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Making the case for an extensive carbon tax

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Introduction

As a consequence of anthropogenic climate change, the global surface temperature has increased by 1.2°C compared to pre-industrial levels (IPCC, 2021). In the Paris Agreement, 200 countries agreed to limit global warming to "well below 2°C pre-industrial levels and to pursue efforts to limit temperature increase to 1.5°C" (High-Level Commission on Carbon Prices, 2017). However, according to the IPCC, the global surface temperature is expected to continually increase until 2050 at the very minimum (IPCC, 2021). Moreover, if CO2 emissions are not drastically reduced during the next few decades, global warming will exceed 1.5°C and then 2°C before the end of this century (IPCC, 2021). Hence, severe policy interventions will be necessary in order to limit global warming to 1.5°C (Rogelj, Shindell, Jiang, Fifita, Forster, Ginzburg, Handa, Kheshgi, Kobayashi, Kriegler, Mundaca, Séférian, and Vilariño, 2018). One such policy intervention is carbon pricing (Rogelj et.al., 2018). Carbon pricing can be done in two different ways: through carbon taxation or through a cap-and-trade system (Haites, 2018; Rogelj et.al., 2018). This paper is mainly concerned with carbon taxation, which involves the government imposing a tax on carbon emissions (Haites, 2018).

In the following sections, I will make the case for a high carbon tax. A carbon tax could disincentivize carbon intensive investments, production, and consumption (High-Level Commission on Carbon Prices, 2017). Moreover, it would generate tax revenue that can be used for social purposes (Carl & Fedor, 2016). However, due to the inelasticity of many of the products that are subject to the carbon tax, such as fossil fuels, the carbon tax would need to be much higher than it presently is in order to have the intended effect (Haites, 2018). Furthermore, a high carbon tax would disproportionately harm low-income households, as they already live on the margins and do not have anything left to spare. In order to deal with this, some of the revenue that is generated could be used to support low-income households (Carl & Fedor, 2016). Additionally, the leftover revenue could be used to facilitate a green shift by subsidizing renewable energy, energy efficiency, and climate adaption (Carl & Fedor, 2016). As such, I conclude that, if properly implemented, a carbon tax could be a useful tool to reduce the amount of carbon emissions and facilitate a green shift without disproportionately harming the poor.

Main section

The argument in favour of setting a price on carbon emissions rest on the premise that making emissions more costly would disincentivize carbon heavy investment, production, and consumption, thereby incentivizing a more ecologically sustainable pattern of investment, production, and consumption, thus lowering the amount of GHG-emissions emitted into the atmosphere and as such slowing down the process of global warming (High-Level Commission on Carbon Prices, 2017). To expand on this, it is argued that, if corporations have to pay a carbon tax on their emissions, then their carbon intensive projects would be less profitable, as the costs of production would increase relative to the value that is generated through the production process. This in turn makes economic activities that are not subject to carbon taxation more appealing than they would be without a carbon tax, as their profitability is not affected by the carbon tax. As such, carbon taxation provides an incentive for corporations to engage in less carbon intensive production processes, while investors gain an incentive to invest in less carbon intensive projects (High-Level Commission on Carbon Prices, 2017). For instance, a carbon tax is likely to induce the implementation of energy efficiency measures in order to minimise the additional production costs incurred from carbon taxation (Haites, 2018). Similarly, carbon taxation is likely to induce a switch away from carbon intensive energy resources towards renewable energy resources, as a carbon tax would make the latter cheaper than the former (Haites, 2018).

Moreover, it is argued that, by increasing the cost of production, carbon intensive goods would also make the prices of carbon intensive products increase, as the corporations which produce them would need to raise the prices in order for them to make profit. As such, the costs of a carbon intensive consumption pattern would increase. This would in turn make consumption patterns that involve less carbon emissions relatively cheaper, as products that have a lower carbon footprint would be subject to less of a cost increase related to the carbon tax. Thus, a carbon tax would disincentivize carbon intensive consumption patterns and incentivise more sustainable consumption patterns (High-Level Commission on Carbon Prices, 2017).

An important counter argument pertaining to carbon taxation is that it has not induced the necessary changes thus far. Up until now, carbon taxes have had limited effects. Studies looking at European countries who have implemented a carbon tax tend to find that the carbon tax only contributed to incremental reductions in GHG-emissions when compared to business as usual. Furthermore, the overall GHG-emissions in these countries actually continued to rise

(Haites, 2018). These observations reflect the relatively inelastic demand for fossil fuels in the sectors where the carbon tax was implemented (Haites, 2018). This means that it is not enough to simply make it a bit more expensive to make use of fossil fuel. It would need to get far more costly. Thus, the carbon price would need to be increased manifold in order to be an effective tool for reducing carbon emissions (Ripple, Wolf, Newsome, Gregg, Lenton, Palomo, Eikelboom, Law, Huq, Duffy, & Rockström, 2021).

So, would it be rational to adopt a much higher carbon tax? According to the High-Level Commission on Carbon Prices, a much higher carbon price is a necessity if we are to limit global warming to well below 2°C. They argue that the carbon price would need to be at least US$40-80/tCO2 by 2020 and US$50-100/tCO2 by 2030 in order to be consistent with limiting global warming to well below 2°C (High-Level Commission on Carbon Prices, 2017). While acknowledging that limiting global warming to 2°C could indeed be done with a lower carbon price in the near future, they argue that it would require other policies and/or higher carbon prices later. Because of this, setting a higher carbon price now would likely make for a more cost-effective pathway towards limiting global warming to 2°C (High-Level Commission on Carbon Prices, 2017). Despite this, as of 2020, the average price per tonne of carbon dioxide was relatively low, sitting at US$15.49 (Ripple et.al., 2021). In other words, not increasing the carbon tax manifold would mean that more costly action would need to be taken in the future in order to limit global warming to well below 2°C, let alone 1.5°C High-Level Commission on Carbon Prices, 2017).

