that such a scheme would bring. ●

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