CARBON TAXATION: LESSONS FROM FRANCE AND BRITISH COLUMBIA

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Introduction

Transitioning into a system with low greenhouse gas (GHG) emissions is one of the greatest and most important tasks facing the world today. The Paris Agreement on Climate Change aims to limit global warming to well below two degrees, and preferably below 1.5 degrees (UNFCC, 2015). Several countries have therefore adopted a carbon tax as part of their policy to reduce emissions.

This article seeks to answer the question of whether a "heavy" tax on carbon emissions will work in practice. This paper consists of four parts: First, I introduce some relevant theory that helps explain how a carbon tax will work. Second, I present empirics on the results of carbon tax implementation has worked in France and British Columbia. Third, I discuss the results from France and British Columbia, and link this with the relevant theory. The fourth part is a conclusion, where I state that a carbon tax must be really "heavy" to substantially reduce emissions. Implementation must also be done in the right manner for it to be politically achievable.

Theory

The reasoning behind a carbon tax is that carbon emissions can be seen as a negative externality. This can be seen as a market failure, as carbon emissions are not adequately accounted for by the market mechanism. Goods that emit GHGs are consequently overproduced compared to the socio-economic optimum. The idea is therefore that a carbon tax can internalize the externality by increasing the cost of production, and thereby increase the market price.

There are however some problems with implementing carbon taxes. Firstly, energy can be seen as a necessary good, and therefore it has an inelastic demand. This means that the demand of energy changes less than the price changes. For example, a low-income household living on the countryside might depend on a car to be able to get to work. This household will buy as much fuel for the car as before, and the only effect of a carbon tax for this household is reduced purchasing power. A high-income household will, in contrast, not be affected by the tax because the tax constitutes less of their total purchasing power. Demand might be more elastic in urban areas however, because there are more viable alternatives to the car, such as public transport. This means that a carbon taxation will affect people disproportionately.

Secondly, environmental protection is a collective goods problem. Collective goods are goods characterized by the following traits:

1. Non-exclusivity – nobody can be excluded from using the good.

2. Non-rivalry – one person consummation of a good doesn't deteriorate another person's consummation of the same good.

The problem with collective goods is that it takes coordinated action to provide something that will benefit all members of a group regardless of what each member contributes to it (George-Duckworth, 2011). In this case, the group is the international system, and each member is the individual states. The problem is especially complicated on the international scale, as the international system lacks one central authority.

Empirics

A carbon tax was introduced in France in 2014 with the price set at 7 € per ton of CO2 in 2014, rising to 14.5 € per ton of CO2 in 2015 and 22 € per ton of CO2 in 2016 (Criqui et al., 2019). This was during a time of low oil prices, which made implementation less painful (Criqui et al., 2019). As of 2018, the carbon price was set at 44.60 € per ton of CO2 (Douenne & Fabre, 2020). Further increases were due to continue, but after weeks of protests by the "yellow vests", Macron decided to freeze the carbon tax at the 2018 level (Douenne & Fabre, 2020). Since 1990, emissions have been reduced by 13% (Criqui et al., 2019). However, CO2 emissions ceased to decline in 2016 and 2017 (Criqui et al., 2019). It is therefore difficult to see a clear effect on carbon emissions from carbon taxes in France. The resistance towards carbon taxation in France is large, even though climate change is regarded as an important issue (Douenne & Fabre, 2020). In general, French people prefer green investments or regulations over carbon taxation (Douenne & Fabre, 2020).

British Columbia introduced a carbon tax in 2008 at ten dollars per tonne of CO2. This price has gradually increased and is now at $45/tCO2 (Government of British Columbia, 2021). However, to combat the problem of low-income households being affected harder than others, British Columbia formed the tax to be revenue neutral, by making sure that all revenues from carbon taxation goes back to the tax payers through reductions in personal and corporate income taxes (Rhodes & Jaccard, 2013). The carbon tax has not made a statistically significant impact on aggregate CO2 emissions (Pretis, 2021). However, the carbon tax is estimated to have made some sector-specific emission reductions, such as a 19% reduction in transportation (Pretis, 2021). The carbon tax is generally supported by the British Columbia residents, although regulatory approaches are preferred over taxation when it comes to climate change policy (Rhodes & Jaccard, 2013).

