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WILL CARBON TAXES HELP ADDRESS CLIMATE CHANGE?

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ABSTRACT:

The coronavirus disease 2019 (COVID-19) crisis ought to serve as a reminder about the costs of failure to consider another long-term risk, climate change. For this reason, it is imperative to consider the merits of policies that may help to limit climate damages. This essay rebuts three common objections to carbon taxes: (1) that they do not change behaviour, (2) that they generate unfair burdens and increase inequality, and (3) that fundamental, systemic change is needed instead of carbon taxes. The responses are (1) that there is both theoretical and empirical reason to think that carbon taxes do change behaviour, with larger taxes changing it to a greater extent; (2) that undistributed carbon taxes are regressive but distributing the tax receipts can alleviate that regressivity (and, in many cases, make the overall effect progressive); and (3) that while small changes for increasing democratic decision-making may be helpful, (fundamental) change takes time and the climate crisis requires urgent action.

RÉSUMÉ :

La crise de la maladie à coronavirus 2019 (COVID-19) devrait servir de rappel sur les coûts de la non-prise en compte d'un autre risque à long terme, les changements climatiques. Pour cette raison, il est impératif de considérer les mérites des politiques susceptibles de contribuer à limiter les changements climatiques. Cet essai réfute trois objections courantes aux taxes sur le carbone : (1) qu'elles ne changent pas les comportements (2) qu'elles génèrent des charges injustes et augmentent les inégalités, et (3) qu'un changement fondamental et systémique est nécessaire au lieu de taxes sur le carbone. Les réponses sont (1) qu'il existe des raisons à la fois théoriques et empiriques de penser que les taxes sur le carbone modifient effectivement les comportements, et que des taxes plus élevées les modifient dans une plus grande mesure; (2) que les taxes sur le carbone non distribuées sont régressives, mais que la distribution des recettes fiscales peut atténuer cette régressivité (et, dans de nombreux cas, rendre l'effet global progressif); et (3) que, bien que de petits changements pour l'amélioration de la prise de décision démocratique peuvent être utiles, un changement (fondamental) prend du temps et la crise climatique exige une action urgente.

INTRODUCTION

The coronavirus disease 2019 (COVID-19) crisis ought to serve as a reminder about the costs of failure to consider another long-term risk, climate change. For this reason, it is worth considering the merits of policies that might help to limit the damages associated with climate change. Indeed, some have argued that the COVID-19 crisis itself is the best time to introduce such policies, largely because the usual costs of destabilizing or reorienting the economy are lessened when there are other major shocks (Singer and Mintz-Woo, 2020; Mintz-Woo et al., forthcoming). On the assumption that it is a good time for considering climate change policies, what are the reasons for some specific policies?

One set of policies involves pricing carbon. The motivation is straightforward; if emitting carbon causes harm, then emitting should not be free. More generally, it is difficult for individuals and companies to discern the climate effects of their actions and, fundamentally, many citizens and companies lack the motivation to discover or to respond to their actions' climate effects. A carbon price provides both information and incentives; as the prices of carbon-intensive products and services rise, individuals and companies both recognize how to change and are rewarded for changing their behaviours. In this manner, carbon pricing policies can contribute to choices that more properly reflect the cost to society.

Perhaps the simplest form of carbon pricing is a carbon tax, which puts some fixed price on an additional unit[1] of carbon.[2] That price is meant to reflect the damages that the carbon is estimated to cause.[3]

But carbon taxes face a lot of objections from the public (Carattini et al., 2018). Taxes in general are of course unpopular, but even the idea of taxing something bad (like emitting carbon and contributing to climate change) can elicit a lot of concern. This essay considers three common objections to carbon taxes: (1) that they won't change behaviour, (2) that they will increase inequalities or create unfair burdens, and (3) that they are superfluous or that only truly fundamental, systemic change can address the problem. In response to the first objection, evidence is adduced from existing policies including the first broad-based North American carbon tax. The evidence suggests that behaviour does change. In response to the second objection, it is pointed out that the tax revenue from a carbon tax can be used to reduce inequality (and make the policy net progressive). In response to the third objection, it is pointed out that the untested nature of fundamental changes means they will require time both to address different social structures and to refine the new systems as they result. Given that climate change requires immediate action and (fundamental) change takes time, this makes fundamental change a bad fit for addressing climate change. I consider these three objections in turn.

