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The structure of the climate debate

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ABSTRACT

First-best climate policy is a uniform carbon tax which gradually rises over time. Civil servants have complicated climate policy to expand bureaucracies, politicians to create rents. Environmentalists have exaggerated climate change to gain influence, other activists have joined the climate bandwagon. Opponents to climate policy have attacked the weaknesses in climate research. The climate debate is convoluted and polarized as a result, and climate policy complex. Climate policy should become easier and more rational as the Paris Agreement has shifted climate policy back towards national governments. Changing political priorities, austerity, and a maturing bureaucracy should lead to a more constructive climate debate.

1. Introduction

The best course of action for greenhouse gas emission reduction and adaptation to climate change has been subject to debate for three decades. Much less attention has been paid to the nature and structure of the climate debate, and why certain actors adopt the position that they do. In this paper, I use basic tools of political economy and the economics of organizations, as well as the philosophy of science and social psychology, to analyse the climate debate.

Economists have contributed large volumes of research on international environmental agreements and the architecture of international climate policy, and copious amounts of papers on the design of greenhouse gas emission reduction policies and policy instrument choice in the first- and second-best. Economists have been reluctant, however, to write much about the climate debate itself and apply their tools of analysis to the question why participants in this debate behave the way they do. This paper makes a first attempt.

Climate policy has moved slowly. This frustrates many, whether on the side of those who advocate for rapid emission reduction or of the opinion that climate policy is a nonsense best forgotten. In either case, it helps to understand why the discussion is as it is, why people argue as they do, and why climate policy has neither gone away nor moved to reduce greenhouse gas emissions. This paper makes a start in answering these questions. The method chosen is discursive rather than analytical, but readers who prefer analytics and econometrics just have to follow the references.

The paper proceeds as follows. Section 2 revisits the case for climate policy. Section 3 sketches the optimal design of climate policy. These sections are kept short because the material is well-rehearsed. Section 4 explores the positions taken by different actors in the climate debate. Section 5 discusses recent developments in international climate policy, with particular regard to the Paris Agreement and the replacement of targets and timetables by pledge and review. Section 6 treats national climate debates, in a necessarily cursory way as there are so many. Section 7 concludes.

2. The case for climate policy

Some people have argued that climate change is bad as all change is apparently for the worse (Potsdam Institute for Climate Impact Research and Climate Analytics, 2014, WBGU, 1995). This is an odd position: nothing leads to good that is not natural. Gender equality would be a radical departure from the past, as would democracy in China, and universal access to sanitation. These decidedly unnatural things would generally be welcomed. Indeed, Hume (1740) has warned against using the world-as-is as a justification for how the world ought to be, and Moore (1903) against assuming that what-is-natural is good. However, as argued by Knappenberger and Michaels (2015), environmentalists typically claim that climate change is bad for all that is good and good for all that is bad.

The environmental movement's hankering for the presumed purity of times long gone and its resistance to progress reflects its roots in

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Romanticism (Hinchman and Hinchman, 2007) as does its embrace of the naturalistic fallacy of von Schiller (1787) and the implied rejection of Hume (Miller, 2005).

Environmentalists' construction of all climate change as necessarily bad is also at odds with its frequent embrace of scientific results as a key justification for environmental policy. Research has shown that climate change would bring both positive and negative impacts (Arent et al., 2014; Schneider et al., 2007; Smith et al., 2001; Pearce et al., 1996). Positive impacts include a reduced demand for energy for winter heating, fewer cold-related deaths, and carbon dioxide fertilization which makes crops grow faster and reduces their demand for water. Negative impacts include sea level rise, the spread of tropical diseases, and increases in storm intensity, droughts, and floods. Adding up all these impacts after having expressed them in welfare equivalents, the impact of initial climate change is probably slightly positive. This is irrelevant for policy, because initial climate change cannot be avoided. More pronounced climate change would have net negative effects, and these impacts would accelerate with further warming. Even so, the impacts would be moderate: The welfare impact of a century of climate change is comparable with the welfare impact of a year of economic growth (Tol, 2015). Uncertainties are large, though, but even the most pessimistic estimates show that welfare loss due to a century of climate change is comparable to that of losing a decade of growth (Stern et al., 2006).

With relatively small numbers for the total impact of climate change, it is no surprise that a recent meta-analysis of estimates of the social cost of carbon concludes that its expected value is $\$201/tCO_2$ for a 0% pure rate of time preference, $\$^{2015}107/tCO_2$ for a 1% PRTP, and $\$13/tCO_2$ for 3% (Tol, 2015). This compares to a price of carbon dioxide emission permits of $\$13/tCO_2$ in California[1] and of $\$5/tCO_2$ in the EU[2] in July 2016. These latter prices do not buy a lot of emission abatement.

3. The design of climate policy

Greenhouse gas emissions can be reduced in a number of ways (Clarke et al., 2014). More efficient energy use and a switch to alternative energy sources are the two main technical options, although reduced population growth, slower economic growth, carbon capture and storage, and geoengineering should be considered too.

