

The Economics of Carbon Pricing (B-TEACHING NOTE)

This teaching note provides supplementary material to assist in the teaching of the case study 2008-78.1. It consists of:

- some focus questions to stimulate discussion and test learning outcomes;
- a list of taped interviews (some video, some audio) along with the typical questions that were asked in the interviews;
- a list of references for further reading on the economics of climate change.

Focus questions

- What factors do you think might affect the slopes of the MB and SMC curves in **Figure 1a** (in the Case Study)? What would you expect to happen to these slopes over time?
Reference: Stavins (2005) Ch 25, and/or most other textbooks on environmental economics.
- What are the relative merits of auctioning permits versus granting them to existing producers?
- It is sometimes argued that the advantage of permits is that they enable a given degree of abatement to occur at the lowest possible cost. Do you agree with this claim?
- Show that if the SMB schedule is flat then allowing trading of permits yields unambiguous gains to society relative to the case where firms are given a fixed allocation of permits. (Note that a flat SMB schedule implies that the marginal gain from abatement does not depend on the amount of abatement that is occurring. Is this realistic?)
- Evaluate the argument that tradable permits are likely to be a more efficient instrument in the long run than a carbon tax.
- Evaluate the argument that a tax would be simpler to administer than a tradable permit system while also being more easily adjusted in response to changing economic circumstances.

This case was written by Professor Ross Guest, Griffith Business School, for the Australia and New Zealand School of Government as a teaching resource to accompany the case study 2008-78.1. The use of teaching materials is restricted to authorised persons.

© The Australia and New Zealand School of Government. Version 30-6-2009. Distributed by the Case Program, The Australia and New Zealand School of Government, www.anzsog.edu.au. No further reproduction or distribution permitted without prior written consent.

For each of the issues below, state the position taken in the Garnaut Review and then state your view with a short (100 word max) reason for your view (which may or may be the same as the Garnaut viewpoint):

- sectors to be excluded e.g. the transport sector, the agricultural sector?
- the initial carbon price and the proposed rate of increase over time
- a transition period during which the carbon price would be low enough to barely affect energy prices
- hoarding of permits by users
- lending of permits by the Carbon Bank
- allowable carbon offsets
- compensation for “trade exposed, emissions intensive industries” (TEEs)
- compensation for electricity generators
- compensation for low-income households
- permit revenue to fund research and development of alternative energy
- frequency of permit auctions

Taped Interviews (available on request from info@casestudies.anzsog.edu.au)

- Video interview with The Hon Penny Wong, Federal Minister for Climate Change and Water (17.54 minutes)
- Audio interview with The Hon. Greg Hunt, Federal Member for Flinders and Federal Opposition Spokesman on Climate Change (33 minutes)
- Video interview with Professor John Quiggin, ARC Federation Fellow and expert on environmental economics (27.43 minutes)
- Video interview with Mr Dan Hunt, Director General, Queensland Department of Mines and Energy
- Audio interview with Mr Brendan Pearson, Director of Corporate Affairs and Deputy to CEO, Minerals Council of Australia (33.26 minutes)

Typical interview questions

(i) *The best way of pricing carbon*

Is a carbon trading scheme the best way of pricing carbon? Many economists believe a carbon tax would be better. Professor Jeffrey Sachs, economic adviser to United Nations secretary-general Ban Ki-Moon, and author of the best-seller *The End of Poverty*, is reported to have said of the carbon trading scheme:

“It’s such a mess administratively. It covers only a fraction of what needs to be covered. It’s hard to implement. It’s hard to monitor. It’s not transparent. It’s highly manipulative — which is why the banks love it.”

How do you respond to that sort of criticism?

(ii) Responses of other countries

Many countries have adopted carbon trading schemes, but not China and India, who together will account for about half of global emissions within a couple of decades.

How important is it to Australia’s carbon pricing policy that China and India sign on to emissions reductions?

How important is it to our policy framework that some form of a Copenhagen protocol succeeds in December 2009?

(iii) Dealing with TEEIs

Can we move on to the issue of how to deal with trade-exposed, emission-intensive industries (TEEIs)? Let’s take the LNG (liquid natural gas) industry for example. They have argued for special treatment on both environmental and national interest grounds: first, that LNG is relatively low carbon energy and we are a big exporter to Asia-Pacific, so if we price carbon in LNG we reduce the ability of the Asia-Pacific to reduce their carbon intensity; second, that we would simply shift the industry offshore without reducing global emissions – the carbon leakage argument.

Do you agree?

If TEEIs deserve special treatment, what criteria should be used to classify industries as TEEIs?

Is there a related issue with respect to our uranium exports, in that they reduce carbon output in other countries – could they therefore generate international carbon offsets for Australia?

(iv) Renewable energy targets

Is it sensible to have both an emissions target and a renewable energy target? How do you respond to the arguments that a renewable energy target is redundant once you’ve got a carbon emissions target, and it is a “picking winners” strategy which is likely to be less efficient than allowing the market to pick the winners?

(v) Compensation for households

With respect to compensation of households for the effects of the carbon price, how should this be done? What particular changes to the tax and transfer payments system do you advocate?

