

ENVIRONMENTAL POLICY AND PUBLIC OPINION: A NOTE ON INSTRUMENT CHOICE

By Raphael Calel

Introduction

The Kyoto Protocol will run out in 2012, and the parties to the United Nations Framework Convention on Climate Change (UNFCCC) are preparing to negotiate a new agreement at the 2009 Climate Change Conference in Copenhagen. The question of how we can most effectively reduce our consumption of natural resources is more relevant and more hotly debated than ever before. There is a consensus among the parties regarding the excessive consumption of natural resources (e.g. greenhouse gas emissions are equivalent to consumption of clean air). Surprisingly, most agree about the aggregate consumption levels that are needed to prevent or mitigate the most severe consequences of climate change. On the global level, a major topic of discussion has been the distribution of the cost of reducing natural resource consumption. Parties involved in the discussion weigh each country's historical contribution to the problem on the one hand, and the consequences each country will suffer on the other. Although this is an important question that must be resolved before a comprehensive solution is agreed upon, countries around the world have realised that they cannot wait for such an agreement before springing into action. The question that must be answered right away, then, is: how can countries or regions most effectively achieve reductions in their natural resource consumption?

Choosing a Policy Instrument

The two main forms of state intervention are 'command and control' and 'economic instruments'. Command and control is a technical term used by the government to mandate certain actions, and penalise non-compliance. This is the traditional form of state intervention with which we are all familiar. Economic instruments act through the adjustment of prices for the natural resources. According to the principle that demand falls if the price rises, it is conceivable that consumption will fall to the desired level if the price is high enough.

Economic instruments often appear in two forms: Pigouvian taxes and cap-and-trade. A Pigouvian tax is an additional percentage of tax demanded by the government for a specific product. The amount of the tax is chosen specifically such that demand will fall to the desired level. In other words, the government decides the price, and market forces are left to determine the level and distribution of consumption. If the objective of such a tax is to achieve sustainable consumption levels, the tax needs to be adjusted according to the environmental impact of each product. In addition, the magnitude of the tax will depend on the price sensitivity of or demand for each product.

It is noteworthy that even when we have enough information to set appropriate Pigouvian taxes, such taxes will be indirect. If burning one litre of oil generates socially costly emissions (i.e. the consumption of clean air), a Pigouvian tax would raise the price of a litre of oil to reflect this social cost. The consumption of oil is therefore taxed, although we are really interested in reducing the consumption of clean air. Cap-and-trade, on the other hand, aims to create a market for the right to consume clean air (i.e. to pollute). The government limits the aggregate quantity of emissions to sustainable levels, and thereafter anyone can buy or sell the rights to those emissions. This implies that the level of aggregate consumption is fixed and that market forces are left to determine the price and distribution.

A Pigouvian tax sets the price and lets the quantity supplied adjust to the desired level, while cap-and-trade fixes the quantity at the desired level and lets the price adjust. In theory, both economic instruments produce equivalent outcomes in terms of price and total quantity. However, cap-and-trade requires politicians to know only the sustainable level of consumption of

the natural resource, while taxation requires additional information about the environmental impact and price sensitivity of each product. For large-scale projects with many participants, such as the European Union Emissions Trading Scheme, which covers over 12000 installations in a variety of sectors, it is understandable that cap-and-trade is chosen instead of taxation. Cap-and-trade is now a model for both national and international environmental policy.

The instrument choice debate seems to have moved on to the weighing of the relative benefits of different economic instruments just as quickly as we have, and cap-and-trade schemes are expected to play a much larger role in future environmental policy. However, one should not be so quick to dismiss command and control. Economic instruments and command and control are usually compared on the basis of a narrowly defined cost-effectiveness analysis. Economic instruments induce emitters who actually gain little from their emissions to cut down below their allocated quota and sell the difference, while command and control requires everyone to reduce their emissions to the same level no matter the cost. Since those for whom emissions are most valuable will tend to have the highest levels of emissions, command and control, in effect, requires the greatest reduction from the greatest emitters. By this measure, economic instruments are clearly cheaper for society than command and control. If both policy tools lead to the same total amount of emissions, economic instruments are clearly preferable. But does this comparison accurately reflect the true social costs and benefits of these policy instruments?