Energy-saving and -switching are best stimulated by a carbon tax, for three reasons. First, incentive-based policy instruments, such as taxes, tradable permits and subsidies, are better suited for reducing emissions from diffuse and heterogeneous sources than rule-based instruments. This is because the cost of meeting any emission target is minimized if the marginal abatement costs are equalized for all emitters. A uniform carbon price guarantees this. Uniform marginal abatement costs are very difficult, if not impossible to achieve through direct regulation if polluters are heterogeneous in technology or behaviour (Baumol and Oates, 1971).

Second, taxes and tradable permits are superior to subsidies because subsidies lower the average costs of pollution – and thus stimulate the polluting activity – whereas taxes and tradable permits increase average costs (Baumol and Oates, 1988).

Third, taxes are more appropriate for stock pollutants than tradable permits. This is because a mistake with a quantity instrument would have minimal environmental implications – what matters are total emissions for the world and the century rather than emissions from a country in a year – but may have large economic consequences. A mistake with a price instrument would have neither large environmental implications nor large economic consequences (Weitzman, 1974; Pizer, 1999). A carbon tax is therefore the cheapest way to reduce greenhouse gas emissions. Care should be taken on the use the revenues of the carbon tax (Ekins and Barker, 2001; Carraro et al., 1996; van Heerden et al., 2006) and on the interactions between the carbon tax and pre-existing taxes and other market distortions (Newbery, 1995; Baumol and Bradford, 1970; Babiker et al., 2003).

Ending greenhouse-gas-induced climate change requires that we reduce carbon dioxide emissions from fossil fuel combustion to, essentially, zero (Matthews and Caldeira, 2008). Achieving that at a reasonable cost requires massive technological change, particularly in power generation, transport, and agriculture (Edmonds and Wise, 1998). Investment is a bet on the future, and deterred by regulatory uncertainty (Hoffmann, 2007; Battalio and Schultz, 2011). Investment in R & D takes even longer to pay-off, and stable and predictable policy is correspondingly more important. A carbon tax also emerges as the preferred policy instruments for stimulating technological progress (Requate and Unold, 2003, Fischer and Newell, 2008) – noting, of course, that knowledge is partly a public good and R & D therefore needs a second public intervention either through subsidies (Acemoglu et al., 2012) or patents (Gallini, 2002; Nordhaus, 1969).

The initial carbon tax should be modest because it imposes a deadweight loss as it penalizes decisions made before there was a carbon tax (Wigley et al., 1996, Goulder and Mathai, 2000). Over time, the carbon tax should rise. Net present abatement costs are lowest if all emissions from all sectors and all countries are taxed equally and if the carbon tax rises with a modified Hotelling rate (Hotelling, 1931, Van Der Ploeg and Withagen, 2014).

Higher carbon taxes would lead to deeper emission cuts. Only a modest initial carbon tax is needed to keep atmospheric concentrations below a high target but the required tax rapidly increases with the stringency of the target. If concentrations are to be kept below 450 ppm CO_2eq, the global carbon tax should reach some $\$210/tCO_2$ in 2020 or so (Tol, 2013) – fifty times the recent price of permits in the Emissions Trading System which covers about half of emissions in Europe. Such a carbon tax would roughly double the price of energy in Europe. A 450 ppm CO_2eq concentration would give a 50/50 chance of meeting the declared goal of the European Union and the United Nations to keep global warming below 2 °C (Peters et al., 2015; Peters, 2016).

However, less ambitious targets would require far lower carbon taxes, and would hardly affect economic growth (Clarke et al., 2014, 2009; Tavoni and Tol, 2010). The above discussion about the impacts of climate change suggests that a modest carbon tax can be justified, but that more ambitious goals may be hard to defend (Tol, 2013).

4. The debate on climate policy

I argue above that climate change is a relatively small problem that can easily be solved: we just need a modest carbon tax.[3] A casual observer of climate policy and the media would have a different impression. Climate change is often presented in catastrophic terms (Hulme, 2008), although there are also voices that decry it as a hoax (Jang and Hart, 2015). Climate policy is often presented as costless if not beneficial (Barker et al., 2007), although there are also voices that claim it may bring the economy crashing down (Kelly, 2016). These positions are untenable, so their persistence requires explanation.

A number of things stand in the way of a reasonable debate on international climate policy and the simple solution sketched above.

First, the presentation of climate change is often a discourse of fear (Hulme, 2008). There is a demand for an explanation of the world in terms of Sin and a Final Reckoning This is often referred to as Millenarianism (Landes, 2011). Although many Europeans are nominally secular, fewer are in practice. The story of climate change is often a

[1] http://calcarbondash.org/

[2] https://www.eex.com/en#/en

[3] Note that climate change has all the characteristics of a wicked problem (Churchman, 1967; Rittel and Webber, 1973; Grundmann, 2016) and that anthropogenic climate change, its causes and its consequences are complicated. Despite that, first-best climate policy is simple.