"CARBON TAXES WON'T CHANGE ANYONE'S BEHAVIOUR"

The first objection is that carbon taxes won't change anyone's behaviour. In considering behavioural change, it is helpful to think of society as composed of three groups.[4] The issue here is about who would reduce their carbon emissions. First, in the wealthiest group are those who already produce a lot of carbon and would continue to produce a lot of carbon, even if it were more expensive to do so. Second, in the poorest group are those who produce much less carbon and would continue to do so were it to become more expensive. Finally, in the middle group are people who are on the edge with respect to some behaviours and who are content producing carbon at the current price, but who would reduce their carbon-intensive activities were it more expensive to produce carbon.

In the COVID-19 context, we should expect that people are more sensitive to changes in price on average because of the shocks the pandemic has introduced into the economy. For this reason, we might expect the middle group to be even larger during the current period of shocks (Mintz-Woo et al., forthcoming).

Those in our first, wealthy category can afford to keep polluting, even if it is more expensive. Those in our second, poor category already cannot. An objector might admit that there could be some in the third category who would change, but might claim that they are fewer, and, besides, how do we know there really are such people at all? It's hard to imagine changing your actions just because there is more cost.

First, in theory, if we line individuals up according to how much they want to pursue various behaviours that increase emissions (in terms of how much they would pay to do so), we would get our three groups. With actual people, there may be different sizes to these groups—and in extreme cases with very bimodal distributions (where the mass of the population is concentrated around two points with less mass in between), there may be very few—but the larger the society, the more people we could expect in this middle group. Furthermore, we can "increase" the number of people in this group by instituting a larger carbon tax, because the greater the tax, the greater the number of people who would fall into the group that changes behaviour based on the resulting price difference.

In the context of COVID-19, the theoretical case is even stronger. We know that people face greater costs and uncertainties in the midst of the pandemic, so we should expect there to be more people who are likely to be sensitive to increased costs and who, therefore, would change their behaviour more than usual in response to higher prices. Furthermore, there are more social costs to travelling at this point as well; the potential for spreading SARS-CoV-2 is increased with greater travel, so to some extent it is more valuable to dissuade travel now than it is usually. This is most clearly the case with air travel over long distances, but it is plausible that commuting over shorter distances also introduces risks that increase the social costs of travel.

Second, in practice, with respect to taxing other behaviours, we can see that taxing other social bads has affected their use. This is even the case with behaviours that are highly difficult to change—because, for instance, they are addictive, as in the case of cigarette smoking (e.g., Hu et al., 1995). One way to explain the counterintuitive nature of these behavioural changes is to appeal to what psychologists call "heuristic questions," or questions that are easier to answer in lieu of the target question. For instance, it is easy to answer a heuristic question like "Would I change my behaviour if it were more expensive to emit?" instead of the more complex question "How many people in society would change their emitting behaviour if it were more expensive?" which requires considering the diversity of costs and considerations that go into others' behaviour and their different means and needs. It's easy to answer that I would not change my behaviour and then assume that others are relevantly similar, when of course there are many relevant differences among people in society.

Third, in practice, with respect to carbon pricing globally, there is evidence that carbon pricing influences the amount of carbon that we emit. Rohan Best, Paul J. Burke, and Frank Jotzo use a database from the International Energy Agency covering about 96 percent of the global population in 2017 to see how countries with carbon prices, or with higher carbon prices, performed in terms of reducing the emissions growth from fuel combustion (2020). They find that having a carbon price is associated with a statistically significant 2 percent reduction in CO_2 emission growth and, moreover, that larger carbon prices are associated with greater reductions—an effective carbon tax increase of €1/tonne of CO_2 is associated with a statistically significant 0.2 percent reduction in CO_2 emission growth, even when other relevant policies are accounted for. For instance, the authors control for feed-in tariffs (which pay directly for renewable energy) and renewable portfolio standards (which set a minimum percentage of the energy mix as coming from renewable sources). This line of research suggests that carbon prices help reduce emissions, and that higher carbon prices help more. Of course, these carbon prices are not all carbon taxes, so it makes sense to turn to evidence from a specific case of carbon taxes as well.

