Non-National and Other Approaches to Emissions Reduction: Why More Attention Should Be Given by Economists

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Abstract

Climate change policy has been set back by politics in the United States (US) and Australia as the US withdraws from the Paris Agreement and as the Australian government abolished the carbon pricing mechanism. Given the political gridlock at the national level, this article argues that non-national policies are not necessarily economically inferior despite the greater efficiency and scale of national policies. To argue this point, the general theory of second best is used (Lipsey & Lancaster, 1956), there is a review of some sub-national emissions reduction policies and the potential of behavioural economics in climate change is mentioned. The article finds that there is great potential and scope for the implementation of non-national climate change policies.

Introduction

The issue of climate change has been a politically contested and sensitive topic in countries such as Australia and the US. There are disputes over the mere existence of climate change, and about how climate change and emissions reduction should be treated policy wise. These challenges are partly due to the inherent nature of climate change and greenhouse gases (GHGs) and how they are a textbook case of a negative environmental

externality[1] resulting in the need for collective action. Everyone directly or indirectly emits GHGs, yet the effects are not immediate, equal or attributable to a certain source. Subsequently, there is also a first-mover disadvantage because of probable free-riding[2], given the freely mixing nature of the atmosphere, from countries and people not reducing GHG emissions. There are also issues such as the inter-temporality of climate change, technical issues such as measurement and source identification of GHGs, the short-term lack of a cheap and readily available substitute for fossil fuels, and the attribution of who pays (Ostrom, 2012); all issues that only complicate the whole problem.

Economically, a generally proposed solution to excess GHG emissions is to put a price on them; either a market-based emissions trading scheme or a tax that places a direct price on emissions. Some consider a cap-and-trade system or emissions intensity scheme as the 'first-best' policy solutions, assuming that an atmospheric CO_2 limit of below 450 parts per million is known to be acceptable, allowing markets to efficiently set the price of emissions. This is compared to a tax on emissions, where the assumption is that the shadow price[3] of carbon emissions is already known. However, the issues with the implementation of such policies are the political constraints around climate change action. Especially at a national level in Australia, politics is what has most constrained policies and effective action on climate change. Due to the incremental, non-immediate physical and political impacts of climate change, the result has been slow or no action, or even a complete denial of climate change. Lobbyists for industries most likely to be affected by any kind of price on emissions, such as coal mining, further obscure and delay

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[1] A positive or negative externality is a benefit or a cost, resulting from the actions of an individual or entity, which is experienced by unrelated third parties i.e. a polluter not paying for the negative effects of pollution.

[2] The act of free-riding is when someone is able to take advantage of a public resource without having to pay for it, such as polluting countries taking advantage of cleaner air due to air pollution reduction measures in other countries.

[3] The estimated price of something for which there is no market price.

action as they lobby politicians (Jenkins, 2014). Even if national policies are enacted, these constraints mean that even first-best policies become compromised with exceptions and rent-seeking[4] from the affected industries, leading to sub-optimal and less efficient policies (Jenkins, 2014).

For these reasons, sub-national policy solutions are an increasingly viable and necessary alternative considering that some action is better than no action (Ostrom, 2012). For economists in politically constrained countries, this means that more focus should be directed at sub-national emissions reduction policies, on top of or instead of national policies depending on the political climate.

National vs Sub-National Emissions Reduction Policies

National emissions reduction policies logically target the largest emitters mostly due to the inherent scale of national policies and issues of federal jurisdiction. For example, Australia's carbon pricing mechanism (CPM), or 'carbon tax' as it was more infamously known, covered 60 per cent of emissions and mostly affected GHG emissions from large businesses and industrial facilities, before the mechanism was revoked in 2014 (Clean Energy Regulator, 2015). The CPM covered power plants, miners and manufacturers amongst others.

