

Sustainability and the role of economics

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ABSTRACT

The paper examines the role of economics in dealing with environmental concerns such as sustainability and the issue of whether economics and the market are relevant for these types of problems. Both the market and the political forum are mechanisms for resolving resource allocation conflicts like sustainability. In either mechanism, participants are required to reveal their values or ethics so that trade or compromises can be made. In this context of decision making and the need to weigh up alternatives, economics provides a means to evaluate the processes and the underlying values which are being revealed. The neo-classical economic paradigm and its tools are important components of the economic contribution. Concepts like opportunity cost, contingent valuation, willingness to pay or discounting will not disappear from the study of environmental problems or from the issue of sustainability because they reflect issues and values which are real and need to be studied to make adequate decisions.

INTRODUCTION

In an article published earlier in this journal, Richardson (1994) raises a number of issues about the role of economics and society's current evolution to sustainable management practices. The thrust of the paper was that 'neo-classical' economics was largely the cause of our current lack of sustainable practices, particularly through the use of future value and discounting. It was argued that a move to ethical or 'political' commitments would somehow allow us to circumvent these problems created by neo-classical economics. In developing these ideas, a number of other concepts revolving around the notion of opportunity costs and value are also presented. The paper in effect casts doubt on whether in fact these commonly used 'economic' costs are 'real', and should be incorporated in our decision-making processes, particularly when dealing with environmental problems. The solution offered in the paper is to ignore or 'assume away' economic costs and limit the use of economic analysis as part of our decision-making process and instead to rely on political processes to deliver the 'right' answers. In the longer term, it is believed that ecological economics may be well enough developed to permit economics to again have a role to play in the sustainability debate. The purpose of this paper is firstly, to look at the role of economic analysis and the context of how it is used, and secondly, to address some of the issues raised about values and assumptions.

ECONOMICS, POLITICS, VALUES AND ETHICS

Richardson (1994), following Jacobs (1993), suggests that we need acceptance of an ethical or political commitment to sustainability, however it is defined. This would solve the sustainability problem by constraining market or other activity which did not fit the definition of 'sustainable'. This suggestion raises two issues, one of which is that ethics and politics are synonymous, and the other is that politics alone as a process will be better placed to determine the values associated with sustainability. It is important here to separate the values or ethics held by indi-

viduals from the processes used to reveal those values and come to compromises.

Our society has developed two basic mechanisms for resolving the problems of resource allocation, one being the market place and the other being the political process. The two are intertwined to a great extent because they provide us with a continuum of forums in which resource allocations are made. For problems which are easily amenable to market activity, such as the provision of most goods and services, the political process involves itself only to the extent that we desire rules of conduct and performance to facilitate the market, and the market is basically left to run itself. As we move into areas which are not so amenable to the market place, such as income redistribution, or public goods like national defence, the political process becomes involved as the dominant means for determining how resources are to be allocated.

The important point is that the market and the political arena are both mechanisms for resolving problems. In both cases, the nature of the process is to get people to reveal their preferences, or values, so that exchange, trade or compromises can be made. After all, politics is as much a process of give and take as the market. In the market, revelation of preferences is captured through the market mechanism and revealed in market prices. In the political arena, revelation of preferences is done through debate and discussion and revealed in legislation. The role of the discipline of economics in this process is to study how markets function and how people make economic decisions. Its partner on the political process is political science. By providing knowledge of how decisions are being made in the market place, economics facilitates problem solving by making potential outcomes more clear to those involved.

The relationship between decision-making processes and values is also important. For most 'problems' to be such, some values must generally exist before one undertakes a process of resource allocation. Values are not arbitrary conveniences created by theories. Instead, theories emerge as attempts to explain observed values or behaviour, and how these values are determined. People do not value the future less, ask for higher returns on longer investments, or in other words use discounting, because economic theory told them it was prudent to do so. Rather, we observe that this is how people behave and then develop economic theories to explain this behaviour.

There are some who would argue that this view of economics, as being 'positive' or limiting itself to descriptions of how people behave, is not really the case. They would say that instead, economics is 'normative' or provides descriptions of how people ought to behave. The essence of the distinction for most is that economics is positive at least until it is used to provide normative policy advice. At the point of providing normative policy advice the values of the user may become embodied in an economic analysis through the choice of particular economic tools.

