

Climate Change and U.S. Climate Policy

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BuildingEnergy08

Prof. Gilbert E. Metcalf
Department of Economics
Tufts University

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Learning Objectives

- Understand how market based incentives can reduce carbon emissions
- Understand the relative merits of tax versus cap and trade type policies for the U.S.

U.S. GHG Emissions in 2006

Carbon Dioxide		5,934
Energy Related	5,826	
Other	109	
Methane		605
Nitrous Oxide		379
Other Gases		158
	TOTAL	7,076


A Classic Externality

- Non-spatial externality
- Efficient solution: price CO₂ emissions
- What's the right price?
 - Estimates are very imprecise: range from \$3 to \$95 per ton CO₂e
 - Catastrophe concerns
- Given long lags in GHG dispersion, prudence dictates starting now and refining policy as more information becomes available

Carbon Pricing Options

- Cap and Trade
 - Require permits to be surrendered for emissions
 - Allow trading among emitters
 - If limits binding, price of permits positive
 - Raises the cost of emissions
- Carbon Tax
 - Set tax on emissions
 - Raises the cost of emissions

Important Policy Design Features

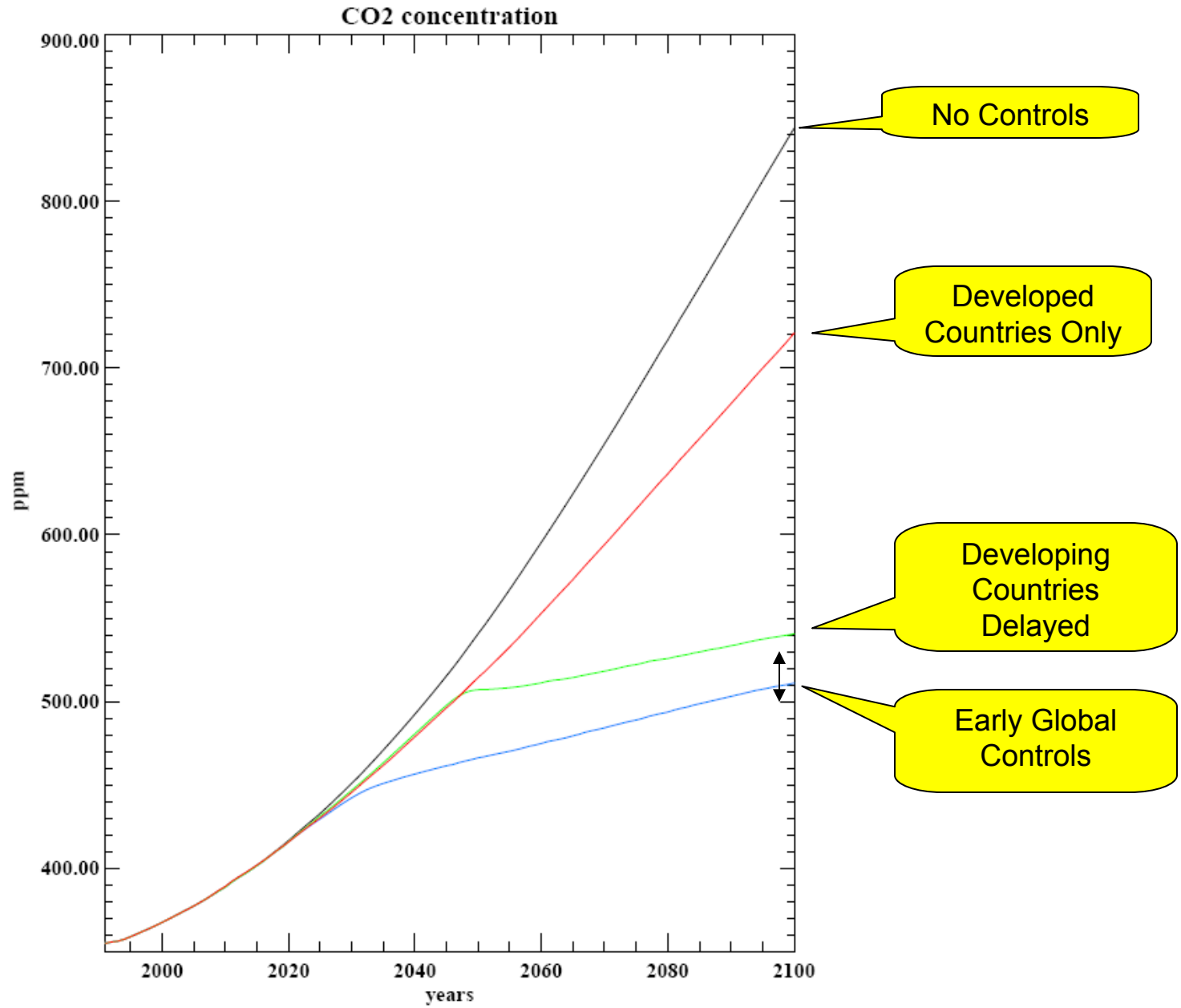
- Comprehensive sectoral coverage
- Upstream implementation
- Multi-gas implementation 
- Use of revenue
- Credits for Sequestration
- Long-term commitment
 - Domestic planning
 - Credibility an issue to ensure global participation