In comparison, while sub-national policies could also mean market-based emissions reduction solutions, but at a smaller scale like in Tokyo (Roppongi, Suwa, & Oliveira, 2016), indirect policies such as better planning and building regulations can also be

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[4] Seeking to obtain economic gains by manipulating society or politics i.e. a company seeking favourable land zoning outcomes, subsidies or loans from the government.

enacted. Fifty-four per cent of emissions are due to electricity generation in Australia (National Greenhouse and Energy Reporting, 2017) and approximately 26 per cent and 25 per cent of electricity consumption is due to the residential, and the commercial and services sectors respectively (Vivid Economics, 2013). It could be said then that day-to-day individual demand for electricity contributes close to a quarter of Australia's emissions. Better building efficiency regulations should therefore be enacted by state and council policies given its contribution to emissions.

This should mean that economists should have more of a focus on sub-national emissions reduction policies, especially if national policies are limited by political constraints. Jurisdictional differences between national and sub-national policies mean that sub-national policies also address issues that national policies do not, such as efficiency regulations (ACT Climate Change Council, 2015). Indeed, sub-national policies often have multiple goals, providing benefits other than emissions reduction. Inter-temporal benefits can be found, as in the case of more environmentally friendly building regulations, assuming buildings are used for multiple decades. For example, buildings have been retrofitted so that their energy efficiencies, comfort and amenities are all improved (Schreurs, 2008). Helping to limit demand for emissions at sub-national scales may be just as effective and efficient as limiting supply of emissions such as via the CPM.

Some sub-national policies could even help prepare and pave the way towards national policies and allow economists to experiment and test policies, depending on their scalability. Indeed, this is the path that China has purposefully taken, having started with seven different pilot emissions trading schemes that vary in coverage, enforcement and allowance allocation, for example, in seven cities and provinces[5]. These pilot schemes

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[5] Beijing, Shanghai, Tianjin, Chongqing, Shenzhen, and Hubei and Guangdong province.

were preparation for a national scheme to be implemented in 2017 (Jotzo & Löschel, 2014). Such a pathway could also be taken from Tokyo's building-level cap-and-trade scheme (Roppongi, Suwa, & Oliveira, 2016). These small-scale versions of national emissions reduction policies can be more politically feasible, such as in the more environmentally friendly policies and politics of the ACT (ACT Climate Change Council, 2015), while simultaneously providing experience and a local proving and testing ground for economists and other interested parties. Smaller scale policies may also help increase the chances of national policies being enacted as costs and benefits are measured and known for certain.

The General Theory of Second Best

Naturally, the smaller scale and coverage of sub-national policies lead to concerns over their effectiveness and efficiency compared to national first-best policies. Even though the scale of emissions at a sub-national level is not insignificant, the economic efficiency of these sub-national policies should still be questioned of course. However, modifying the general theory of second best (Lipsey & Lancaster, 1956), there is an economic rationale for focusing on and implementing sub-national policies. As the theory argues, if there are constraints which prevent a Pareto optimal[6] condition from being reached, then reaching other Pareto optimal conditions may not be welfare improving (Lipsey & Lancaster, 1956). Subsequently, the situation that is reached is deemed second-best given

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[6] Pareto optimality is when resources have been allocated so that there is no longer another allocation where someone can be better off without someone else being worse off.

the impossibility of satisfying one of the Pareto optimal conditions, denying the attainment of the first-best Pareto optimality.

As such, sub-national policies can be seen to be second-best due to the political constraints that affect national climate change policies. With these political constraints leading to sector/industry exceptions and the obtaining of economic rents, national emissions reduction policies can become sub-optimal as a Pareto optimal condition, such as broad national coverage of GHG emissions, is not reached. It could be argued that wherever there is politics, there is compromise. Consequently, some second-best sub-national policies could be considered just as, or more, efficient as such compromised national policies. It should be noted though that sub-national policies are just one branch of second-best policies. Amended national policies, such as the exclusion of the agricultural industry by the CPM (ABC Rural, 2011) for emissions measurement and political reasons, can also be considered second-best (Bennear & Stavins, 2007). Given the theory of second best implies that sub-national policies should and can be considered economically efficient, policies at this scale, like Tokyo's scheme, should be more actively considered by economists.