Since ethics are part of the values that a person holds, the link between ethics and decision-making processes is the same as that for values. Thus, the perceived absence of ethics in any situation is unrelated to the failure of the market or politics to 'create' ethics. If one considers that ethics are missing, the problem will instead be related either to a failure of the process to reveal underlying ethics or values, or to do it in a way that allows discussion or trade to take place. For example, Ehrlich (1993) terms the difficulties that political processes have with environmental prob-

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lems as the "fog of politics". In his words, one can generally count on policies being "badly formulated and/or badly executed, politicians and bureaucrats being incompetent, cowardly, or venal, and citizens not responding as expected." A particular process or mechanism, such as the market or the legislature, is thus not inherently 'unethical' and nor are the ways in which we study these processes. The way a process is conducted, or allows values to be revealed or considered may be considered to be inefficient, but this must be considered separately from the issue of ethics which deals with the values held by people.

Rather than a call for an 'ethical or political commitment' to sustainability, it could instead be argued that what we need is the values or ethics associated with sustainability to be reflected in any of our political and market processes (Proops 1993). It is important to keep in mind that politics is simply a system and not a set of values. As such, it is no more likely to create the correct ethics that promote environmental concerns than the market. The so-called 'greening' of western governments in recent years took a long time and only happened as enough voters made environmental issues political ones. To use the sustainability context of Richardson (1994), politics only have become 'ethical' in recent years because it is only recently that this forum started looking at sustainability as a problem. A similar greening process is occurring in the market place as businesses recognise and figure out ways to incorporate environmental aspects into their decisions. It is only when those who are participating in a process recognise and promote environmental values or particular ethics that these will be incorporated into decisions. This will occur irrespective of the process. Some may argue that the political process will be more able to determine, debate and deliver outcomes which reflect the correct sustainability 'ethics', although in many cases ethics are not the issue, but rather things like property rights or overcoming market failure.

There have been attempts to link the emergence or presence of environmental problems to the use of economics in that situation. An example would be the current debate about tropical log exports and the degree of local processing. The presence of market imperfections, or a failure to reveal values, lies behind much of this problem. This simply identifies that the problem has an economic context and can be studied in a particular way. It is a much different proposition to try and link this with some 'neo-classical argument' as if it was collusion by economists against tropical forests (Richardson 1994). While one might accept Norgaard's (1989) observation that there is a hegemony of neo-classical in the economics used to analyse environmental problems, there is also a recognition that neo-classical economic theory and tools are still important in addressing these issues (Costanza 1989, Proops 1989). Neo-classical economic theory is in fact used to identify what is happening in the tropical log market as market failure rather than masking it as some optimal practice.

When examining the 'corrupt' or 'amoral' practices of politicians and businesses one must be careful to differentiate between the values held by those individuals, a failure of the process to reveal everyone else's ethics, and the theories or techniques used to evaluate what we observe happening. Similarly, the administrative requirements for rates of return or pay-back periods set by the World Bank or any other organisation have to be recognised as such rather than prescriptions of economic or any other theory. The fact that a particular factor is chosen to be maximised, that a discount rate is chosen as a tool or that a particular rate is chosen, reflects objectives and constraints of that particular decision-maker. The objectives and constraints may range from a requirement to make a profit to a need to have a mechanism for allocating scarce funds. Economic theories will certainly provide techniques for evaluating particular effects of policies or targets and help the decision-maker evaluate some of the economic consequences of those criteria but the theories do not prescribe the

particular criteria used. The criteria in the end reflect the values and needs of the decision-maker.

Whether one looks at political processes or markets, each has had difficulty in modifying to encompass environmental and sustainability issues. Environmental problems are often no more amenable to solution in the political arena than they are in the market because one still has to determine a way of balancing conflicting views. Many of environment-related activities of Governments have been in the development of processes to handle environmental issues as much as the resolution of issues. An example of this would include the Resource Management Act in New Zealand.

SUSTAINABILITY AND THE TOOLS OF ECONOMICS

The discipline of economics has made rapid progress towards dealing with environmental issues. Although Jacobs (1993) and Richardson (1994) cast this process in the context of someone being dragged unwillingly into something that they would rather avoid, this is hardly the case. A perusal through resource economics texts over the past ten or 15 years would show the development of economics in resource and environment issues. A key point is that the development of new economic tools and paradigms has paralleled the development of ecological issues. That is, in the same way that political systems have been evolving mechanisms for dealing with environmental issues as a response to these issues, so has economics. This is a process that most in the forestry profession would recognise. Factors that were at one time ignored in forest management, such as wildlife and recreation, are now common components of forestry decisions and techniques have been developed to deal with this.

As far as the economic contribution to the sustainability debate goes, there is no "neo-classical economic paradigm" which is inherently anti-sustainability or anti any other environmental issue. The theoretical problem for economists has always been simply to determine how individuals incorporate ecological and sustainability values into their decisions. This is happening through the development of the ecological economics paradigm, as well as through the development of new techniques or approaches within other economic paradigms to measure these values.