Revisiting 'Economic instruments versus Command and Control'

The preceding comparison is subject to several qualifications. First, if one requires very large reductions in resource consumption, there may be very little scope for choosing the most cost-effective measures. Instead, practically all available abatement measures must be taken, essentially eliminating the efficiency advantage of economic instruments. Secondly, the advantage of economic instruments in the above comparison derives from an implicit assumption that polluters face very different abatement costs. If abatement costs were similar, there would be little benefit in opting for economic instruments (Harrington and Morgenstern, 2004).

Other research takes a broader approach to comparing these instruments. The relative costs and benefits of these policy instruments are found to be ambiguous once we take into account the uncertainty about abatement costs (Zhao, 2003), technological change (Krysiak, 2008), varying enforcement capabilities etc (Montero 2002). Goulder and Perry (2008) provide a good recent review of the instrument choice debate.

A significant omission, however – in the basic comparison as well as in the broader literature – is the relationship between environmental policy and public opinion. We shall explore two potential links, both having implications for instrument choice.

First, setting a price on emitting a tonne of carbon dioxide or deforesting an acre of land affects the social acceptability of continuing with these activities. One potential response to this commoditisation is that it becomes more acceptable to continue to whatever extent one wishes, as long as one pays for oneself. Another possible response might be, 'if I am being punished for every incremental increase anyway, I might as well do as much as I like'. Nevertheless, the banning of excessive harvesting of these natural resources stamps these activities as unacceptable. In fact, Goeschl and Perino (2009) provide experimental evidence showing that the use of taxes *reduces* environmental contributions, while command and control *increases* contributions. Moreover, these results persist even after the regulation has been removed.¹ Their experimental design eliminates the cognitive mechanisms usually found in the experimental literature (e.g. conditional behaviour, peer pressure, and reputation), and they are left with the conclusion that command and control generates a more favourable response by casting the choice as a moral

¹ The experimental economics literature contains numerous reports that taxes and fees exacerbate undesirable behaviour – behaviour which persists even after the payment schemes have been removed. See Gneezy & Rusticini (2000) for an illustration of the typical results.

dichotomy between ‘good’ and ‘bad’. Although their results do not exhibit long-term persistence, it would not be unreasonable to think that continual exposure to such instruments would serve to cement this moral dichotomy. Although more research is needed, this psychological difference means that command and control policy could lead to greater reductions in excess consumption of our natural resources over a longer period. Larger scale econometric evidence also suggests that criminalising the over-use of environmental resources reduces such behaviour, in large part due to the fear of public condemnation for transgressing established regulations (Almer and Goeschl, 2008). Such evidence indicates that command and control may be more effective by utilising the power of public opinion to achieve environmental policy objectives.

Secondly, implementing economic instruments requires us to make false equivalencies that might have devastating consequences for the environment. To put a price on a tonne of carbon dioxide one has to assume that each tonne has the same environmental impact, and the same holds for permission to harvest fish, forests, pollute water, etc. Otherwise, a separate price would have to be set for each tonne of fish and each acre of the forest, which would be infeasible. The truth, of course, is that these are not equivalent. Such false equivalences lead to the incorrect impression that all consumption of a natural resource damages our environment equally. The fact is, however, that deforesting an acre of virgin forest is more damaging to our ecosystem than harvesting an acre of new forest. If the price of harvesting these types of forest is the same, but the cost of harvesting virgin forest is lower (since there is no waiting time for the trees to be fully grown), the virgin forest would be harvested first. Similar examples can be found for every natural resource. One may reduce excessive deforestation, but the cost may be other biodiversity losses as well as a destabilised and weakened ecosystem. This problem is much more easily dealt with using command and control. One can simply choose to give greater protection to certain natural resources, a method which is already used in several countries.

