

GLOBALISATION IN AN AGE OF CRISIS

NBER CONFERENCE, BANK OF ENGLAND,
15 SEPTEMBER 2011

Remarks by Alex Bowen¹ on 'Facing the Climate Change Challenge in a Global Economy' by Lee Branstetter and William Pizer

Introduction

This paper offers a very good and fair appraisal from a U.S. perspective of the background to and prospects for international negotiations on reducing emissions of greenhouse gases. The paper's insights benefit from the authors' first-hand experience of participating in policy formation, which has led them to extol the virtues of creative ambiguity in international negotiations. It concludes, that there will be, in David Victor's phrase, "variable geometries in participation" in future collective action to mitigate climate change. This analysis recognises that there is room for "coalitions of the willing" and the evolution of broader-based collective action over time. It leads to a more sophisticated and nuanced conclusion than the recently-popular claim that the search for global top-down agreements is likely to be replaced by bottom-up measures by citizens' groups and nation states in isolation.

As far as the ultimate prospects for halting human-induced climate change is concerned, the authors are perhaps surprisingly optimistic at a time when global greenhouse gas emissions may be rising faster than ever² and revised long-run prospects for emerging-market economies are outweighing the depressing effect of the world's economic slowdown.³ They write that "it is our view that the United States will eventually enact comprehensive climate legislation... Even Kyoto critics... concede that they will most likely result from a strong, broad-based agreement with legally binding targets.... The vast majority of U.S. industry would be largely unaffected by carbon regulation in the short run."

I want to discuss four issues that the paper raises in my mind. First, what is one to make of the apparent conflict between simple economic logic and political reality that the authors suggest exists? Second, what will the key lines of fracture be among nations in future as they grapple with anthropogenic climate change? Third, what are the costs and benefits of a gradual ramp up policy versus a 'big bang'? And, finally, what are the consequences of the 'variable geometries' approach?

The apparent conflict between simple economic logic and political reality

¹ Principal Research Fellow, Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science, email a.bowen1@lse.ac.uk.

² The International Energy Agency estimates energy-related carbon dioxide emissions to have increased by over 5% from 2009 to 2010 (press release, 30 May 2011).

³ See Blanford et al (2009).

The authors suggest that while simple economic logic might argue for a global unified approach, political reality points toward a future of fragmented carbon regimes. This echoes Elinor Ostrom, who in a recent paper for the World Bank, discusses what she calls a “polycentric approach” for coping with climate change (Ostrom, 2009). Like Branstetter and Pizer, she notes that “The classic theory of collective action predicts that no one will change behavior and reduce their energy use unless an external authority imposes enforceable rules that change the incentives faced by those involved.” But she goes on to point out that “Two broad grounds exist for doubting whether sole reliance on the conventional theory of collective action is a wise scientific strategy. The first is the weakness of empirical support for the conventional theory of collective action... The second is the existence of multiple externalities at small, medium, and large scales within the global externality that has been of primary concern in the academic and policy literature.”

Charles Kolstad (2011) also takes issue with apparently simple economic logic, drawing attention to the apparent willingness of individual countries to go it alone in tackling trans-border environmental issues in the absence of a comprehensive international environmental agreement. He observes that experiments to examine the incidence of free-riding, together with casual empiricism in the real world, suggest that far more co-operation takes place than conventional theory would predict. But if one broadens the concept of utility to allow for the possibility of ‘impure altruism’ (Andreoni, 1990), these empirical observations make more sense. There may be much more scope for international climate co-operation than conventional economic wisdom suggests.

Certainly, it is striking that a substantial range of climate-change mitigation actions are being planned by small countries, both developed and developing, without an overarching legally binding agreement being in place (or, indeed, even on the horizon). By some calculations, pledges before and immediately after the Copenhagen Conference of 2009 amounted to pledges to cut emissions by some 15% from business-as-usual levels by 2020 (Stern and Taylor, 2010). Admittedly, these pledges are not legally binding, but they were unlikely to have been made without the conference to concentrate minds and cast the glare of international publicity over countries’ aspirations. So perhaps there is good reason for a degree of optimism about the future growth of such policies. The more general message is that if simple economic logic appears to contradict political reality, it is a good idea to review the apparent logic – and the choice of axioms and simplifications used to model economic actors’ behaviour.

What will the key lines of fracture be among nations in future?

That brings me to the next issue: who are the key economic actors and what are their interests? I was rather surprised at this paper’s focus on the divide between developed and developing countries and emphasis on the West versus the rest. That may make sense if one is sticking to a global, top-down view of nation states attempting to negotiate a global agreement and it reflects the Kyoto Protocol distinction between Annex 1 countries and the rest. But in a more polyvalent world of variable geometries, one might well want to look beyond the veil of the nation state and ask, how would various climate-change policies affect returns to capital, labour, and

owners of various natural resources, and how are these factors of production distributed across countries?

