



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Notes

Climate change, economics and hope: a comment on Brennan*

Graham R. Marshall[†]

Geoffrey Brennan's (2009) argument that climate change is essentially a political/institutional problem has my support. However, I disagree with how he has defined the problem and with his conclusions.

The part of his argument I disagree with can be summarised as follows:

- (1) Reducing carbon emissions constitutes a global public good.
- (2) An authoritative consensus exists within the economics profession that free-rider problems in providing large-group public goods cannot be solved without a government intervening to compel cooperation.
- (3) Establishing a government capable of compelling international cooperation in reducing carbon emissions is 'hopelessly implausible'.
- (4) International efforts to reduce carbon emissions will therefore fail.
- (5) Australia should accept climate change as inevitable and focus on adapting to it.

I have no quarrel with step (1). However, the case for step (2) and beyond relies on an unsubstantiated claim that an authoritative consensus of the kind described does actually persist within the economics profession. This consensus is based on how Samuelson defined the problem of providing public goods. In this definition, individuals benefiting from public goods face strong temptations to withhold their own contributions in the hope of free-riding on others' contributions. This reasoning led to the 'zero-contribution thesis' (i.e., that no-one will contribute) and it was shown to have the structure of an n-person prisoners' dilemma. Professor Brennan claims that the mainstream of the economics profession continues to follow Samuelson's logic in accepting 'that individuals can, in principle, gain by the creation of explicitly collective

* Preparation of this comment was made possible by financial support from the Australian Government's Commonwealth Environmental Research Facilities program for the project 'Improving economic accountability when using decentralised, collaborative approaches to environmental decisions'. Valuable feedback on an earlier draft was received from Tim Cummins and Alistair Watson. The views expressed herein are not necessarily shared by the above parties.

[†] Graham R. Marshall (email: gmarshal@une.edu.au) is at the Institute for Rural Futures, University of New England, Armidale, Australia.

contracts in which all are compelled to contribute ... The state is seen as the institutional embodiment of those collective contracts' (p. 311).

Although strong consensus of this kind did once exist within the mainstream of the economics profession, theoretical and empirical developments have weakened it to the extent that it remains authoritative only in the sense that it still underpins the presumptions in many economics textbooks. Leading economics journals are increasingly publishing articles acknowledging government intervention to be an incomplete solution to the free-rider problem. Elinor Ostrom was co-awarded the 2009 Nobel Economics Prize for work demonstrating the possibility of common property regimes providing robust solutions to free-rider problems in managing natural resources. The continuing, albeit declining, influence of ideas from the earlier 'economic' consensus has more to do with path dependence than with leading economists agreeing they reflect the best of what economics can offer.

The zero-contribution thesis has come under severe challenge. It is inconsistent with evidence from extensive fieldwork that 'individuals in all walks of life and all parts of the world voluntarily organize themselves so as to ... create and enforce rules that protect natural resources' (Ostrom 2000 p. 138). It is contradicted also by the many public good provision experiments undertaken since the 1970s. With great consistency, these experiments demonstrate *inter alia* that: (i) subjects in one-shot games, and in the first round of finitely-repeated games, contribute from 40 to 60 per cent of their endowments to providing the public good; (ii) after the first round of finitely-repeated games, contribution levels tend to remain well above zero despite some decline; and (iii) face-to-face communication yields substantial increases in contributions (*ibid.*).

Nevertheless, Professor Brennan remains sufficiently persuaded by the zero-contribution thesis to accept 'the general point about the incentives to free-ride in n-person prisoners' dilemma situations as given'. Part of his defence for this position is to reason as follows that the case for government action in providing public goods collapses if the purported authoritative consensus is not accepted:

After all, if it is possible for 250 or so autonomous states to strike a voluntary deal to reduce carbon emissions, why should it not be possible for individuals to do much the same? ... [T]he essential logic of the n-person prisoners' dilemma game remains the same whatever the 'n' in question is, provided that it is considerably larger than 2. In short, if there is a solution to the free-rider problem [in reducing carbon emissions] short of effective global government, this is an important fact ... for the rationale for government in general ... (p. 312).