This brings us to the final point, in practice, about evidence from regions that have implemented carbon taxes in particular. The first general carbon tax introduced in North America, in the Canadian province of British Columbia, is worth considering. It started at C$10/tonne of CO_2, which increased in C$5/tonne of CO_2 increments annually until the tax finally reached C$30/tonne of CO_2. Although the tax has been successful in many respects (and is liked by British Columbians), the key here is about behaviour. A review of the scientific literature conducted by Brian C. Murray and Nicholas Rivers (2015) found that the carbon tax had decreased British Columbian emissions by an estimated 5-15 percent since its introduction, relative to the expected emissions trend. Notably, it had done so while not appearing to burden the province's economy (Hassler et al. (2016) come to similar conclusions about Sweden). These results support the claim that, in some of the earlier broad-based carbon tax policy cases, behavior related to CO_2 changed.

All of these lines of evidence suggest that some in society change behaviour in response to carbon taxes (and other climate laws). However, another important response to the objection is that the goal of carbon taxes is not solely to shift behaviour away from carbon-intensive consumption. Both a moral point and a practical point can be added. With respect to morality, consider the people from our first group whose behaviour does not change and who simply pay the additional cost. One might think that the tax has failed with respect to these people. But no—the point is that the emissions associated with their actions are damaging to society, so they should face those consequences—that is, the estimated cost of those damages. The moral problem was that, before the carbon tax, these people were damaging society without paying for the damages. If they pay the estimated cost of the damages, then that is a morally different situation, and, intuitively, they do not owe society more than the estimated costs of those damages.

The practical point to add is that it is not the case that the only effect of a carbon tax is that some people shift their behaviour. The other major effect is that a carbon tax raises tax revenue for the government. This practical importance is not insignificant: the tax revenue can also be used for many purposes, such as investment in green technologies or infrastructure. As will be discussed in the next section, it can also be used to make the carbon tax more distributionally just.

"CARBON TAXES WILL INCREASE INEQUALITIES AND MAKE UNFAIR BURDENS"

The second objection is that carbon taxes will increase inequalities and produce unfair burdens on society. In the context of COVID-19, we should be especially concerned about this; the crisis does not have equal effects on everyone—those who have fewer resources and more tentative jobs have been impacted more starkly. And consumers tend to think about the consumer side of taxes: namely, taxes make things cost more money. It is true that taxes on carbon are disproportionately borne by the poor; higher portions of their living costs are related to energy and these may be harder to avoid. For this reason, the objector is right to be concerned about increasing inequalities, especially in the context of COVID-19.

This is an important objection, but my answer is that tax money does not simply disappear and that we should recognize that post-tax income is distinct from post-tax-and-transfer income. In other words, after taxes have been paid, there are ways that the government can transfer that tax revenue, and some of these ways will reduce or remove inequalities. In many places, taxing carbon (which is usually regressive, as the objection rightly reflects) and then rebating that tax revenue in simple per capita rebates (that is, just dividing up the revenue by citizen and giving everyone an equal share) will be an overall progressive tax policy that puts more net money in the hands of the poorest half of society and takes away more net money from the wealthier half. It also has advantages of being

an easy-to-implement way of using the revenues (Baranzini, 2017). In other words, in many places, you don't need to specially design the carbon tax to be progressive; if you just commit to dividing up the revenue generated evenly, the overall result ends up progressive.

Let us consider this objection a bit more carefully. One version of this worry is that the inequalities in society are exacerbated by carbon taxes. This worry can arise because, when thinking about taxes, we often focus on paying the taxes and not on what those tax revenues can be used for. When we focus only on the paying the taxes, it is (in many cases) true that the effect is regressive, meaning that proportionally greater payments are made by those who are poorer than by those who are wealthier.