In the climate-change domain, the distribution of ownership of fossil-fuel resources is a key issue. I am struck by how one piece of simple economic logic, Hotelling's insight into the pricing of exhaustible natural resources, has barely been taken on board in the climate-change policy literature, despite having a long pedigree in the theory – for example, it is not discussed in the JEL article that Branstetter and Pizer cite (Aldy et al, 2010). But back in the 1980s, Hans-Werner Sinn introduced the 'green paradox' by which efforts to support renewable energy development might accelerate fossil fuel depletion and increase emissions (see discussion in Sinn, 2008). The relevance of exhaustible resource theory for climate change has been elaborated by a number of authors, such as Michael Hoel (2009) in a fascinating paper entitled 'Bush meets Hotelling.'

Yet OPEC and Russia have in some sense been the 'dog that didn't bark' in international negotiations. If world carbon prices follow the trajectory integrated assessment models suggest is necessary to keep below the 2°C ceiling on global temperature increase to which the vast majority of countries have signed up, fossil fuel prices will be depressed. As a recent EBRD report explained very clearly (EBRD, 2011), the oil and gas exporters of the former Soviet Union stand to lose a huge amount from adverse changes in their terms of trade. And the integrated assessment models may themselves underestimate the height to which carbon prices may have to rise to choke off fossil-fuel consumption. As far as I am aware, hardly any of them incorporate a Hotelling effect in their structure.

I would therefore have liked to have heard more from the authors about the role of fossil-fuel interests in international climate-change policy-making – not just OPEC's and Russia's roles in international negotiations but, for example, the role of coal owners in U.S. climate-change politics. That role is pertinent to the question of whether Europe and the U.S.A. are likely to be on the same side of the policy divide in future or whether Europe will be lining up with other fossil-fuel-poor countries against countries such as the U.S.A, Canada, Russia, Saudi Arabia and Australia. More generally, economic analysis of international policy should consider who the key stake-holders are and what motivates them, looking behind the veil of the nation state if necessary. In effect, that is what Heckscher, Ohlin and Samuelson did in international trade theory.

Comparing "ramp up policy gently" and going for a 'big bang'?

That links to the third issue that I want to raise. The authors argue that standard economic analysis suggests that the efficient pricing path involves setting carbon prices relatively low to begin with, but rising over time. But the natural resource pricing literature suggests that one may have to start with much higher carbon prices, high enough to drive fossil-fuel rents to zero. Even if one regards the Hotelling-based argument as a theoretical curiosity, despite the empirical insights to which it has given rise, there is a debate to be had over what 'relatively low' means.

If one is a proponent of using a very low pure rate of time preference in discounting costs and benefits from public policies, the logic dictates starting with a higher carbon

price than otherwise that rises less rapidly thereafter.⁴ The transition of the capital stock to a low-carbon mix would still be gradual, because of replacement cycles and time to build, but it would be faster than with market-interest-rate-based discounting. The UK Committee on Climate Change reckons the UK needs a carbon price of £30 per tonne CO₂e by 2020 if the UK is to meet its emission reduction target, which itself is designed to be consistent with European commitments to the 2°C ceiling (Committee on Climate Change, 2011). Modelling exercises to calculate price trajectories consistent with the 2°C ceiling suggest that a price of anywhere from \$13 to \$263 per tonne is necessary by 2020. This distribution suffers from sample selection bias because it excludes the results of studies that imply that it is infeasible to keep below the ceiling. Working back to the present using a real social discount rate of, say, 3% (plus a factor to reflect the decay of greenhouse gases from the atmosphere) would yield a current carbon price of more than a few dollars.

I concede that, in the immediate future, while many countries face high levels of involuntary unemployment, trying to induce rapid structural change is risky. But there are ways in which the economic slowdown can be turned to the advantage of climate-change objectives (Bowen and Stern, 2010). Whether gradually increasing the carbon price from a low base, so that people barely notice, is compatible with the changes in consumption and investment patterns that would reduce emissions is a moot point. Such an approach might also raise doubts about political commitment to the carbon-pricing regime over the long term. The alternative ‘big bang’ approach can be seen as a way of demonstrating commitment and establishing the reputation of the policy authorities.

More generally, there is a question of how rapidly to bring in any new international policy regime. Does it make sense to do things by halves? Do some aspects of the regime necessarily require a step change? The literature on policy reform and sequencing after the fall of Soviet communism may have something to teach climate-change analysts.

Should national policies adopt the ‘variable geometries’ approach?

