

Carbon tax or cap and trade policy, which is more efficient?

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M.A. Economics (Environmental Economics)

2024-26

Research Task

assigned for acceptance in

Research cell of Madras School of Economics

Feb 10, 2025

Introduction

Carbon tax and carbon cap, these two are some of the only methods that seem feasible and effective to reduce the carbon levels in the environment from 424 parts per million (ppm)¹ to the safe number of 350 ppm. Carbon tax is a demand side approach to make the product expensive to the consumer leading to decreased consumption of quantity to control carbon emission. Carbon cap and trade also (known as emissions trade system) approach is a supply side approach that sets a ceiling on the firms to limit production over a certain quantity. Either of these will lead to companies to innovate in order to produce products for less carbon footprints and supply the demand at equilibrium quantity. On either approach such new innovative companies will be beneficiary as tax burden will be lower on them selling their goods for cheaper prices in competitive markets and if the carbon cap is imposed then they can sell their extra carbon permits as a tradeable allowance to other firms.

This is a problem of contest that which is better specially for a country like India which needs to increase its consumption at a significant rate but at the same time sustainability cannot be ignored. Since the environment dooms day clock is ticking, melting our glaciers, giving birth to great wildfires that are devouring human habitats like California wild fires, and rising global average temperature, it is inevitable that all the governments will have to take steps to limit human consumption and reduce carbon emission in one way or other. It is important to understand which.

In this research it is the goal to analyze both of them and understand what will be better. Both of the systems have their own pros and cons in implementation, we will look which pros and cons makes them more appealing for a particular type of country. Carbon tax or Carbon Cap.

Methodology

In order to make this research paper secondary sources have been used. Various researches on climate change, researches on carbon tax vs carbon cap and commentaries on Indian bureaucratic system². And then the insights derived from the data has been used to write conclusion.

Literature Review

As per the author By Robert N. Stavins, Cap and trade system will be superior in United States of America looking at the American lobby of anti-tax promoters. Neither NGO nor the general public will be in favour of Carbon taxes. He also discusses that carbon taxes give certainty about the prices but not reduction in carbon in his article in The Environment Forum of Harvard University³.

FIG 1 shows the current status of carbon taxes, and Emission trading systems in the current world with data taken in 2024 as data collected by World Bank⁴.

Under carbon tax the price of emitting per ton of carbon is set but the total quantity of emission is not. Therefore tax system will give fair knowledge of tax revenue but be uncertain about the actual release of CO₂ releases. Whereas an ETS will have pinpoint focus on the carbon releases as it is fixed but revenue government will earn depend upon the

¹ https://gml.noaa.gov/ccgg/trends/gl_trend.html

² <https://www.hindustantimes.com/analysis/transforming-public-administration/story-PZEGbLXbUIAR9Q3fQ0XmvJ.html>

³ https://scholar.harvard.edu/files/stavins/files/column_22.pdf

⁴ <https://carbonpricingdashboard.worldbank.org/compliance/instrument-detail>

approach these permits are handed to the companies. If these are free then government will not have anything as revenue, if these are auctioned then it will be uncertain how much revenue government will generate and how much companies will have for costs impacting their profit maximizing problem. Taxes seems to be best for short term as there is existing taxation infrastructure in the country but ETS will require new systems.⁵

Compliance carbon pricing instruments around the world, 2024

Map shows jurisdictions with carbon taxes or emissions trading systems implemented, under development or under consideration, subject to any filters applied in the table below the map. The year can be adjusted using the slider below the map.

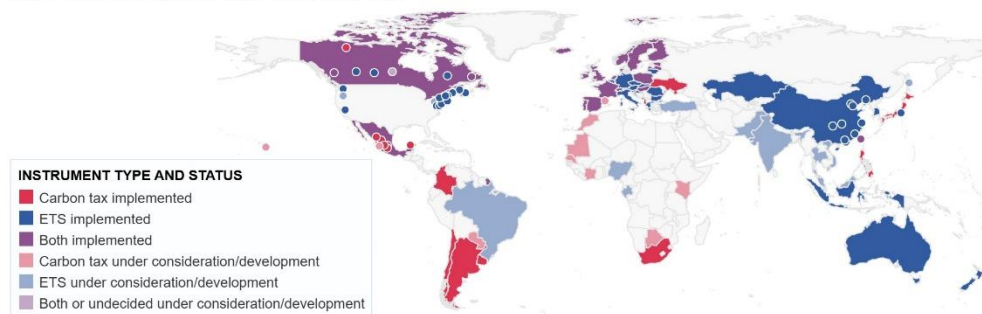


FIG 1

98% of the experts agree that carbon taxes will reduce the emission⁶ certainly which is extremely important as a start for a better future.

Data

Now that we have established that these methods are effective against dealing with and carbon emission, lets look at data.

In Sweden a carbon tax to curb pollution resulted in 11 % decrease in carbon emission in their transport sector. As transporting goods became costlier, buyers started procuring goods for nearby sellers compared to previous ones to save cost.⁷

And a British Columbia study found that carbon taxes decreased 5-15% emissions without having any cost to GDP.⁸

In USA some power companies reduced its emission by 50% in RGGI states.⁹

While due to the structure of carbon cap and trade the reduction in emission can be infinite as it can be set exogenously.

Conclusion

I found Carbon taxes to be more beneficial to developing countries like India which has more focus on GDP and want to have an effective carbon reducing mechanisms. As these can be easily be absorbed by the existing taxation infrastructure in the country. While implementing new institutions take time and are costly and corruption can easily hijack it in developing countries

⁵ <https://www.lse.ac.uk/granthaminstitute/explainers/which-is-better-carbon-tax-or-cap-and-trade/>

⁶ <https://www.kentclarkcenter.org/surveys/carbon-taxes-ii/>

⁷ <https://pubs.aeaweb.org/doi/pdfplus/10.1257/pol.20170144>

⁸ <https://www.sciencedirect.com/science/article/abs/pii/S0301421515300550?via%3Dihub>

⁹ https://www.rggi.org/sites/default/files/Uploads/Fact%20Sheets/RGGI_101_Factsheet.pdf

On the other hand, as carbon cap gives more power to pinpoint the exact reduction in carbon emission which is more beneficial if controlling pollution. So a develop country can avail the use of these systems for more flexible arrangements for their industry as to they can buy and sell the permits as per their needs and demands.

Also one more benefit of Carbon taxation is more revenue in government treasury, which can be then used to fund public infrastructure projects.

This conclusion can be seen as a truth in the current data of countries which have one of these or both implemented in their country which developed advance countries of Europe following ETS method (and some countries following both) and some lesser developed countries either don't have any mechanism or having carbon taxes. China with their large manufacturing giants only capping the carbon and keeping tax lite in order to not hurt their export.

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