The theory and tools associated with the neo-classical paradigm were developed originally to tackle different problems from those posed by recreation, ecology or sustainability, all of which share a common thread of being difficult to 'measure'. The emergence of tools such as willingness to pay, contingent valuation or option value is because there is a recognition that there are real opportunity costs or foregone values with certain types or levels of activities. In the same way that discount rates and considerations of alternative actions have been common components of decisions because they are seen to reflect real values, these new tools are entering decision-making processes for the same reason. How adequately they reflect particular values is secondary to the fact that these types of measures have been developed because they provided a means of making comparisons and weighing up alternative actions.

The importance of being able to measure something, however that is done, is that most problems that we deal with are not absolute and involve some degree of compromise or trade-off. The only way that compromises can be made is if we know something about the nature of the compromise, or what are the relative costs and benefits. It is this difficulty with measurement that generates the impression for some that this particular paradigm is anti-sustainability. Given the track record of any process or theory, political or economic, in establishing sustainability, the measurement problem is likely widespread and not specific to a

particular technique or approach.

There is also a question as to whether ecological economics will provide the great break from neo-classical economics. The major difference between neo-classical economics and ecological economics, at least currently, is on how the issue of sustainability is treated, and in a way, the relative importance placed on it as an issue. Neo-classical economics implicitly assumes that environmental services are infinite relative to the economic 'sub-system' and thus they can be considered to be free (Daly 1992). In other words, there is a scale problem with neo-classical economics, and it is this problem which ecological economics is attempting to overcome. Pearce and Atkinson (1993) suggest that ecological economics as a comprehensive body of thought will emerge by encouraging existing paradigms, such as the neo-classical, to account for environmental problems more openly and explicitly. A look at the ecological economics literature will show that all of the major 'neo-classical' economic tools for getting people to reveal their hard-to-measure values, such as contingent valuation, willingness to pay (Lockwood *et al.* 1994, John *et al.* 1992), willingness to accept, and option value (Chambers *et al.* 1994) are common tools of analysis. As Richardson (1994) points out, all have their technical problems but these are neither insurmountable or dead end and the research into improving techniques continues (Shogren *et al.* 1994, Schulze 1994). Willingness to pay and contingent valuation are examples of the process of adding ecology and sustainability to the neo-classical paradigm.

A factor which often unsettles those from scientific backgrounds is the ability of economics to embrace a number of paradigms at once, adding new ones without entirely rejecting the old. While 'physical' science typically adopts a new paradigm completely and abandons the one which preceded it, the 'social' sciences find it useful to have a number of coexisting paradigms. The difference is that the subjects that are being examined by the physical sciences are much more conducive to comprehensive theories which can adequately explain everything. Given the nature of what is being studied in the social sciences, i.e. human behaviour, comprehensive theories have not emerged. Far from being trapped by neo-classical theory, economists make use of a range of other economic paradigms to explain economic behaviour, never entirely abandoning the old, but exploring new possibilities. The emergence of ecological economics as a new paradigm will be in a similar pattern, never completely replacing the old but adding new dimensions to understanding and our ability to make decisions that adequately reflect our values (Costanza, 1989).

A component of the 'problem' with economics, as identified by Richardson (1994), is actually related to individual perception. The exercise by, as it is termed, the "New Zealand Treasury boffins" valuing national parks at \$315 million and the archives at \$826 million (Richardson 1994) could be an entirely accurate reflection of society's views, although one's own personal weighting of values may differ from this. One's own view is a personal value judgement, as is anyone else's. In fact, this particular exercise was carried out to put some values on national assets for the balance sheet in the national accounts, rather than an attempt to find out how individuals valued these assets. The value of national parks was determined by Valuation New Zealand using 'comparable' real estate values, rather than actually asking people how they valued the national parks.

The fact that the entire archives could be photocopied for a few thousand dollars while national parks are technically irreplaceable has some relevance to value but does not determine value. Someone may value the original archives highly as opposed to copies and may consider one National Park to be highly substitutable with another, or any other recreation experience rather than being irreplaceable. The 'value' we place on something is derived from benefit that is obtained, not from the

cost of production. Values can be held independent of any knowledge of costs of production or even our ability to pay. Costs of production will only influence the amount of use rather than the value held by the user.

DISCUSSION

This paper has presented a structure for placing the role of economics in society's attempts to cope with its emerging environmental concerns. To those involved in the forest sector, the issue of sustainability, and appropriate forums and tools for determining courses of action should also be important. Forests and forest activities have borne the brunt of society's new-found environmental awareness and in many cases the positive contribution of forestry professionals to solving problems has been lost or sidelined. In the development of environmental issues, much of the decision-making appears to have migrated from the market mechanism to the political forum, and a number of both objective and subjective decision-making tools and processes have emerged. The issues for the forestry sector are whether all of the migration of sustainable forest management decision-making from the private to the public arena is warranted, and which of its management tools, be it scientific or economic, are relevant in today's environment. In the process the sector may also determine whether it has adequately aired its long-held views about sustainable forest use and the tools which are used for this.

