

Discussion of Strand's "Taxes and Caps as Climate Policy Instruments With Domestic and Imported Fuels"



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Overview



- Review of where this paper fits in the literature
- Review of intuition of model results and assumptions that drive them
- Are the forces driving the results empirically plausible?
- Extensions and speculation

Where the paper fits in the literature



- Bergstrom (1982): importers can offset monopoly rents with tariffs
- Amundsen and Schoeb (1999): tax can exceed Pigovian tax because of competition for rents
- A number of other papers find that the rent contest can lead to higher taxes than the Pigovian tax
- This paper fills a hole in the literature because it
 - Looks at multiple fuels
 - Considers the choice between cap-and-trade vs. taxes as instrument

Model Intuition



- There are two “regions”: oil producers who export, and oil consumers who also have their own fuel source (coal or natural gas)
- Both care about carbon emissions, and the alternative to oil can be either more or less carbon intensive
- The oil producing region uses an “export” tax that can be thought of as the monopolist policy instrument
- The oil consumer can reduce rents to the oil producer with an import tax and can reduce carbon emission by taxing both forms of energy or by introducing a cap-and-trade program. The oil consumer might like to have a higher tax on oil to extract rents (model 1), but might have to have a carbon tax because of WTO concerns (model 2)

Model 1 Intuition



- Exporting region, if it cares about carbon emissions, might soften the “monopoly” rent extraction for fear that reducing oil might cause consumers to switch to coal and increase carbon. If second fuel is natural gas, this concern is muted. Clean alternative helps oil.
- Importing region will charge Pigovian tax on coal, and will also shoot for some rent extraction. Global tax on oil is too high.

Model 2 Intuition



- Exporter has the same problem
- Importer has to use carbon tax, which closes the gap between the taxes on the two fuel sources. Because of this, the rent extraction is lower for consumers, and the oil producers are better off.

Model 3 Intuition



- Exporter's problem: Under cap and trade, the exporter takes the total amount of carbon as given, and then maximizes rents. If oil is the only source of carbon, the monopoly price sets the permits at zero value. If the second fuel is coal, then the producer's carbon can be emitted by coal consumption quickly, which reduces the ability to extract rents. Cleaner is better for the producer.
- Importer's problem: dual to earlier problem.
- Total tax on carbon higher still

Are the Forces Empirically Plausible?



- Cap and Trade makes cartel more stable because quantities are certain
 - But technological change could emerge faster if oil is too expensive which might reduce short run rents in a dynamic model.
- Clean energy leading to higher producer rents seems very counter intuitive. To the extent that coal and natural gas are a composite alternative with similar carbon content to oil, it might be that the carbon intensity is really close to 1 across fuel 1 and 2, which pushes output to zero in the model.
- I would like more focus on profits, and on the linearity assumptions.

Extensions and Speculation



- The model needs a developed country that produces both oil and the second fuel.
- In that world, the oil producing country will want to push the developed world to cap and trade to maximize its own rents from oil.
- Such oil producing countries will increase the likelihood of a cap and trade Nash Equilibrium by investing strategically in R&D on zero footprint technologies. Such technologies will be share freely with non-oil producing countries to lock them into paying high oil rents.