Importance of Other Countries

- U.S. energy related CO₂ emissions 22% of world total in 2004 (5,932 mmt out of 26,922 mmt)
- U.S. share projected to drop to 19% by 2030
- Non-OECD emissions projected to exceed OECD emissions by 57% in 2030

Assumptions in Modeling

- EU, Japan, Canada, Australia, New Zealand gradually reduce emissions from Kyoto to 50% below 1990 in 2050.
- Developing countries delay action
 - Reduce emissions to 2015 levels from 2025 to 2034
 - Reduce emissions to 2000 levels from 2035 to 2050



Paltsev et al. (2007)

Policy Options

- Cap and trade bills
 - Lieberman-Warner (S.2191)
 - Paltsev et al. (2007) analyze a number of bills
- Carbon tax
 - Larson (H. 3416)
 - Metcalf (2007)
- Hybrid approaches
 - Bingaman-Specter (S. 1766)
 - Stavins (2007)

Cap & Trade vs. Tax: Important Issues

- Revenue
- Allocation
- Administration
- Efficiency
- Price Volatility
- Induced Innovation

Revenue

- Revenue obscured under a cap & trade system
 - \$80 billion annually with a \$15 per ton CO₂ price
 - Order of magnitude larger than Acid Rain Program
- Including the revenue in the budget process explicitly instills some budgetary discipline
 - Revenue from cap & trade only included in federal budget if auctioned
 - Free permits are a hidden transfer

Allocation

- Permits are valuable assets
 - Big incentive for rent seeking activity
- Current focus on allocation has perverse distributional results
 - Emphasis should be on compensating affected parties, not regulated sectors
 - Carbon Tax Swap addresses this problem


Administration

- IRS in place to administer a carbon tax
- Cap & trade system will need to establish administrative structure
- No need for benchmarking with tax
- EU-ETS is a downstream system. Adds considerable complexity

Efficiency

- Pure cap & trade fixes quantity but not price
- Pure tax fixes price but not quantity
- Economic modeling consistently shows that tax more efficient to achieve given GHG reductions under abatement cost uncertainty

Price Volatility

- EU-ETS prices highly volatile 
- Makes planning by firms difficult
- Need for complicated schemes (e.g. Carbon Market Efficiency Board)
- Safety valve mechanisms address upside risk
 - But if binding, converts system to a tax
 - Why not start with the optimum design?

Induced Innovation

- Downside risk also a concern with cap & trade
 - Phase I ETS prices traded for less than €5 throughout 2007
 - Concern in RGGI that initial permit allocation may be too high
- Low permit prices deter induced innovation

Concern: No Guarantee Of Emission Reductions with Carbon Tax

- Committing to specific emission reductions regardless of the cost cannot be justified by any model of social welfare
- We should balance reductions against the economic cost as represented by the marginal cost of abatement
- Moreover, no guarantee of specific emission reductions with cap and trade

Carbon Tax or Cap & Trade?

- Differences can be overstated
- Hybrid schemes mix attributes of both approaches
 - Safety Valve
 - Cap & Trade cum Carbon Fee
- Either approach preferred to a partial regulatory approach
- International harmonization possible with either approach

Summary

- Carbon pricing an efficient policy instrument to reduce greenhouse gas emissions
 - Cap and trade system
 - Carbon tax
- Carbon pricing more efficient than regulatory approaches
- Significant reductions in emissions depends importantly on new technologies
 - Carbon capture and storage
 - Second generation biofuels
 - Other technologies?

