

Effective carbon taxes need green nudges

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For effective climate policy, we need both classic and behavioral policies. Green nudges facilitate the effectiveness of a carbon tax by increasing the salience of the tax, harnessing pro-climate concerns, extending the reach of a tax by targeting behaviors directly and, importantly, increasing public acceptance of carbon taxes.

A consensus among economists is that a price on carbon in the form of a carbon tax is the key tool for reducing negative externalities like greenhouse gas emissions¹. In theory, if we implement the “right” or socially optimal price, carbon taxes ought to influence businesses and consumers to take steps to reduce their tax burden, through either developing and using new technologies or reducing carbon-emitting activities.

A carbon tax works if people act rationally, in ways that minimize costs to themselves, a fundamental assumption in conventional economics. However, as several decades of research in behavioural economics have shown, they do not always behave rationally².

Consumers (and business employees) do not make decisions in a vacuum. During the past 14 years, a growing literature on nudges documents how small changes in the decision environment shifts behaviour in ways that are not predicted by standard economic theory. A *green nudge* is a behavioural intervention that changes the decision context to reduce negative externalities without changing economic incentives (tax or subsidy) or the choice set (regulation). Examples include defaulting consumers into green energy contracts, placing vegetarian food higher up in the menu or physical nudges like offering more veg foods at the front of the buffet³. Compared to classic nudges aimed at enhancing self-interest⁴, green nudges rely on cognitive biases and moral concerns to nudge people away from choices that create negative externalities and costs for society and towards improving societal welfare.

Despite the evidence of nudges successfully affecting behaviour if designed and targeted correctly⁵, many economists and policy makers still do not take them seriously as policy instruments, or even suggest they distract from serious structural policies⁶.

We argue that there is a fundamental flaw in the reasoning that a conventional instrument, like a carbon tax, and a behavioural instrument, like a green nudge, are alternatives to each other in practice. A carbon tax cannot be implemented independently of the choice architecture that consumers interact with. A nudge, by definition, interacts with the available choice set, financial incentives like prices, and legal and regulatory environment. Outside of academic research (e.g. where randomized control trials often compare the effectiveness of financial incentives versus nudges and theoretical models abstract away competing contextual influences), taxes and choice architecture have combined effects on behaviour. If we want to design an effective climate policy mix, we need to consider how carbon taxes work in real-world decision-making contexts.

In the following, we will present several cases where a clever use of choice architecture in the form of green nudges can support a carbon tax. Table 1 shows how our arguments could be applied to a meat tax.

Salience of the tax

For a consumer to react to a tax, they need to be aware that it exists when they make a consumption decision. While this might seem like a trivial statement, this is often not the case. Research on VAT has shown that consumers significantly underreact to taxes that are not salient⁷. If price tags on products explicitly show the VAT, then the demand for these products is 8% lower than when the tax is added at the cash register, even though all shoppers should know the standard VAT. If the sole aim of the tax is to collect tax revenue, then this may be less concerning. Yet if the aim of the tax is to change behaviour, then this underreaction is a problem, since consumers would not reduce carbon-emitting activities. A recent Norwegian study showed that despite a 1000% increase in peak prices, significant electricity reduction only happened when consumers received a timely reminder of the price increase the day before a peak event⁸. Unless people pay attention to the additional costs at the right time, even enormous price increases will not have the intended effects.

Farhi and Gabaix show theoretically that carbon taxes will have to be set at a higher rate than the social cost of carbon if they need to account for this inattention and the resulting underreaction⁹. Because policy makers cannot implement different tax rates based on the level of inattention of individuals, the tax burden will increase for everyone. There is already opposition to carbon taxes because they can be regressive and unfair. This inattention-inflated tax rate would thus further increase the tax burden for all income levels and disproportionately hit lower-income households. Nudges, such as timely reminders, labels and order effects can help mitigate this problem by making carbon taxes more salient and thus reducing the need to inflate the tax to account for inattention. In the best case, they even allow for a lower carbon tax.