The migration of decision making for many forestry issues from the private to public domain is not a current phenomenon and has a long history. Most deforestation of the 'new-world' occurred as part of explicit public policies and incentives to encourage agriculture (Laarman and Sedjo 1992), including New Zealand (Roche 1990). Much of the degradation of forests was also 'political', with politicians choosing short-term, unsustainable employment or economic growth over what their professional foresters were advising was sustainable. The evidence is thus not conducive to immediately advocating public over private decision making. What was also evident over periods of deforestation was that it often represented the social consensus of what was appropriate to do at the time (Laarman and Sedjo 1992). In other words, it was ethical at the time it was done.

Ample evidence exists that shows the ability of private interests and the market to sustainably manage a forest resource for any particular use, be it subsistence food gathering in the Amazon or commercial timber interests in countries like the US and New Zealand. The key in most cases where sustainable forest management has not been successful is not that private interests held the wrong ethics, but that there was an absence of enforceable property rights. Once property rights are in place, an 'owner' can safely plan far enough ahead to be concerned with sustainable management. Richardson (1994) provides an example of the property rights problem with the changes that have occurred in China. Nepal's nationalisation of its forests to provide charcoal for its nascent steel industry and the resultant deforestation is another good example.

The current environment in New Zealand provides an interesting picture of private versus public inputs to forest management. The public sector's holding of plantation forests, which have been seen to have clearly a commercial focus, have been placed in commercial management similar to private plantations. Guiding legislation like the Resource Management Act 1991 has emerged from environmental debates in the public forum. While the Act has the potential to impinge on private activities, it also has the potential to emphasise private decisions and reinforce the sustainability precepts already practised in the forest sector. In some ways the Act could actually increase the profile of the forest sector's own initiatives for sustainable management. These include the Code of Forest Practice (LIRO 1993) or internal cor-

porate programmes (Commercial Forestry and the Resource Management Act 1994). Public policies governing indigenous forests management are more problematic since the Forests Amendment Act 1993 has taken away many of the private owners' own management rights and imposed a new range of sustainability criteria. The property rights impact was evident in the increased level of harvesting which preceded the implementation of the Act.

The role of economics remains well defined for sustainable forestry. Although it has been the bane of classical foresters for its emphasis on financial rather than biological maturity, economics provides a variety of tools to aid in decision making. The need for these tools arises from the rapid expansion of competing users of forests and conflicts over who, how and when forests will be used. Both the market and the political forum will provide mechanisms for resolving these resource allocation conflicts. In either case, participants are required to reveal values or ethics so that trade or compromise can take place. Economics will provide a means, however incomplete, of at least partly quantifying these values and facilitating the process of the chosen mechanism.

Even if we believe, as Jacobs (1993) and Richardson (1994) appear to, that economic methodology is going to lag environmental needs and that only the political forum is appropriate for solving ecological problems, opportunity costs must still be weighed up. One must make a big mental leap for adopting a political process and being able to assume away values and opportunity costs. All that happens is that the forum for determining how these costs will be identified and weighed up is changed. We will still need a mechanism for determining 'how much' is good. The 'safe minimum standard' approach is an example of this. It contains an implicit derivation, measurement and weighting of values. The specification of the standard has not allowed any values or opportunity costs to be assumed away, current or future. Even with the political forum, society is still left with defining and valuing sustainability, and as with all scarce resources, determining what is tradeable in sustainability. In a similar way, the 300-year rotation oak forests of France contain an implicit weighting of values, present and future, which meet the objectives of the owner.

There is no indication that concepts like opportunity cost, contingent valuation, willingness to pay or discounting will disappear from the study of environmental problems or from the issue of sustainability. In New Zealand, these tools are currently being applied in studies of the impacts of possible afforestation of the Mackenzie country, appropriate control measures for possums in forests, and in each of the new areas being afforested on farms. People continue to use these techniques because they reflect issues and values which are real and need to be studied to make adequate decisions. There will be continued change in the types and breadth of analysis, particularly to encompass the ecosystem as part of the "economy" so that adequate accounting is made of the use of resources.

The problem, as many see it, is not whether sustainability or any other forest-use issue is determined in a market or a political forum, but whether the particular forum contains a clear recognition of what is being weighed up. Similar to the way in which users of statistics are castigated for misrepresenting-representing cause and effect, those who are involved in the sustainability debate must be careful to avoid the same accusation with their use of assumptions. This is particularly so for assumptions that are meant to eliminate undesirable issues rather than provide methodological convenience.

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