Another issue with implementing a carbon tax is that it would hurt low-income households disproportionately, effectively constituting a regressive tax. This is because a carbon tax would lead to increased energy prices which would be particularly difficult for low-income households to bear, as they are already living on the margins and do not have any energy left to spare. Additionally, low-income families consume much less carbon intensive products and carbon intensive energy than high-income households, who, contrary to low-income households, would be able to shoulder the burden of higher energy prices and higher prices in general. While high-income households would thus be hit harder in absolute terms, as they consume more carbon intensive products and more carbon intensive energy, low-income households would be hit harder relative to their income (Carl & Fedor, 2016).

However, the tax also generates public revenue. The money that is generated from the taxes do not dissolve into thin air. It goes to the government, who then decide what to do with the revenue which is generated. The revenue could simply be refunded to businesses and

individuals in the form of tax cuts or rebates. This could be done by means of mailing citizens and corporations flat checks, as is the case in Switzerland (Carl & Fedor, 2016). Alternatively, the revenue could be used to support low-income families, thereby cancelling the negative effect that the tax would have on their well-being (Carl & Fedor, 2016). Additionally, even after accounting for the revenue that is spent on low-income households, there will still be leftover revenue that could be spent on other social goals. The revenue could be used on green public investments, such as subsidizing renewable energy, subsidizing energy efficiency, and climate adaption strategies, thereby facilitating a switch to a greener economy (Carl & Fedor, 2016).

A final argument against a carbon tax is that the present carbon taxation system has too many holes. The limited effects that carbon taxes have had up until now could also be attributed to extensive tax exemptions and tax reductions for emission intensive trade exposed industries (Haites, 2018). As of 2020, there was a total of 61 different carbon pricing initiatives, 31 of which were ETS and 30 of which were carbon taxes. In total, these different carbon pricing initiatives only covered 22% of GHG-emissions (World Bank, 2020). Additionally, as of 2020, the world spent US$181 billion on fossil fuel subsidies (Ripple et.al., 2021). Such subsidies effectively function as negative carbon pricing by rewarding the very activities which a carbon price is meant to disincentivize (High-Level Commission on Carbon Prices, 2017). Consequently, subsidies are likely to inhibit the desired adjustments (Haites, 2018). However, this does not in itself prove that a carbon tax cannot work. It merely indicates that the way in which carbon taxation has been implemented thus far is not sufficient. Giving extensive tax exemptions, tax reductions, and subsidies to carbon heavy industries defeats the very purpose of having a carbon tax to begin with. As such, fossil fuel subsidies need to be removed and the carbon pricing system needs to be expanded to include all forms of emissions. A stringent carbon tax regime which subjects all carbon emissions to a high tax could indeed be conducive to disincentivising carbon intensive economic activity and facilitating a green shift.

Conclusion

A carbon tax is a policy whereby the government sets a price on carbon emissions in the form of a tax (Haites, 2018). By subjecting carbon emissions to taxation, a carbon tax would make it more expensive to engage in activities which involve large quantities of carbon emissions.

This would increase the costs of carbon intensive production, making such activities less profitable. Production of goods and services that involve less carbon emissions would as a result be relatively more profitable compared to a scenario in which there is no carbon tax. As such, investors and producers would have more of an incentive to turn change their investment and production patterns away from projects which involve large quantities of carbon emissions, towards a pattern of investment and production which is less carbon intensive, thus reducing carbon emissions connected to production and investment (High-Level Commission on Carbon Prices, 2017). Moreover, a carbon tax would also increase the prices of carbon intensive goods and services, due to the increased costs of production which the carbon tax would incur on the producers. This would in turn make it more expensive to have a carbon intensive consumption pattern, thus incentivising consumers to consume less carbon intensive goods, thereby lowering the total amount of carbon emissions connected to consuming goods and services (High-Level Commission on Carbon Prices, 2017).

However, due to the inelasticity of products such as fossil fuels, the tax would need to increase manifold from today's average price of US$15.49 per tonne of carbon dioxide in order to be an effective tool for disincentivizing carbon intensive investment, production, and consumption (Haites, 2018; Ripple et.al., 2021). Moreover, in order for the carbon tax to be effective, the fossil fuel subsidies and extensive tax exemptions and tax reductions for emission intensive trade exposed industries would need to be done away with (Haites, 2018). Furthermore, the carbon tax would effectively function as a regressive tax, as low-income households would be hit much harder by it relative to their income. In order to deal with this, some of the revenue that is generated from the tax could be used to accommodate low-income households (Carl & Fedor, 2016). Additionally, the leftover revenue could be used on green public investments, such as subsidizing renewable energy, subsidizing energy efficiency, and climate adaption strategies, thereby facilitating a switch to a greener economy (Carl & Fedor, 2016).

In conclusion, a high carbon tax which encompasses all carbon emissions could disincentivize carbon intensive investments, production, and consumption, while its revenue could be used to support low-income households and to facilitate a green shift by subsidizing renewable energy, energy efficiency, and climate adaption. As such, if properly implemented, a carbon tax could be a useful tool to reduce the amount of carbon emissions and facilitating a green shift without disproportionately harming the poor.

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