This reasoning unrealistically portrays government's role in providing public goods as 'all or nothing'. Some measure of government coercion is normally needed to increase sufficiently the likelihood of free-riders being

punished that free-riding remains below a threshold beyond which conditional cooperation would unravel. The more that individuals voluntarily resist temptations to free-ride on public good provision efforts, however, the less will be the need for coercion, and thus (given the normally high costs of coercion) the greater the likelihood of successful provision (Marshall 2005).

In any case, the inappropriateness of the purported authoritative economic consensus as a basis for policy responses to the commons problem of reducing global carbon emissions becomes clear when we discover the game-theoretic analogue of this consensus is an *n*-person prisoners' dilemma that assumes players formulate choices independently. In most actual commons problems, individuals' choices are conditioned by expectations of others' behaviour. The problem here is one of interdependent parties assuring one another they will reciprocate each other's cooperation. This is the situation with international efforts to reduce global carbon emissions, where nations are attempting to establish the mutual trust needed to commit to a joint strategy. This problem is modelled appropriately as an assurance game. A mutually-cooperative solution to this game is possible when a joint strategy can be devised providing the required mutual assurance (Runge 1981).

Of course, mutual trust is itself a public good. However, extensive empirical research has established that levels of mutual trust sufficient for moderate to high levels of cooperation can become established when gaining a reputation as a trustworthy reciprocator is important. The possibility of achieving substantial cooperation in large-group settings seems to be explained by research that strongly supports the assumption that modern humans have inherited a propensity to learn and apply reciprocity strategies (Ostrom 2000).

As isolated members of the current human population of 6.8 billion, we clearly have our work cut out for us in establishing mutual trust we will reciprocate each other's carbon emission reduction efforts. By delegating governments the responsibility to act on our behalf, however, the task of establishing this trust is greatly simplified. That's not to imply the task is easy, just that enough international cooperation may emerge voluntarily to make affordable the task of applying additional measures (e.g., trade sanctions) to increase this cooperation to the required level.

Clearly it takes more than a government promising to abide by some global agreement on reducing carbon emissions to convince other governments that it can deliver. As emphasised above, the ability of governments to deliver on their promises, and policies more generally, depends in large degree on their ability to gain cooperation from their citizens. In assessing each other's reputations as trustworthy reciprocators, therefore, national governments will rationally look at the track record of each other's constituents in supporting carbon emissions reduction measures.

This perspective suggests that unilateral action by a government in reducing carbon emissions can be a rational response to the challenge of credibly assuring other members of the global community it can be counted on to

reciprocate their contributions to meeting internationally-agreed targets for carbon emissions reduction. Ostrom (2009 p. 21) argued accordingly that:

Building a strong commitment to finding ways of reducing individual [carbon] emissions is an important element for coping with climate change. Building such a commitment, and the trust that others are also taking responsibility, can be more effectively undertaken in small- to medium- governance units that are linked together through information networks and monitoring at all levels.

Climate change is indeed a political/institutional problem, but Professor Brennan's definition of that problem is not the only one accepted within the mainstream of the economics profession. I have observed that the zero-contribution thesis underpinning his conclusion that international carbon reduction efforts will fail remains under severe challenge, and he has misdiagnosed the political/institutional problem as a prisoners' dilemma rather than as a more tractable assurance problem. The prospects of the global community successfully reducing carbon emissions are therefore more hopeful than he concludes. It *can* therefore be in Australia's national interest to commit to reducing carbon emissions, to the extent that we can assure ourselves our efforts will be reciprocated sufficiently to reduce the risks we face from climate change.

References

- Brennan, G. (2009). Climate change: a rational choice politics view, *Australian Journal of Agricultural and Resource Economics* 53, 309–326.
- Marshall, G.R. (2005). *Economics for Collaborative Environmental Management: Renegotiating the Commons*. Earthscan, London.
- Ostrom, E. (2000). Collective action and the evolution of social norms, *Journal of Economic Perspectives* 14, 137–158.
- Ostrom, E. (2009). *Nested Externalities and Polycentric Institutions: Must We Wait for Global Solutions to Climate Change Before Taking Actions at Other Scales?* Working Paper 09-5. Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington.
- Runge, C.F. (1981). Common property externalities: isolation, assurance, and resource depletion in a traditional grazing context, *American Journal of Agricultural Economics* 63, 595–605.