Treasury's recent discussion paper on our taxation system said that Australia has one of the most redistributive tax-transfer systems in the world. Is there a need to make it more redistributive by dealing with the effects of carbon pricing?

References and bibliography on the economics of climate change

- Arrow, K.J. and Fisher, A.C. (1974) "Environmental Preservation, Uncertainty, and Irreversibility" *Quarterly Journal of Economics*, 2, 312-319.
- Adams, P. (2007) "Insurance against Catastrophic Climate Change: How Much Will an Emissions Trading Scheme Cost Australia?" *Australian Economic Review*, 40, 4, 432-452.
- Castle, E., Berrens, R. and Polasky, S. (1996) "The Economics of Sustainability" *Natural Resources Journal*, 36, 716-730.
- Chichilnisky, G. and Heal, G. (1994) "Who should abate carbon emissions? An international viewpoint" *Economics Letters*, 44, 443-449.
- Clarke, H. (2007) "Conserving Biodiversity in the Face of Climate Change", *Agenda*, 14, 2, 157-170.
- Freebairn, J. (2007) "Economic Issues with Climate Change", *Australian Economic Review*, 40, 4, 402-409.
- Garnaut, R. (2008) "Garnaut Climate Change Review. Interim Report to the Commonwealth, State and Territory Governments of Australia", available at: http://www.garnautreview.org.au/domino/Web_Notes/Garnaut/garnautweb.nsf.
- Garnaut, R. (2008) "Garnaut Climate Change Review. Draft Report. June 2008 available at: <http://www.garnautreview.org.au>.
- Goulder, L. H. and Pizer, W. A. (2005) "The Economics of Climate Change" NBER Working Paper 11923, NBER, Cambridge, MA. Available at <http://www.nber.org/papers/w11923>.
- Hackett, S. (2006) "Environmental and Natural Resource Economics. Theory, Policy and the Sustainable Society", 3rd Edition, M.E. Sharpe, Armonk, New York.

- Heal, G. (1998) *Valuing the Future. Economic Theory and Sustainability*. New York: Columbia University Press.
- Jensen, P. and Webster, E. (2007) "Is Stern Correct? Does Climate Change Require Policy Intervention?", *Australian Economic Review*, 40, 4, 421-431.
- Quiggin, J. (2007) "The Prime Ministerial Task Group on Emissions Trading: Advocacy and Analysis", *Agenda*, 14, 3, 5-12.
- McKibbin, W. (2007) "The Prime Ministerial Task Group on Emissions Trading: An Assessment", *Agenda*, 14, 3, 13-18.
- Robson, A. (2007) "The Prime Ministerial Task Group on Emissions Trading: A Solution in Search of a Problem", *Agenda*, 14, 3, 19-26.
- McNeill, J. and Williams, J. (2007) "The Economics of Climate Change: An Examination of the McKibbin-Wilcoxon Proposal for a Carbon Price for Australia", U21Global, Working Paper No 005/2007.
- Nordhaus, W.D. (1994) *Managing the Global Commons: The Economics of Climate Change*. MIT Press, Cambridge, MA.
- Padilla, E. (2002) Intergenerational equity and sustainability. *Ecological Economics*, 41, 69-83
- Pearce, D. Groom, B., Hepburn, C. and Koundouri, P. (2003) "Valuing the Future Recent Advances in Social Discounting", *World Economy*, 4, 2, 121-141.
- Pigou, A. C. (1932) *The Economics of Welfare* (4th edition). London: Macmillan.
- Ramsey, F. P. (1928) A Mathematical Theory of Saving. *Economic Journal*, 38, 543-59.
- Solow, R. (1992) An almost practical step toward sustainability. Invited lecture on the occasion of the fortieth anniversary of Resources for the Future.
- Solow, R. (2005) "Sustainability: an economist's perspective. In *Economics of the environment: Selected readings* (ed. by R. Stavins) (5th edition). New York: Norton.
- Stavins, R.N. Ed. (2005), "*Economics of the Environment. Selected Readings*" 5th Edition, W.W. Norton & Co., New York.
- Stavins, R.N., Wagner, A. and Wagner, G. (2003) Interpreting sustainability in economic terms: dynamic efficiency plus intergenerational equity. *Economics Letters*, 79, 339-343.

- Stern, N. (2007) *The Economics of Climate Change: The Stern Review*. Cambridge: Cambridge University Press. An electronic version of the Stern Report is available at http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.
- Victor, D. (2004) “*Climate Change. Debating America’s Policy Options*”, Council on Foreign Relations, inc., New York.
- Weber, D. (2002) “Pollution Permits: A Discussion of Fundamentals” *Journal of Economic Education*” 33, 3, 277-290.
- Weitzman, M.L. (1974) “Prices vs. Quantities’, *Review of Economic Studies*, October, 41, 4, 477-91.
- Woodward, R.T. and Bishop, R.C. (1997) “How to decide when experts disagree: Uncertainty-based choice rules in environmental policy” *Land Economics*, 73, 4, 492-507.