Finally, there is the question of whether the ‘variable geometries’ approach is applicable nationally. In my view, there are significant dangers in a domestic pick-and-mix approach to tackling climate change. Growing recognition of the threat of global climate change has drawn attention to several important market and policy failures in addition to the central environmental externality of greenhouse gases, including spill-overs from innovation, network economies, information asymmetries, moral hazard from policy-makers’ difficulties in pre-committing and economically inefficient tax systems.

These failures have not now been recognised for the very first time, of course. But their costs now need to be re-assessed. If the climate threat can galvanise action across the board, there is clearly scope for a Pareto-superior outcome, if the appropriate side payments – to developing countries and fossil-fuel owners, for example – can be arranged. This is why the World Bank, OECD and others are

⁴ This is the approach adopted in Stern et al (2007). It is controversial but has a long pedigree in welfare economics.

emphasising the virtues of green growth. But this requires improved policies on several fronts. In this connection, it would have been interesting to learn the authors' views about the state of play in international discussions about low-carbon technology transfer, intellectual property rights, trans-national energy infrastructure and 'measurement, reporting and verification.'

However, siren voices have been suggesting that effective mitigation can be brought about largely by supporting low-carbon R&D. The advice is to soft-pedal on carbon pricing. Yet a range of studies (e.g. Fischer and Newell, 2008) make clear that the overall costs of mitigation are likely to be much higher if we do not use all the tools in the tool-box. That does not seem like good politics, let alone economics. And many national policy mixes are piecemeal, not designed as a whole and likely to be far from cost-effective. The OECD (2011) has amply made that point with respect to the U.K. On some calculations, the implicit carbon price in the U.K. varies across sectors and uses from zero to nearly £250 per tonne CO₂e.

The fact that this conference is taking place at the Bank of England provokes the thought that environmental policy-makers could take a leaf out of the monetary policy book to create a more robust and coherent domestic policy mix. One option would be to give a single public authority constrained discretion to pursue national emissions targets, using a defined set of delegated policy instruments. In the U.K., for example, the Secretary of State for Energy and Climate Change could start by handing over carbon pricing and feed-in tariff rates to the Committee on Climate Change.

References

- Aldy, J.E., Krupnick, A.J., Newell, R.G., Parry, I.W.H., & W.A. Pizer (2010): 'Designing Climate Mitigation Policy,' *Journal of Economic Literature*, Vol. 48(4), pages 903-934
- Andreoni, J. (1990): 'Impure Altruism and Donations to Public Goods: A Theory of Warm-Glow Giving,' *Economic Journal*, Vol. 100, pages 464-77
- Blanford, G.J., Richels, R.G., and T.F. Rutherford (2009): 'Feasible climate targets: The roles of economic growth, coalition development and expectations,' *Energy Economics*, Vol. 32, Supplement 2, pages S82-S93
- Bowen, A, and N Stern (2010): 'Environmental policy and the economic downturn,' *Oxford Review of Economic Policy*, Vol. 26, No. 2, pages 137-163
- Committee on Climate Change (2011): *Meeting carbon budgets –3rd progress report to Parliament*, UK Committee on Climate Change, London, June
- EBRD (2011): *The low-carbon transition: special report on climate change*, European Bank for Reconstruction and Development and Grantham Research Institute on Climate Change and the Environment, LSE
- Fischer, C., and R.G. Newell (2008): 'Environmental and technology policies for climate mitigation,' *Journal of Environmental Economics and Management*, Vol. 55, pages 142-162
- Hoel, M. (2009): 'Bush meets Hotelling: effects of improved renewable energy technology on greenhouse gas emissions,' *FEEM Working Paper No. 262*, Fondazione Eni Enrico Mattei, Milan
- Kolstad, C.D. (2011): 'Bridging reality and the theory of international environmental agreements,' paper prepared for a symposium in honour of Tom Schelling (October 2010), University of Manchester, revised March 2011, forthcoming in *Climate change*

and common sense: essays in honour of Tom Schelling, edited by R.W. Hahn and A. Ulph, Oxford University Press, Oxford

OECD (2011): *Economic Survey of the United Kingdom 2011*, OECD, Paris

Ostrom, E. (2009): 'A polycentric approach for coping with climate change,' *Policy Research Working Paper* No. 5095, World Bank, Washington D.C., October

Sinn, H.-W. (2008): 'Public policies against global warming: a supply-side approach,' *International Tax and Public Finance*, Vol. 15, pages 360-394

Stern, N., and others (2007): *The economics of climate change*, Cambridge University Press, Cambridge

Stern, N., and C. Taylor (2010): 'What do the appendices to the Copenhagen Accord tell us about global greenhouse gas emissions and the prospects for avoiding a rise in global average temperature of more than 2°C?' *Policy Paper*, Grantham Research Institute on Climate Change and the Environment, LSE, in conjunction with UNEP, March