



## WHY FINANCE MINISTERS FAVOR CARBON TAXES, EVEN IF THEY DO NOT TAKE CLIMATE CHANGE INTO ACCOUNT

### Authors:

Max Franks\*, Ottmar Edenhofer\*\*, Kai Lessmann\*

\* Potsdam Institute for Climate Impact Research (PIK); \*\* Mercator Research Institute on Global Commons and Climate Change, Berlin Institute of Technology, and PIK

### Overview

It is difficult for finance ministers to raise revenue by taxing a firm's mobile capital assets because the costs of relocating that capital in response to tax pressure have been reduced by globalization. Countries compete for this capital by reducing their capital tax rates. Governments are still pressured to provide welfare-enhancing public infrastructure investments despite resulting reductions in revenue.

Carbon taxes are a way to raise revenue without chasing firms abroad because carbon assets are not mobile or evenly distributed geographically. A tax on carbon imports cannot be avoided by relocation as easily as a tax on mobile capital. As a result, finance ministers who may not otherwise care about the environment may favor a carbon tax as a way to finance welfare-improving public investment.

### Background

In a globalized world, capital is highly mobile. Taxing this capital causes firms to relocate to countries with low tax rates, which reduces government revenue and local employment. To entice firms to stay, governments have reduced corporate tax rates and increased payroll taxes that fall on relatively immobile labor. Unlike capital or labor, carbon-intensive resources (fossil fuels) are found unevenly around the world. This geographic advantage means exporters of fossil fuels are able to charge a higher price because they have less competition. Income produced by this advantage is called "rent."

The authors hypothesize that taxing carbon allows an importing government to raise revenue to finance public infrastructure investment without increasing taxes on individuals or businesses and thereby decreasing domestic output. Increasing investment in infrastructure is welfare-enhancing as long as the financing for the investment is generated in a way that does not decrease output. A tax on carbon generates revenue by distributing a portion of fossil fuel rents to the importing country without generating a race to the bottom in tax rates or prompting firms to relocate.

The authors construct a multi-period, multi-country general equilibrium model to test these hypotheses. The model includes two groups of countries: those that import carbon-intensive resources and those that export carbon-intensive resources. Importing countries are able to set taxes on imported carbon resources, domestic labor, and domestic capital. Exporting countries can choose to impose a tax on exported carbon resources. Within importing countries, firms can respond to taxes strategically (that is, by relocating production). Consumers derive welfare from the wages

they receive from firms, improvement in public infrastructure, and dividend payments they receive as owners of firms. Governments use taxes to provide public infrastructure and choose tax rates to maximize consumer welfare.

The model assumes that importing countries resemble OECD countries (such as the United States).

## Key Findings

1. **A carbon tax increases consumption by several trillion dollars.** Compared to scenarios in which importing countries use only consumption, capital, or payroll taxes to finance infrastructure investment, using only the optimal carbon tax increases the present value of consumption by \$1.7 billion per annum (USD).
2. **Welfare declines with the use of non-carbon taxes, relative to carbon taxes.** Comparing welfare under a non-carbon tax regime to welfare under a carbon tax regime shows that carbon taxes increase welfare by 2.3% relative to the next best option.
3. **Carbon taxes shift rents from the owners of carbon-intensive resources to countries that import these resources.** The resource owners' profits are affected by all of the tax regimes studied. However, a carbon tax produces the largest reduction in these profits (profits are 36% lower than the next best option), indicating a transfer of rents from the resource owners to the importing country.
4. **These results are robust to strategic interactions between firms and countries.** The model allows for the possibility that exporting countries will react strategically when importing countries implement a carbon tax. However, the benefits of a carbon tax, relative to a capital tax, remain, even as the exporting country reacts strategically.
5. **Implementing a carbon tax slows resource extraction and decreases the total volume of resources extracted.** By taxing the carbon-intensive resource, importing countries increase the price paid by consumers of the resource and decrease the price received by producers. This reduces demand, incentivizes conservation of the resource, and results in environmental benefits. All of these benefits occur even though the initial impetus for the carbon tax is simply to raise revenue for infrastructure improvements.

## Conclusions

Taxing carbon-intensive fossil fuels enables finance ministers to generate revenues for investment in public infrastructure without taxing mobile capital. This allows countries to invest in welfare-enhancing public infrastructure without causing capital flight and negatively impacting growth by driving firms overseas. As a result, a carbon tax improves welfare in countries that import fossil fuels on a financial level *and* on an environmental level. Even where it is not motivated by environmental concerns, a carbon tax slows the production of carbon-intensive resources, reduces consumption of these resources, and benefits the environment.

**Full paper available at:** <http://belfercenter.ksg.harvard.edu/publication/25110>

## About the Project

Established in 2007, the goal of the Harvard Project on Climate Agreements is to help identify and advance scientifically sound, economically rational, and politically pragmatic public policy options for addressing global climate change. Drawing upon leading thinkers in Argentina, Australia, China, Europe, India, Japan, and the United States, the Project conducts research on policy architecture, key design elements, and institutional dimensions of international and domestic climate policy.

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