

Carbon Pricing within the Fiscal System: Implications of Climate Risk

Roberton C. Williams III

University of Maryland, Resources for the Future,
and NBER

Conference on Pricing Climate Risk
4/13/2013

Background

- Carbon pricing could yield substantial new tax revenue
 - \$33/ton carbon tax in US in 2020 would raise roughly \$180 billion/year
- For budget-constrained governments, uses for new revenue can yield significant efficiency gains
 - Fund tax cuts (or prevent tax increases)
 - Reduce budget deficits, fund new spending
- These gains – the “revenue recycling effect” – can dramatically lower the cost of carbon pricing

Tax Interactions

- However, there is an offsetting negative effect
 - Pre-existing taxes on capital and labor distort capital and labor supply decisions
 - Carbon pricing effectively taxes production and consumption, exacerbating capital and labor supply distortions
 - Under central case assumptions, this negative “tax interaction effect” more than offsets gains from revenue recycling
 - Optimal carbon price = marginal damage/MCPF

Tax Interactions from Pollution

- Almost all models in this literature treat pollution damage as a separable term in utility
- This means damages have no effect on the economy
- A handful of papers relax this assumption
- Williams (2002): when pollution damages productivity, this also interacts with the tax system
 - Damage is like a tax on production, and discourages factor supply
 - This magnifies the benefits of reducing pollution
 - Result: optimal tax = marginal damage

Tax Interactions and Climate Risk

- How could climate risk interact with tax system?
- Production damage: dynamic version of earlier result
- But production damage is stochastic, so investments are also riskier
- Damage can directly destroy part of the capital stock
- Damage can increase need for government spending
- Mortality: higher mortality → less reason to save
- Lots of room for new research