

RICHARD S. J. TOL, CLIMATE ECONOMICS: ECONOMIC
ANALYSIS OF CLIMATE, CLIMATE CHANGE AND CLIMATE
POLICY, EDWARD ELGAR, CHELTENHAM, 2014

by

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DO ECONOMISTS REALLY KNOW BEST?

Book Review of Richard S. J. Tol, *Climate Economics: Economic Analysis of Climate, Climate Change and Climate Policy*, Edward Elgar, Cheltenham, 2014

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In the final chapter of this book, Tol concludes that: “climate change is a relatively small problem that can easily be solved” (page 193). Not ‘possibly’ or ‘perhaps’, but stated as a matter-of-fact. On what basis does Tol make this claim? Like everyone else who studies future climate change, Tol is reliant upon the simulations of climate models to acquire information on the future. Tol uses output from such models in neo-classical economic analysis of costs. Yet the outputs of climate models are highly uncertain. Much depends on what the climate sensitivity is – 1.5°C for a doubling of CO₂ from pre-industrial levels or 4.5°C – the scientifically accepted range. If it is only 1.5°C Tol is probably right, but he’s unlikely to be correct if the sensitivity is 4.5°C instead, which is equally likely.

Tol notes that a carbon price of \$700 per tonne CO₂ would need to be applied to energy generation to meet the 450 ppm target (CO₂ concentration in atmosphere and considered to be consistent with a global mean temperature change of 2°C, a target selected by the EU countries and agreed internationally in 2009). A carbon price at this level would double energy prices – is that a problem ‘easily solved’? Surely not! Just imagine the economic, social and commercial implications of doubling energy prices. In using ‘is’ and ‘can easily be’ in the above sentence, Tol betrays something of his own bias, namely the ‘contrarian-leaning’ view that, as a threat, climate change has been exaggerated by the green movement and its fellow travellers and has distorted a more rational allocation of financial resources. Tol ascribes such responses to quasi-religious beliefs, power-hungry bureaucrats expanding their fiefdoms, naked self-interest, and so on, but doesn’t provide any actual evidence in support of these reductionist claims.

Modern social science is accepting of bias – many see it as inevitable and even a good thing provided that it’s acknowledged and not smuggled in under the cover of ‘science’. While Tol is ready to cast others as biased and motivated by self-interest or deluded notions of the collective interest, he comes across as believing that he at least is ‘right’- whereas his own bias shouts out at many points in this book. (The choice of the ‘Four Horses of the Apocalypse’ as the front cover illustration tells you quite a lot!). Neo-classical economists are increasingly isolated from other social scientists by their clinging on to the position of ‘superior knowledge’ but it doesn’t wash with many these days. Of course this is not to excuse scientists and policy wonks that use climate change to scare the living daylights out of people – they are also guilty of using bias

in choosing the science that fits their predilections and of not acknowledging the fact.

Tol's book is based upon a series of lectures he has delivered to university students over the years and it is clearly intended for a similar audience. In parts, the book is a succinct and useful account of key topics and debates in climate economics and Tol demonstrates an impressive breadth of knowledge. The commitment to neo-classical economics doesn't waver and the reader is treated to mathematical expositions at many points in the book, requiring a reasonable mathematical comprehension. Herein is a further bias – the preference for an orderly analysis at the margin which can be expressed numerically.

The question Tol doesn't address is whether neo-classical economics is the right 'tool for the job' he is embarking upon. Does it help illuminate matters or does it create a false sense of confidence in 'the answer'? If climate change is also about abrupt change or 'tipping points' in biogeochemical systems, how useful is marginal analysis, a central axiom of which is steady change and the continuation of existing relationships and structures? It's a bit like trying to predict the future of the economy using econometric models – it works as long as nothing much changes structurally, which means the utility of predictions declines very rapidly beyond a few years into the future in dynamic economies.

Further imponderables are highly discontinuous socio-economic change such as technological innovation and the rise and fall of nations and ideologies. Does it make sense to extend marginal-type analysis decades into the future when we know that the drivers of future change will be as much (historically more) discontinuous as continuous in nature? We do not pretend to have an answer but raise it as a counter to the confidence that Tol appears to have in tools which may just not be up 'to the job'. Of course those tools can still be wielded but then we have to question the validity of the findings. Indeed, at several points Tol presents data showing the wide uncertainty in economists' estimates of the costs of climate change impacts and carbon abatement but somehow still assumes that a 'correct' answer is possible.

