What do we know about policy costs? How can we learn more?

Hadi Dowlatabadi and Gary Yohe / Richard Tol
Canada Research Chair
University of British Columbia

University Fellow, Resources For the Future, Washington DC.
Adjunct Professor, Carnegie Mellon University, Pittsburgh, PA.

Outline

- The challenge of cost projections.
- A review of what we know.
- Reflecting on the challenge.
- An adaptive management problem?
- Implementation possibility?
- Conclusion

Challenge of cost projection

- Knowing the present baseline:
  - Economic
  - Environmental
- Knowing the future baseline absent intervention.
  - Economic
  - Environmental
- Knowing impacts of intervention.
  - Economic
  - Environmental

Review of what we know 1

- For industry:
  - Governments tend to overestimate baseline emissions.
  - Command & control schemes have cost about as much as expected per unit emission controlled.
  - Flexible/incentive schemes have tended to be less expensive than expected.
  - Trading has rarely, if ever, been why controls have been less costly to achieve.
  - Porter's hypothesis is not borne out for any industry group. On average $1 in control cost lead to ¢18 production cost savings.
- For households:
  - Policy costs have been systematically under-estimated.
  - 2/3 of US households do not use any energy savings information when purchasing appliances.
  - 1/7 of US households spend > 10% of income on residential energy costs. Why would then not exercise informed choice?
  - Exposure to full market forces only changes the fraction who exercise informed choice from 1/4 to 1/3.

Review of what we know 2

- Climate models now routinely reflect parametric uncertainties but rarely address structural uncertainties in how we conceptualize the way the world works.
- The climate policy costing models have grown more sophisticated but still struggle with:
  - what the economic baseline will be;
  - how to represent technical change and its response to policy;
- No end of sophistication will stop models from being surprised by:
  - new science such as net impacts of converting a farm to a forest on the climate system (Pielke 2002).
  - new applications of old technology (industrial carbon separation and sequestration).

Review of what we know 3

- The good news is that from a technical standpoint back-stop control costs, even draconian controls in 2025, are unlikely to be higher than $250/tC.
- The bad news is that there has been negligible behavioural response to oil price rises in excess of $120/tC since January 1999.
- However climate policy can have significant announcement effect. For example, the UK share of new diesel car registrations has doubled from 13% to 26% in response to announced new tax policy on automobile ghg emissions* starting in 2002. Unfortunately, such effects are rarely, if ever, modelled.

* This outcome also exemplifies grave policymaker error. It will cause significant additional mortality and morbidity in the UK by being implemented *before* the availability of automobiles capable of meeting Euro IV particulate emission standards.

Reflecting on the challenge

- GHG controls are alien territory to both firms and regulators
  - why expect firms to excel at controls (under any implementation scheme) when there is no track record?
  - Why expect regulators to get the policy right?
- Firms are heterogeneous in their innovation strategy (from the radical innovators to the incremental modifiers)
  - why treat everyone the same?
  - Why not exploit the differences creatively?
- Unlike most previous experience, GHG control regimes and economic systems are not conterminous.
  - many have commented on the problem of leakage.
  - Real-politics of trade may lead to conflict over government R&D and capital turnover incentives to increase buy-in of policy.

An adaptive management problem?

REALITY	THEORY
• Asymmetry of information between regulator and regulatee. • A population that can be partitioned into: – A group of innovators in technology & management. – A group of rapid adopters once the path to success is charted. – A group of laggards who will resist to the end. • By proposing *"one size fits all"* policies, we get endless resistance.	• Continuous learning about the system. • Careful interventions designed to reveal system properties and meet objectives. • Careful monitoring. • Periodic re-evaluation of objectives. • Iterative refinement of interventions.

Implementation possibility!

- Phase I: Start small policy experiments with *innovators*. Being careful to:
  - limit their risks.
  - monitor costs and impacts.
  - refine goals and governing regulations to reflect the technically, socially and economically desirable.
- Phase II: Promote* diffusion of the "innovative steps" that lead to best practice compliance under flexible schemes.
- Phase III: Develop command & control regulations based on best practice for laggards.
- Phase Ia: revisit the goals and start again…

Conclusion

- In public policy the problem of free-riders is well known.
- A scheme is proposed where *innovator agents* (firms, farms, foresters, municipalities, …) in partnership with regulators become free-drivers helping chart a course towards meeting new policy objectives.
  - A carefully selected set of experiments will help reveal best policy design.
  - it will also generate an empirical basis from which control costs can be more reliability estimated.
- In this scheme:
  - flexibility measures are offered where it can be best used.
  - inflexibility is imposed where flexibility is abused.