Sub-National Carbon-Pricing Policy in the USA

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July 18-19, 2019
Why think about sub-national climate policies?

• Climate change is a global commons problem
  • For virtually any jurisdiction, the benefits it reaps from its actions will be *less* than the costs it incurs.
  • Also, leakage generally greater for smaller jurisdictions.

• So, why think about sub-national policies?
  • National government does not take action
  • Actions by national government not sufficient
U.S. Domestic Climate Policy (in the Age of Trump)

- *Trump Administration* is rolling back -- or trying to roll back – Federal *climate change and related energy policies* across the board

- But it’s *not trivial to change* Federal laws and regulations

- And *state climate policies* remain, and some are being *strengthened*
  - Renewable mandates (electricity generation) exist in more than half of the states
  - Also, there are motor vehicle GHG emissions standards, appliance efficiency standards, building codes, zoning laws, subsidies, and many others

- But most significant (or, at least, most interesting) are sub-national carbon-pricing initiatives
  - *California’s AB-32 and AB-398* – includes cap-and-trade system
  - *Regional Greenhouse Gas Initiative* – electricity sector in 9 states + NJ
  - *Oregon* will likely enact cap-and-trade system in 2019
  - On the other hand, *Washington State* has twice defeated carbon tax referenda
Regional Greenhouse Gas Initiative

- Downstream CO\textsubscript{2} cap-and-trade system for electricity sector in 9 states
  - States must auction 25% of allowances, but trending towards 100% auction
  - No true safety-valve, but trigger prices allow increased use of offsets
  - Limited emissions to average of 2002-04 level during period 2009-2014

- Non-Binding due to modest targets, \textit{low natural gas prices}, recession, and energy conservation
  - In response, cap lowered by 45% in 2015, then 2.5%/year, for eventual 10% cut by 2019 (13% below 1990, 35% below BAU)
  - \textit{With non-binding cap, no direct emissions impact; allowance price was close to auction reservation price} ($2.00/ton CO\textsubscript{2}), \textit{but now up to }$5.25/ton
  - \textit{In any event, auctions have raised considerable revenue for states} (> $2 billion)
California’s Global Warming Solutions Act of 2006 (AB 32)

- Broad and ambitious policy to cut GHG emissions to 1990 level by 2020; and 40% below 1990 level by 2030 (with AB 398)
  - Cap-and-trade system
  - Energy efficiency standards for vehicles, buildings, & appliances
  - Renewable portfolio standard
  - Low carbon fuel standard
- Cap-and-trade system
  - Covers 85% of economy (with price collar post-2020)
  - Increasing use of auctions over time
  - Output-based updating allocation used to protect trade-sensitive industries
  - Declining share of reductions can be from offsets (49% → 5%)
  - Link with Quebec system; others pending
Reflecting on Sub-National Climate Policies

• In presence of national (Federal) policy, ….

  ▪ Will sub-national efforts achieve their objectives?

  ▪ Will sub-national efforts be cost-effective?

  ▪ Answer: interactions can be problematic, benign, or positive, …

  ➢ depending on relative scope and stringency, and specific policy instruments used
Problematic Interactions

• If a national policy limits emissions *quantities* or uses nationwide *averaging* of performance, …

• Then, additional emission *reductions* accomplished by “green state” (more stringent policy than Federal) reduce pressure on other states,
  ▪ … thereby *encouraging* (such as through lower allowance price) – emission *increases* in other states

• Result: 100% leakage, and loss of cost-effectiveness nationally

• Potential examples (can depend upon details of regulations)
  ▪ California policies *and* a Federal cap-and-trade (HR 2454)
  ▪ State limits on GHGs/mile *and* Federal CAFE standards
  ▪ State renewable fuels standard *and* Federal RFS; or state renewable portfolio standard *and* Federal RPS

• Partial solution: carve-out from Federal policy (but not cost-effective)
Benign Interactions

- Example #1: Sub-National policy less stringent than Federal policy
  - Result: sub-national policy becomes non-binding and largely irrelevant

- Example #2: National policy sets price (not quantity)
  - A carbon tax, or a binding price collar in cap-and-trade
  - More stringent actions in green states do not lead to offsetting emissions in other states induced by a changing carbon price.
  - However, there will still be different marginal abatement costs across states, and so aggregate reductions are not achieved cost-effectively.
  - Could achieve same target nationally at lower aggregate cost with slight increase of carbon tax and abandonment of binding state policy
Positive Interactions

• Sub-National jurisdictions can address market failures not addressed by a national carbon-pricing policy
  ▪ Example: principal-agent problem re. energy-efficiency investments in renter-occupied properties → state or local building codes

• Sub-National jurisdictions can be “laboratories” for policy design
  ▪ Can provide useful information for development of national policy
  ▪ But will sub-national authorities allow their “laboratory” to be closed after the experiment has been completed and the information delivered?

• Sub-National governments can create pressure for more stringent national policy
  ▪ Example: CA Pavley standards and subsequent change in Federal CAFE
  ▪ Desirable if previous national policy is insufficiently stringent, … but that is an empirical question
Conclusions

• Sub-National climate policies often appear desirable in light of insufficient national policies

• And such policies can indeed be helpful, even important

• But given the global commons nature of the climate change problem,
  • … the highest level of geographic jurisdiction (typically nations) is likely to be the most effective environmentally, and the most cost-effective

• And national and sub-national circumstances matter:
  • Under certain conditions, perverse interactions can occur when one policy is nested within another, resulting in:
    • No incremental emissions reduction
    • Greater aggregate costs
    • Suppressed allowance prices, hence diminished incentives for technological change

• In other words, the devil is in the details!
For More Information

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