A Solution to the Leakage Problem

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When only a subset of countries restrict emissions, energy-intensive industries—and their emissions—may move offshore to countries with few or no restrictions on emissions, a phenomenon known as “leakage.” Border tax adjustments are typically used to confront this challenge, but they are difficult to implement, are legally questionable and do not make the emissions restrictions much more effective. A better approach is to tax domestic extraction along with border adjustments on imports and exports of energy. This approach is simple to implement, clearly legal, and is much more effective at reducing emissions.

The Challenge

The most commonly proposed policies to address leakage are border tax adjustments. Most carbon prices fall on domestic production. Border adjustments impose an import tariff and an export rebate. The import tariff is a tax on emissions in the foreign country from production of the imported good. It ensures that imports face the same tax as goods produced domestically. The export rebate gives back any carbon taxes paid domestically, so that goods sold abroad face the same tax as other goods sold in the foreign country. The net effect is to shift the tax from domestic production to emissions associated with domestic consumption.

This approach suffers from a fundamental flaw. Leakage arises primarily because domestic carbon taxes lower the global price of energy. Border adjustments do not address this effect. A tax on emissions from domestic production with border adjustments also lowers the global price of energy, creating an incentive to shift activities abroad. As a result, this policy does not, and cannot, perform well on a global basis. Moreover, border adjustments are complex and legally questionable.

Recommendations

There is an alternative approach that would be simpler, reduces emissions and controls leakage much more effectively, and is clearly legal:

- Shifting to a combination of an extraction tax and a production tax addresses the core source of leakage: the price of energy. The key to the solution is to combine taxes in a way that moderates their effects on the price of energy, and, therefore, the incentives to expand activities in non-taxing regions. Combining a tax on domestic extraction and a tax on domestic production is a simple way to do so. A tax on domestic extraction raises the global price of energy because it reduces the supply of energy: domestic extractors receive their sales prices less the tax, making extraction less profitable, so they reduce the amount they extract. A tax on domestic production has the opposite effect. Producers’ cost of energy is the market price of energy plus the tax, so they pay more for energy inputs and, therefore, will demand less and cause the price to go down. Combining an extraction tax (which pushes energy prices up) with a partial border adjustment on energy (a production tax, where
prices go down) creates a hybrid approach where there is a tax on supply and a tax on demand—pushing the price of energy in opposite directions, thereby moderating the effects and controlling leakage.

The combination of an extraction tax and a production tax is simple to implement. The United States would tax extraction and combine that tax with border adjustments on the imports and exports of energy, at a lower rate than the underlying extraction tax. The border adjustments push that portion of the tax down to production. Both the extraction tax and the border adjustments would be simple and clearly legal.

- Broadening the carbon tax base increases its effectiveness, including through policy that expands U.S. exports. Expanding the tax base to other countries, even those outside the taxing coalition, further reduces emissions and leakage. The United States can do so by imposing border taxes on imports of goods and developing export policy that seeks to expand, rather than just maintain, its export margin. It should do so through a policy of tax rebates and if necessary, subsidies, for exports so that it exports more with the carbon policy in place than without. The figure illustrates what a model suggests is 'optimal' policy: the combination of taxes and subsidies that maximizes domestic well-being. It combines an extraction tax, border adjustments (at a lower rate) on energy, a border adjustment on imports of goods, and a policy for the export of goods that expands exports through a combination of taxes and subsidies on exported goods. Expanding exports in this way expands the carbon price and allows greater emissions reductions. It is the environmentally best policy and the policy that is best for the United States but would be complex from an implementation and legal standpoint.

**FURTHER READING**

*The Design of Border Adjustments for Carbon Prices*

_National Tax Journal_

Border adjustments levy a carbon fee on imports, while exports from a country with a carbon tax have their carbon price refunded at the border. As a result, domestic consumers pay the baked-in price of a carbon tax for goods produced domestically and on imports.

*FURTHER READING*

*Optimal Unilateral Carbon Policy*

_World Policy Working Paper_

The optimal climate policy involves an extraction tax; a border adjustment on the import and export of energy and on the import, but not the export, of goods; and an export policy designed to expand the export margin.