

The ABCs of Taxes and Caps

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Flexibility in AB 32

- AB 32 provides for an incredible amount of flexibility
- Discussion appears to have quickly jumped to a Cap & Trade program (and LCFS), ignoring the obvious alternative – a Carbon Tax
- What are the advantages and disadvantages of each?

“Externalities” and market outcomes

- In the presence of negative externalities, such as climate change, national defense, or more local pollution, the market “fails”
- Firms and consumers face costs that are below the true social cost of the good
 - We get over production/consumption of the good
- Long list of ways to “fix” this
 - Three often used policies

Options

- “Command and control”: force firms and consumers to adopt certain technologies
 - CAFE standards, catalytic converters, NG over coal, electricity generator scrubbers and SCRs
 - Pros: transparent, certain
 - Cons: costs are simply hidden, inefficient allocation of these technologies and abatement
- Cap & Trade programs
- Pigouvian Taxes

Cap & Trade Program

- For every unit of pollution by firms requires a permit
 - The number of permits allocated and cost of abatement determines the permit price
 - Simple supply (vertical) and demand (cost of abatement)
 - The permit price becomes the incremental cost of abatement
 - (Provided there are enough firms trading permits)
- *Key result:* economic efficiency is independent of the initial allocation of the permits
 - Initial allocation obviously impacts profits

Taxes (Pigouvian)

- Every unit of CO₂ is taxed at some point in the production chain
 - The optimal tax level is the amount of damages
- *Key Result #1*: These taxes are *not* distortionary
 - In fact, not taxing is distortionary
 - Revenues can be used to lower other distortionary taxes
- *Key Result #2*: Trading is *not* required to achieve economic efficiency
 - “Trading” occurs in the market---those firms that are good at abatement sell more

No free lunch

- Both Taxes and Cap & Trade raise the price of carbon
 - This will raise the price of final goods
- The incentive for R&D into carbon reducing technologies will also increase
 - This will counteract the tax/permit price effect
- We won't "improve" on a price of zero, however

Comparing Cap & Trade with Taxes

- In a very stylized model Cap & Trade and Taxes are equivalent
 - Demand is constant over time and known
 - In this case, there is a cap that achieves a particular tax level
 - *There is also revenue equivalence*
- What drives a wedge between them?
 - Volatility of demand for the final product and cost of abatement
 - Uncertainty over what the optimal quantity or damages of emissions

Volatility – Advantage goes to tax

- Cap & Trade programs are susceptible to volatile permit prices
 - Demand shocks, abatement cost shocks, etc.
- This can lead to very high or very low prices
 - Makes long term investments in abatement technologies more risky
 - Option value of waiting may forestall investment
- Ability to bank (or borrow) permits alleviates this
- Ceilings and *floors* do as well
 - Becomes a lot like a tax

Uncertainties – A draw

- Depending on the context, we may know more about the optimal level of the pollutant or the marginal damage of the pollutant
 - Knowing more about the optimal level pushes us towards Cap & Trade
 - E.g., 550 (Stern), 750 (IPCC) ppm CO₂e
 - Knowing more about the marginal damages pushes us towards a tax
 - E.g., the mean value marginal damage of CO₂e across a number of studies is \$29/tonne of CO₂e (Tol [2005])

Political Economy – Advantage to C&T

- Not a tax
 - Few politicians like to propose new taxes
 - Cap & Trade acts like a tax, but is not as transparent
 - Fallacy: Trading somehow makes things costless
- Cap & Trade allows for upfront allocation of the “tax revenues”
 - Permit allocations reduce the cost burdens of firms involved
 - In principle, we can auction off permits for governments to capture these revenues
 - Discussed more and more

Potential revenues

- A carbon tax is not going to solve our financial difficulties
 - Again, it has the key advantage that it is not distortionary
- Potential revenues?
 - Bemis and Allen (CEC [2005]) estimate emissions on the order of 500 million tonnes of CO₂e
 - Of course, a tax would decrease this, 2020 goal of roughly 460 million tonnes of CO₂e (1990 levels)
 - Revenues depend on elasticity of abatement
 - ~\$14 billion annually (\$30/tonne CO₂e)

Challenges

- Counting carbon
 - All of these policies are predicated on being able to count carbon
 - Experience with transportation (especially biofuels), this is no easy task
- Leakage and shuffling
 - Leakage: new dirty power plants get built in Arizona
 - Shuffling: the clean bio-fuels are sold here and the dirt biofuels sold elsewhere
 - Climate change is a global problem; any local policy is likely to lead to “leakage” and “shuffling”
 - This reduces the efficacy of local policies

Conclusions

- While in some cases Cap & Trade can be equivalent to a Carbon Tax, it is not likely to be better than a Carbon Tax
 - “Trading as a way to achieve economic efficiency” is often misused
 - The trading in Cap & Trade does not make it more efficient than a tax
 - It simply makes it *as efficient* as a tax
- While the political arguments against a tax are strong, we shouldn't lose sight of its benefits