Local Councils

At an even smaller scale, local councils are responsible for and can be actively involved in policies such as increasing green spaces, waste management and ensuring the presence of sustainable design assessment in the planning process (DELWP, 2017). Their importance as the level of government closest to people should not be forgotten or dismissed. Especially for the local councils covering major cities, council decisions can

make a large impact on emissions reduction given cities, worldwide, produce 80 per cent of GHG emissions (Schreurs, 2008). Yet despite their potential in helping to alleviate the demand for emissions, most councils face multiple barriers in their attempts to reduce emissions (Productivity Commission, 2012). One of the problems for local councils is their lack of necessary skills and knowledge to plan, implement and analyse effective and efficient emissions reduction policies. Even if councils do have some skills and knowledge, they may still be constrained by their financial and personnel capacity to afford experts in general. Such a lack of expertise can increase costs, unnecessarily disadvantage people and businesses and decrease efficiencies of policies.

Policies with an economic aspect that could be enacted by local councils include one from the well-resourced Melbourne City Council called GreenMoney (City of Melbourne, n.d.). The scheme attempts to increase recycling within the council area by awarding points to residents depending on how much they recycle and is part of the council's goal to reduce waste to landfill. These points can then be used online to buy tickets and vouchers to spend on local businesses. The GreenMoney scheme could feasibly be applied to penalise food waste, as the council only currently provides recycling for paper, plastic and aluminium. Given that food waste releases methane, a GHG 25 times more potent than CO_2, when decomposing in landfills, the Green Money scheme is one policy that can be extended to accommodate emissions reduction goals. Despite the size and potential of schemes such as GreenMoney, there is a lack of economic analysis on the efficiency and effectiveness of such local council policies.

Another issue is that given the likely fragmented nature and smaller coverage of sub-national policies, economic focus should also be kept on co-ordinating (Lehmann, 2012) all these sub-national policies. With the number of local councils and state governments

and territories even in a small country like Australia, inefficiencies between policies and opportunities to game emissions reduction policies could well become a large issue. Overlapping coverage of emissions reduction regulations and other policies also risk over-burdening consumers and businesses, or inversely, risk increasing the total amount paid out by governments for a single act of abatement. Economists should ensure that various emissions reduction policies are designed to maximise their combined efficiency, on top of or in lieu of individual policy efficiency, whichever is better.

Behavioural Economics

It is widely known in economics that individuals are not the rational consumers or people that economic theories often assume they are. People are not calculating machines who perfectly balance costs and benefits before acting and neither are they very good at judging and acting on future risks (Productivity Commission, 2012). These challenges occur with climate change as well. Behaviours can be hard to change, like in recycling (City of Melbourne, 2014), and sometimes climate change can be hard to accept or respond to. Given climate change's non-immediate and long-term effects, humans, designed by evolution to respond more to short-term issues, are not that individually inclined to act on it and reduce emissions in a timely manner.

Behavioural economics can help to reduce emissions by breaking through these irrational behaviours and circumventing our subconscious procrastination over climate change. It can do so by creating or complementing price incentives to reduce emissions (Bhargava & Loewenstein, 2015). For example, small but noticeable fees and charges could be added to council rates, or noticeable rewards like GreenMoney given, to increase

awareness and action by individuals to reduce emissions. More importantly though in the context of this essay, these behavioural influences could incrementally change the attitude and perception of climate change among constituents and politicians; enough to help in the creation of a national first-best emissions reduction policy by reducing existing political constraints (Pollitt & Shaorshadze, 2011). If this isn't possible, then behavioural economics could just act to increase the uptake and efficiency of sub-national policies.

Conclusion

The political constraints surrounding climate change and emissions reductions policies have limited national policies and action, especially in Australia and the US. For these reasons, more politically achievable sub-national policies and other approaches, while not necessarily as efficient or large as national policies, should have more attention from all disciplines. Such policies can encompass a wide variety and number of targets in addition to emissions reduction, and can act to directly limit demand for emissions. As can be shown by an application of the general theory of second best by Lipsey &Lancaster (1956), in these times of political constraints on emissions reduction policies, second-best sub-national policies may also be as, or more, efficient than national policies.

Finally, behavioural economics has very real applications and potential when applied to climate change and emissions reduction policies. Given the inherent nature of climate change as a collective action problem with slow and incremental damages to the environment, behavioural economics can be harnessed to increase individual and collective action on emissions reduction. There is also potential for behavioural

economics to slowly change the political constraints around climate change by changing

behaviours and attitudes towards climate change.

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