Discussion

From the two cases of France and British Columbia, we cannot see a statistically significant effect on aggregate CO2 emissions. This could be due to energy being an inelastic good. Unless the prices on carbon-related energy sources increases drastically, the demand for carbon will not change much. This is especially true for people in rural areas who have less "green" substitutes, such as public transport. In the case of British Columbia, however, we can see some significant reductions in certain sectors. This makes sense in relation to the elasticity theory, as goods are generally more elastic when we look at a narrower group of goods, such as in transportation, as opposed to emissions in all sectors. Transportation could also be considered to have more viable alternatives to fossil fuel, such as electric cars or public transportation, rather than for example heating, which might me harder to substitute when we consider a short time horizon. Although we do not see a statistically significant reduction on aggregate CO2 emissions, this does not have to mean that there has been no effect. Goods are generally more inelastic when we consider a shorter time horizon. It takes time to change the energy source we use, and since carbon taxation is a

quite recent concept, the time horizon might be too short to see a statistically significant effect on CO2 emissions. Furthermore, the problem might not be the carbon tax in itself, but that the tax is set too low to see a significant effect. If the tax is set too low, the carbon price will not be affected enough to adequately shift the consumers' demand.

There is also the problem of implementing the tax fairly, as some people will be affected harder than others. This was the case in France, which led to weeks of protesting by the "yellow vests", which forced Macron to freeze the carbon tax. As energy is a necessary good, people will continue to buy it, even though the price increases. Therefore, only the poorest will feel the impact of higher prices. The result is that emissions are hardly reduced, and the purchasing power of low-income households is further decreased. British Columbia seems to have solved this problem by rebating all revenues from carbon taxation through reduction in other taxes, which both makes the policy more popular and more economically efficient. Reducing other taxes could have a macroeconomic benefit as it could increase the province' general demand.

One can also discuss whether we can solve the problem of CO2 emissions within a capitalist system. After all, the problem of climate change arose during the industrial revolution, along with the emergence of the capitalist system. The chase for economic growth is integral to the capitalist system but is at the same time what has caused the degradation of the environment. To find a viable option to the capitalist system is however a difficult task. The alternative to solving pollution through the market mechanism is to start banning environmentally hurtful activities and imposing new green policies. However, this is politically difficult as politicians in a democracy depend on public support to get reelected. Politicians also may have interest in protecting the most profitable industries. It is for example hard to imagine today how a party that wants to outlaw petrol cars would do very well in an election.

Climate change is an international problem, and therefore needs to be solved through collective action. Many states are unwilling to act, because of the collective goods problem. Unless every state participates in implementing emission reducing policies that could negatively affect their economy, the costs will likely outweigh the benefits for a state that reduces emissions more than others. To achieve collective action, we need effective global agreement and enforcement mechanisms. This is however hard to accomplish as there is no international central authority that can impose climate policies on individual states. States are therefore reluctant to introduce a heavy carbon tax, as it could negatively affect their economy, thereby weakening their status on the international arena.

Conclusion

Carbon taxation is not a very effective tool when it comes to reducing emissions, because energy demand is inelastic. The carbon tax must therefore be set high to have a substantial effect on reducing emissions. This is however politically difficult, and can create heavy protests, as we have seen in France. Implementation of a carbon tax must therefore be done in a clever way, where it affects people in a fair manner. Implementation of carbon taxes also depends on international cooperation, as pollution is a collective goods problem. Although there are serious problems with implementation of carbon taxes, it does not mean that we should not do it. Carbon taxation is however only one of the many actions we need to take to reduce emissions worldwide.

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