An alternative interpretation is that we are in the domain of 'endemic uncertainty' due to the fact that we are trying to understand (even quantify) complex systems extending decades into the future and that different people (and intellectual traditions) will interpret the wide uncertainty according to their own implicit bias. We are a long way from the relatively simple cases where known measurable externalities are being internalised through ascribing monetary value. As a thought experience if, in the year 1900, Alfred Marshall (one of the inventors of marginal analysis) had been set the challenge of calculating the costs of air pollution in 2000, how well would he have done? The dangers of many air pollutants were not recognised in 1900 and the expansion of power generation over the course of the 20thC was immense, not to mention two world wars and the Cold War to factor-in. As importantly, public and policy attitudes to air pollution in OECD countries changed dramatically during the 20th Century. Scenarios weren't invented back then but, if they had been, Marshall could have used scenarios of different possible futures, but that doesn't overcome the problem of deciding how - from a wide range of possible futures – effective policy should be formulated in response. Of course, in reality, air pollution policy was gradual, flexible in response to new understanding and technological innovation,

responsive to new knowledge and technologies and, just occasionally, peppered by ‘new ways of thinking about the problem’. It was ‘messy’ – even ‘clumsy’ at times – but it worked.

Despite the above criticisms, the book does offer an insight into how neo-classical economics can be used to inform the policy maker of the potential costs of climate change. While economic valuation may be questionable for the likes of Spangenberg & Settele (2010), it does help policy makers when deciding how to approach the problem of climate change. It is not a panacea for establishing the full potential costs of climate change. This is perhaps where Tol could have accentuated the idea that economic models can and often do provide inaccurate results due to inferior assumptions. Tol’s arguments would have been strengthened had he provided more of a critique of neo-classical and welfare economics. An example of poor critique is in chapter 4, where he makes reference to “first welfare theorem”. More detail could have been given regarding the reasons which may distort efficient allocation with regards to his example of carbon dioxide. The chapter mentions “information asymmetries” under the ETS section yet, makes no explicit reference to the potential effect on efficient allocation.

Another example of very brief coverage of economic theory would be in chapter 11, where Tol applies the idea of cooperative payment schemes to the problem of why international environmental agreements may fail or be “narrow and shallow” e.g. Kyoto. Carraro et al (2006) highlight the significance of the EU as a cooperative of heterogeneous countries with some members having a high marginal willingness to pay to avoid climate change damage and some members with “low marginal abatement costs”. Tol does not seem to highlight this working coalition of heterogeneous partners. Instead he portrays the idea that all coalitions of partners have failed (or will fail) or will face great difficulty in forming meaningful international agreements (due to a lack of consensus amongst partners).

Tol does a good job of explaining the potential problems of ‘grandfathering’ in chapter 4. He highlights the problem of incumbents often being inefficient firms which are allocated licences to the detriment of newer entrants. However, this section could have discussed areas of industrial organisation theory in more detail such as barriers to entry as a result of grandfathering.

Despite some of Tol’s “flippant” comments, his succinct description of willingness to pay and willingness to accept compensation in chapter 5 helps the reader to differentiate between the two terms. The example given of people being “loss averse” to losing their legs seems a good and thoughtful example. Another example of clear communication of economic theory is in chapter 9, where equity was well covered. Understanding the use of equity weights was enabled by the example of health risks in rich and poor countries. Chapter 9 was slightly let down by the absence of a statistical diagram to explain the idea of deep uncertainty, though Tol should be commended for the explanation he provides.

Stylistically, the use of ‘tweets’ at the start of each chapter reflected a somewhat ‘clipped’ approach to the writing which will appeal to some and does succeed in covering a very broad spectrum in 200 pages. Tol has also included good sections on further reading and exercises, some of them available online to be used by students in

seminars and discussion groups. Graphics and figures are used well in most parts of the book but are hard to comprehend in chapters 1 and 2.

This review concludes that Tol provides a reasonable economic analysis that covers most of the relevant topics. While occasionally lacking in detail, this is inevitable in a volume under 200 pages. The book assumes the applicability of neo-classical economics to future climate change policy rather than clearly demonstrating it. Herein lies its limitation for the study and practice of climate policy making, which has to encompass social, political perspectives and values not captured by Tol's version of economics. The book will, nonetheless, be useful for students studying environmental economics, climate change economics and applied economics.

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