It is worth clarifying that command and control does not exempt the policy maker from making false equivalences. To divide forests into areas deserving special protection and those that do not suggests equivalence between all forests on either side of the dividing line. However, such a false equivalence would seem to fit well with the kind of moral dichotomy noted by Goeschl and Perino (2009). The important difference noted here is the consequence of the false equivalences under command and control when compared with economic instruments. However, the combination of command and control and economic instruments arises quite naturally here. If policy makers are equating all new forests anyway, then why not use economic instruments to give incentives for the efficient harvesting of that forest, given that the virgin forests are already protected?

Finally, regardless of whether the proposed mechanisms are significant or not, the role of public opinion must be considered in an intellectually honest policy debate. Suppose we would like to reduce robbery or the dumping of toxic waste into our drinking water (Hausman and McPherson, 2006). Would we consider charging a tax from robbers or from companies dumping toxic waste in our drinking water, and then letting them decide how much of robbing or disposing they would like to do? Clearly, the legislation against such activities is corroborated by an underlying social attitude, namely that such activities are unacceptable.

This argument does not establish moral superiority of command and control, but rather indicates that advocacy of economic instruments already imposes implicit assumptions about how these activities are distinguished in public opinion. In a dynamic setting, this inevitably promotes a certain public mindset. By discussing the role of public opinion explicitly and forcing deliberate consideration of these assumptions, we can begin to reconsider that advocacy in light of the ability for a policy instrument – reinforced or hindered by the public mindset it promotes – to guide us along a least-cost path towards an eventual emissions target. Even if we still decide that economic instruments are preferable, this argument alerts us to the fact that public opinion has an essential role to play in the debate, yet has been unduly relegated to the sidelines.

Conclusion

The debate on how to most effectively reduce the consumption of our natural resources to sustainable levels should, and will, continue for some time still. Economic instruments and command and control are not mutually exclusive, and are often used side by side in practice. Nevertheless, economic instruments, especially cap-and-trade, have caught the eye of policy makers and have a dominating grip on the environmental policy debate. Although recent contributions attempt to broaden the basis for instrument choice, the potentially reinforcing or hampering role of public opinion remains largely unexamined. It is important that the social cost-benefit calculation is wide enough to account for the relationship between environmental policy and public opinion.

This review has explored this relationship, but clearly has not attempted to undertake any such calculations. Moreover, many context-specific questions related to implementation have not been discussed. It would, therefore, be careless to conclude that the arguments presented here will sway the present consensus. The aim is merely to suggest that the relationship between environmental policy and public opinion has been unduly neglected. The relatively amorphous nature of public opinion makes it less amenable to mathematical modelling, which may explain why it has been virtually ignored in economics. We have suggested how public opinion might bear on instrument choice in environmental policy; all very informally, intended more as hypotheses than conclusions. An economist might express suspicion about these arguments since the word 'efficiency' has not appeared much. Yet, this word has a very precise and technical meaning, which is not appropriate for the exploratory nature of this note. Nevertheless, recent evidence suggests that command and control may be able to harness the force of public opinion over time, thus appearing in a more favourable light in a longer-term cost-effectiveness comparison. There is much more research to be done on formalising, testing, and evaluating the importance of such mechanisms, and there are probably many more mechanisms yet to be discovered.

Without serious attempts to consider the relationship between environmental policy and public opinion, it is not clear that the present enthusiasm for economic instruments in environmental policy is warranted. If some of the links here hypothesised are significant, the eager adoption of economic instruments over command and control approaches may have devastating environmental consequences not anticipated by the current literature. A broader debate that explicitly introduces public opinion into the problem of instrument choice will do better to provide robust recommendations for those sitting down at the Copenhagen negotiations later this year. Both cap-and-trade and command and control policies will be part of any effective deal coming out of Copenhagen and subsequent negotiations. Nevertheless, with indications that market mechanisms will play a substantially enlarged role in future environmental policy, the need for a vigorous and expanded debate on instrument choice is more pressing than ever.

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