But those revenues can be used in multiple ways, ranging from paying down debt and reducing corporate income taxes to reducing distortionary taxes like payroll taxes and, most importantly for our purposes, issuing equal per capita lump-sum rebates (i.e., cheques that divide the carbon tax equally amongst all taxpayers). For instance, a report from the Urban-Brookings Tax Policy Center found that, in the United States, that last, lump-sum option "would more than offset the carbon tax burden for low- and middle-income taxpayers but leave high-income families with a net tax increase" (Rosenberg et al., 2018). Since those with lower (and middle) incomes would end up ahead in net terms, and those with higher incomes would end up behind in net terms, the overall incidence of the tax with the rebate option would be progressive.

Therefore, it is possible to design a carbon tax that does not increase inequalities (and that, in fact, decreases inequalities). Of course, in the context of COVID-19, there is great need for governments to fund the kinds of safety-net measures that protect people, especially those in precarious economic or social circumstances. For this reason, using the tax revenues to pay for the deficits associated with this needed spending may also be more progressive during this crisis.

A second version of this worry comes from Lukas Tank, who argues that carbon pricing generates unfair burdens (2020). He points out that people like those in the first category, the very wealthy, will not change their behaviour (and the additional burden of the tax increase will not lower their welfare much). However, those in the less well-off, middle group will have their welfare lowered more due to the additional burden of the tax increase. This argument relies on the (plausible) assumption that welfare is not increased by a marginal dollar as much for the wealthy as for those less well-off.

However, even if we consider uniform carbon taxes, where what you pay for one more tonne of CO_2 does not depend on how wealthy you are or on how many tonnes you have already emitted, this objection insufficiently considers tax revenue possibilities. Again, it is possible for a carbon tax which is regressive with respect to post-tax income to be net progressive with respect to post-

tax-and-transfer income, especially if the carbon tax is designed with an equal per capita lump sum rebate mechanism. In other words, if everyone emits the same as they do today, it is progressive, but since each given individual's rebate is mostly independent of her own emissions (since the rebate comes from everyone's taxes), changing her emissions barely affects her rebate. However, every time she reduces her own emissions, the less tax she pays. So, everyone has an incentive to reduce their own emissions, and the poorest will in general benefit the most. Indeed, we can even make a stronger claim if we believe that the same amount of income will increase the welfare of those less well-off more than the welfare of those wealthier: the progressive outcomes not only mean resources are distributed more fairly but also that more welfare in generated in society.

In short, objectors who are worried that carbon taxes will increase inequality or introduce unfair burdens are right when they consider the carbon tax to be simply a cost to consumers. If they regard it as also a benefit to the government, there are ways the funds can be used to offset that regressivity. However, some think that there is something more fundamentally problematic about taxing carbon and some of these worries are discussed in the next section.

"CARBON TAXES ARE SUPERFLUOUS AND WHAT IS REALLY NEEDED IS FUNDAMENTAL, SYSTEMIC CHANGE"

The final family of objections concerns political alternatives to carbon taxes. There are also many forms of such objections, but the focus here will be on two versions: that a focus on carbon taxes distracts from stronger legislation, such as legislation that prohibits certain types of activities (legislation sometimes called "command-and-control instruments"), and that a focus on carbon taxes distracts from fundamental, systemic changes, where these can include a variety of goals, but often fundamental changes in the economy, such as shifts away from capitalism.

First, we have the objection that carbon taxes are unneeded or redirect interest away from command-and-control legislation. This objection is well taken; some of the prominent advocates of carbon taxes say that introducing carbon taxes should come with reducing or removing legislation that already exists in order to increase public acceptance.

While I agree that it is important to consider whether a proposal takes away political or public oxygen from another proposal, there is nothing necessary about carbon taxes supplanting other policies. In fact, a carbon tax that was combined with other climate policies, like renewable portfolio standards (which require a certain percentage of renewable energy sources) or funding for green research and development, would create many synergies. It is not yet clear whether jurisdictions with carbon taxes have more or less capacity to introduce other green policies, but it is worth considering.

