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SHOULD WE TAX OR TRADE CARBON?

Ask policy makers to name the most important climate change policy and most of them will choose carbon pricing. They would be right. Unless emitters face the full cost of their actions they will not control their carbon output. It is one of the unequivocal successes of the EU Emissions Trading Scheme that all major emitter in Europe now manage their carbon footprint.

But ask further what the best way is to price carbon, and disagreement starts. There are two main pricing instruments – emissions trading (including most prominently cap and trade) and carbon taxation. Both have their proponents and detractors.

There are other ways to price carbon. Direct regulation puts an implicit price on emissions, but it is a blunt instrument, and baseline-and-trade has yet to recover from the experience with the Clean Development Mechanism.

The two main methods have both been implemented in practice.¹ British Columbia has gained much praise for its revenue-neutral carbon tax, which returns all proceeds to businesses and individuals. Sweden has taxed carbon for 25 years now and at an eye-watering rate (currently \$150 per tCO₂), but there are extensive exemptions. Carbon is also taxed in, among other countries, Australia, Chile, Ireland and the UK.

The cap-and-trade world is dominated by three prominent schemes: California, China's provincial pilots and of course the EU ETS. But carbon is also traded in for example New Zealand, South Korea,

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Kazakhstan the North-East US, Tokyo and Quebec. Switzerland has both taxation and a trading scheme.

From this experience it is hard to judge what has been more successful, taxing or trading. Both instruments have been operated with relative (though not perfect) success. Different circumstances will require different solutions, and many of the lessons we have learnt are relevant for either design.

A CHOICE OF RISK

From an environmental point of view, the choice between tax and trade is a choice between two forms of risk. Taxes offer certainty over the cost of compliance (the tax rate), but there is a risk emissions may not come down as expected. Trading schemes offer certainty over emissions (the cap), but compliance costs are unpredictable.

So what is worse, getting emissions wrong or getting compliance costs wrong? The theoretical answer was provided already 42 years ago by Martin Weitzman.² He showed that it depends on the biophysical relationship between climate damages and emissions. If damages increase steeply with emissions it is better to be certain about those emissions and set a cap. Conversely, if damages are relatively constant it is better to tax.

For many economists the Weitzman argument favours a carbon tax, since the climate change damage curve is relatively flat. There is so much natural carbon in the atmosphere that the impact of each anthropogenic tonne is roughly the same. However, climate control is ultimately about quantity constraints. Scientists have

calculated the global “carbon budget” that remains if we are to meet the Paris objective: at most 1,000 GtCO₂ for a reasonable chance of 2°C and less for “well below 2°C.”

Some countries have already converted the global constraint into legally binding targets for themselves. The UK with its statutory carbon budgets is a case in point. Once there is a binding constraint, certainty to meet it becomes important, and that would favour cap-and-trade.

CARBON PRICING THROUGH THE BUSINESS CYCLE

Proponents of cap-and-trade have argued that trading is more responsive than taxation to the business cycle. During an economic downturn emissions fall. Carbon prices also drop and this provides a stimulus to the economy, similar to a tax cut. In other words, carbon price fluctuations act as an economic stabiliser.

This is true. However, analysis has shown that trading schemes over-adjust.³ It is a good idea to ease the regulatory burden during difficult times, but not by as much as trading schemes do.

An economic downturn is also a good time to reduce emissions. It is likely to cost less than when the economy is booming. To encourage that, the permit supply has to be tightened a little bit. Although motivated by oversupply the EU ETS is moving in this direction with its market stability reserve.

Of course the same argument also holds for a carbon tax. During a downturn the authorities should lower the tax rate to stimulate the economy, but not so much as to disincentivise emission reductions.

TRADING SCHEMES ARE EASIER TO GET APPROVAL THAN NEW TAXES. THE ARGUMENT HOLDS BOTH DOMESTICALLY AND INTERNATIONALLY.

In other words, both taxes and trading schemes warrant some intervention over the business cycle, and neither scheme offers an inherent advantage.

THE ADMINISTRATIVE BURDEN

There is also not much difference between the two in terms of administrative costs. The monitoring requirements for regulated firms are exactly the same, whether emissions are measured for tax or trading purposes.

Both measures make administrative demands on the public sector, but in each case there are existing bodies that can assume the new responsibilities – tax authorities in one case and commodity market regulators in the other.

Carbon trading also requires specialist skills, which not all firms will have. Larger firms will build them up and indeed many of them, energy producers in particular, already have trading desks.

But for smaller firms active trading will be burdensome. They may find it easier to pay a tax than mastering options and futures.

The counterargument of course is that carbon trading, like tax compliance, can be outsourced to specialist firms.

THE POLITICS

A key argument in favour of carbon trading has always been the political economy context. Trading schemes are easier to get approval than new taxes. The argument holds both domestically and internationally. Internationally, tax harmonisation is incredibly difficult. Finance ministries guard their tax sovereignty jealously. This is the main reason why Europe has an emission trading scheme rather than an EU-wide carbon tax.

Setting up an international emissions trading scheme is not straightforward either. But the benefits from international cooperation are substantial, and the number of jurisdictions that are exploring linked systems is growing: eg. California and Quebec; Switzerland and the EU. Even the still-born Australian trading scheme was meant to link to the EU ETS.

Domestically, there is invariably opposition to new tax schemes. Voters tend to see them as a revenue raising exercise rather

than environmental policy. And indeed that is often what they are. The UK's climate change levy and carbon price floor spring to mind.

Yet the British Columbia example shows that by hypothecating revenues or cutting taxes elsewhere these perceptions can be overcome. Switzerland's carbon tax revenues are also earmarked, in part, for low-carbon investment.

The point is that both mechanisms create assets (allowances) or revenues (tax returns) that can be used to create an outcome that is politically acceptable. If it is a secondary objective is to raise revenue, permit auctions are not much different from a straight carbon tax.

All this suggests that the differences between taxing and trading are perhaps exaggerated. Once all relevant concerns have been addressed – about price fluctuations, monitoring arrangements and political buy-in – the practical tax and trading schemes that emerge are no longer that dissimilar.

The main challenge is to put a price on carbon in the first place.

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(1) World Bank, 2015. State and Trends of Carbon Pricing, Washington DC, September. (2) Weitzman, M., 1974. "Prices vs. quantities". Review of Economic Studies, 41(4), 477-491. (3) Doda, B., 2016. How to price carbon in good times... and bad!. Wiley Interdisciplinary Reviews: Climate Change, 7(1), pp.135-144.