Harnessing Climate Concerns

Making a tax more salient can further affect behavior by triggering psychological reactions to the reason for the tax. Many people derive immediate positive utility from acting green (or at the very least, they may try to avoid guilt)¹⁰. Green nudges can evoke pro-environmental norms and climate concerns, for example, by making the climate consequences of certain choices salient. Across or within countries, higher income groups usually have higher carbon footprints than lower income groups, but the regressive nature of a carbon tax imposes a larger financial burden on lower income groups. Green nudges that target luxury goods and high-income households in particular can thus amplify the behavioural reaction to a tax for high-income segments without imposing psychological disutility on lower-income groups. For instance, frequent flyer levies are complementary to social movements like, Flygskam, which aim to make high-income individuals feel guilty about and reduce flying. This group flies the most and has the means to choose more sustainable modes of transport or significantly reduce their air travel¹¹. Similarly, social comparisons, reports from local utilities that compare a household's electricity consumption to their more efficient neighbors, have proven effective in lowering electricity consumption among high usage households¹². Rather than sending reports to all consumers, they could directly target high-usage households, thus avoiding imposing a psychological tax on low users of electricity.

Targeting several behaviours directly

Up until now, we assumed that a socially optimal carbon tax is in place. However, finding the “correct” tax rate has proven to be a challenge. In a survey of 400 climate experts, the recommendations for a global carbon price varied between 75 to 250 USD¹³. In addition, many GHG emissions, such as from agriculture or waste management are hard to assess and monitor and thus cannot be taxed directly. It might be more prudent to directly influence behaviors causing these externalities by using green nudges to encourage consumers to reduce their meat, electricity or fuel consumption. In situations where a tax can be levied, but cannot directly target those who are creating the externality, a green nudge can extend the reach of the tax. For example, while an employer would pay a tax on electricity or fuel for the car park, the employer is not able to directly pass through the tax to her employees, even if they are the ones using the electricity and driving the vehicles. Reminders to keep the windows closed when the air conditioning is running or encouraging public transport use instead of the car fleet would still help reduce electricity or fuel consumption when scaled over the population.

Public acceptance of the tax

A major barrier to implementing and scaling effective carbon taxes is public acceptance. A recent survey paper shows that while a majority of people think that climate change is a problem, there is nevertheless resistance to carbon taxes¹⁴. There has even been public protest (e.g. Yellow Vests Movement in France). While public education about the mechanisms and the benefits of a carbon tax is a promising strategy, it seems likely that nudges could over time shift social norms and expectations and clear the way for stronger policy. While clear empirical research for this claim is lacking, the evolution of smoking regulation is telling. In 1964, the first major report on the health effects of cigarette smoke was published in the UK, suggesting taxes on cigarettes and banning smoking in public places. Early policies consisted of health warnings and restrictions on advertising. Only more than 10 years later, in 1976, the first tax was implemented and only the last decade has seen strict smoking regulation. Currently, there is high support for informative green nudges like energy efficiency labels and reminders, as such information may help individuals choose greener- and in some cases cheaper- alternatives. Without such nudges and initiatives like informational campaign, scaling public acceptability for taxes and regulations may much longer.

As with smoking regulation in the last century, the way ahead is challenging in terms of changing consumer behaviour. But now, we don’t have several decades for our policies to take effect. Both carbon taxes and green nudges have their strength and weaknesses in changing behaviour and reducing carbon emissions. Rather than debating whether to rely on either one or another, we should see how and when they can work together as part of an effective climate policy toolkit.

Table 1: Examples of How can green nudges boost the effectiveness of a meat carbon tax

Livestock farming is a huge contributor to greenhouse gas emissions. A meat tax of between 19-56% is required to reflect the environmental impact of meat in high-income countries. ¹⁵ Given the strong public resistance to taxing meat green nudges could pave the way and support the implementation of a tax.
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Saliency of the tax	How to present taxes matters. Separating the carbon tax and the unit price of the meat on the price tag will make the tax and its rationale salient to the consumer. Otherwise, consumers might not notice the price increase or assume it is due to inflation, supply chain issues or even a signal of superior quality of meat as a luxury good, thus increasing demand.
Harness climate concerns	Carbon labels, social comparisons, and feedback on consumption can evoke climate concerns, even among individuals who have a low price elasticity for meat.
Targeting several behaviours directly	At buffets or in public kitchens where there is no direct link between price and meat consumption, physical or information nudges (e.g. ordering of vegetarian items first in a buffet or on the menu) can target meat consumption directly, without needing to change or increase the price of all food products proportionally.
Public acceptance of the tax	Green nudges that encourage consumption of plant-based foods can change the social norm of the role of meat by increasing the share of individuals who frequently consume plant-based dishes. Explaining and reminding individuals that tax revenue is earmarked for climate and conservation projects can decrease resistance to the tax.

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