Furthermore, many advocates of carbon prices would claim that the merits of carbon prices outweigh the merits of command-and-control legislation. This type of legislation is costly for the economy because it amounts to deciding which emissions should be reduced or, worse, to picking winners (in case a specific technology should be used). There is no guarantee that any particular agent, including the government, will reliably select the best technologies to encourage or the worst technologies to prohibit, especially when the technologies are new or are in development. In contrast, a carbon price automatically guides emitters to reduce their most carbon-intensive practices with whatever technologies are best placed to assist.

Second, we have the stronger claims for fundamental, systemic change. These include, but are not limited to, calls to disrupt capitalism and to institute new democratic or citizen-led governance structures. We see these in various political and activist movements, especially in new activist groups like Extinction Rebellion, a group of United Kingdom-based activists, which draws attention via large-scale actions like groups pretending to die in public places.

Of course, there is too little space here to respond properly to these claims, but again it is not necessary to entirely disagree. A first point to make is that some democratic governance structures, such as citizens' assemblies (as instituted in places like Ireland and British Columbia), can produce helpful advice that has the moral weight that comes from being recommended by fellow citizens (Howarth et al., 2020). However, it would take time to incorporate these governance structures more centrally into existing institutions.

This brings us to the second, and key, point: the response that "(fundamental) change takes time." Fundamental, systemic changes are, almost by definition, untested; therefore, they require time to iterate and improve. Since we have less experience of societies structured along different lines, and people have different ideas about what the ideal structure would look like, we can expect that there would be both disagreement about how to change society and a need to test or refine different changes. But these characteristics are unhelpful in the context of climate change; the challenge of reducing climate change is one of incredible urgency. The time it would to take to test and revise fundamental aspects of society, especially global capitalism, is time that we would lose for implementing policies that could reduce carbon today. Given the lag time for carbon to cycle through the system and its persistence in the atmosphere, that lost time would be consequential.

In making these claims, I am assuming that systemic change would substitute for climate change policies during the transition period. The assumption is that systemic change would be sufficiently socially demanding that it would not make it possible to simultaneously address our carbon usage during a transition. It is worth noting that this contrasts with my claims about a carbon tax. Although a carbon tax is a major policy, I deny that it need substitute for other conventional green policies. But if change takes time, and fundamental change prevents other

simultaneous policies being enacted, then fundamental, systemic changes—which may well be good ideas for any number of independent reasons—would prevent us from addressing climate change quickly enough.

CONCLUSION

COVID-19 demonstrates the potential fragility of societies without policies aimed at addressing future risks. Climate change is an even larger future risk, and, while we do have climate policies in place, it behooves us to consider more. Citizens have the opportunity to consider and demand policies that could help address climate change, such as carbon taxes, and the context of COVID-19 may be a crucial opportunity to do so. This essay is meant to address some of the most common objections to carbon taxes, since thoughtful debate about climate policies is needed in response to COVID-19 in order to build back better.

NOTES

[1] The usual unit is a tonne of CO_2, which is a mixture of carbon and oxygen.

[2] There are more regions where carbon prices have instead been implemented via cap-and-trade systems. These systems price carbon by setting a maximum permitted volume of emissions and then facilitating trading of those permits. Sometimes, carbon-pricing mechanisms are distinguished as "quantity-based" (cap-and-trade) or "price-based" (carbon-tax) policies. Some of the worries here have counterparts for quantity-based policies, but often price-based policies elicit stronger objections from the public, which justifies a focus on them. The other reason for focusing on carbon taxes as opposed to cap-and-trade is that the ethics of carbon taxes have been relatively neglected within the climate ethics literature, while cap-and-trade has been well covered (e.g., Page 2011 and citations therein).

[3] It should be noted that the process of estimating those damages or the cost to society of an additional tonne of CO_2 comes with many moral complexities of its own, cf. Fleurbaey et al. 2019.

[4] Technically, this means thinking of three groups classed by willingness to pay for carbon-intensive products, but we can approximate that classification by ranking the population in terms of overall wealth.

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