Summary

- Carbon pricing is regressive
- Regressivity can be undone through well-designed rebate of carbon revenue
- Precedents suggest that many if not all permits will be given away
 - And given to the wrong groups
 - Giving \$80 - \$150 billion annually to special interest groups to purchase their support is bad public policy
- If cap & trade is chosen instrument, distributional and revenue neutrality with full auctioning should be a guiding principle

Questions and More Information?

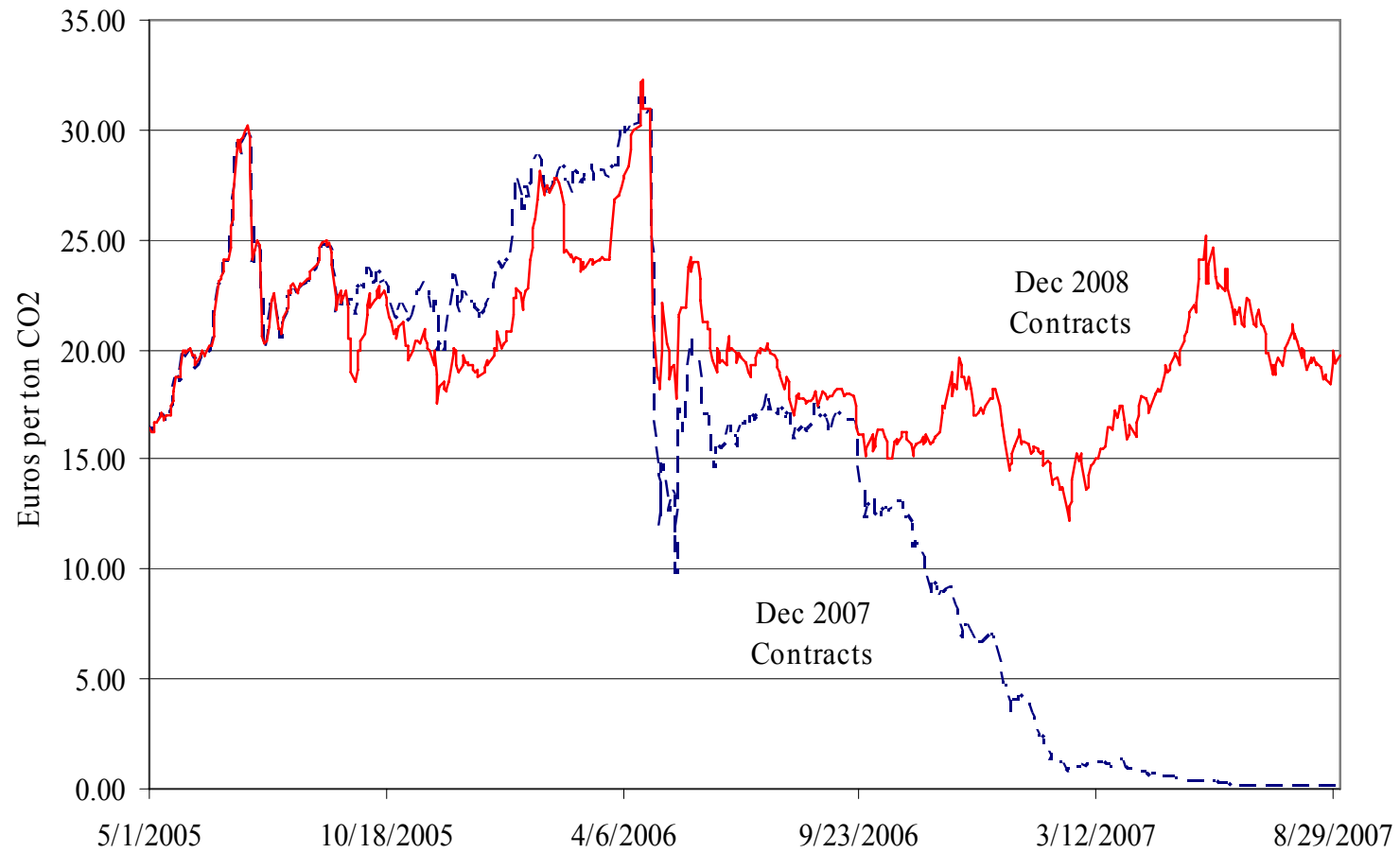
- A Proposal For a U.S. Carbon Tax Swap

http://www.brookings.edu/papers/2007/10carbontax_metcalf.aspx

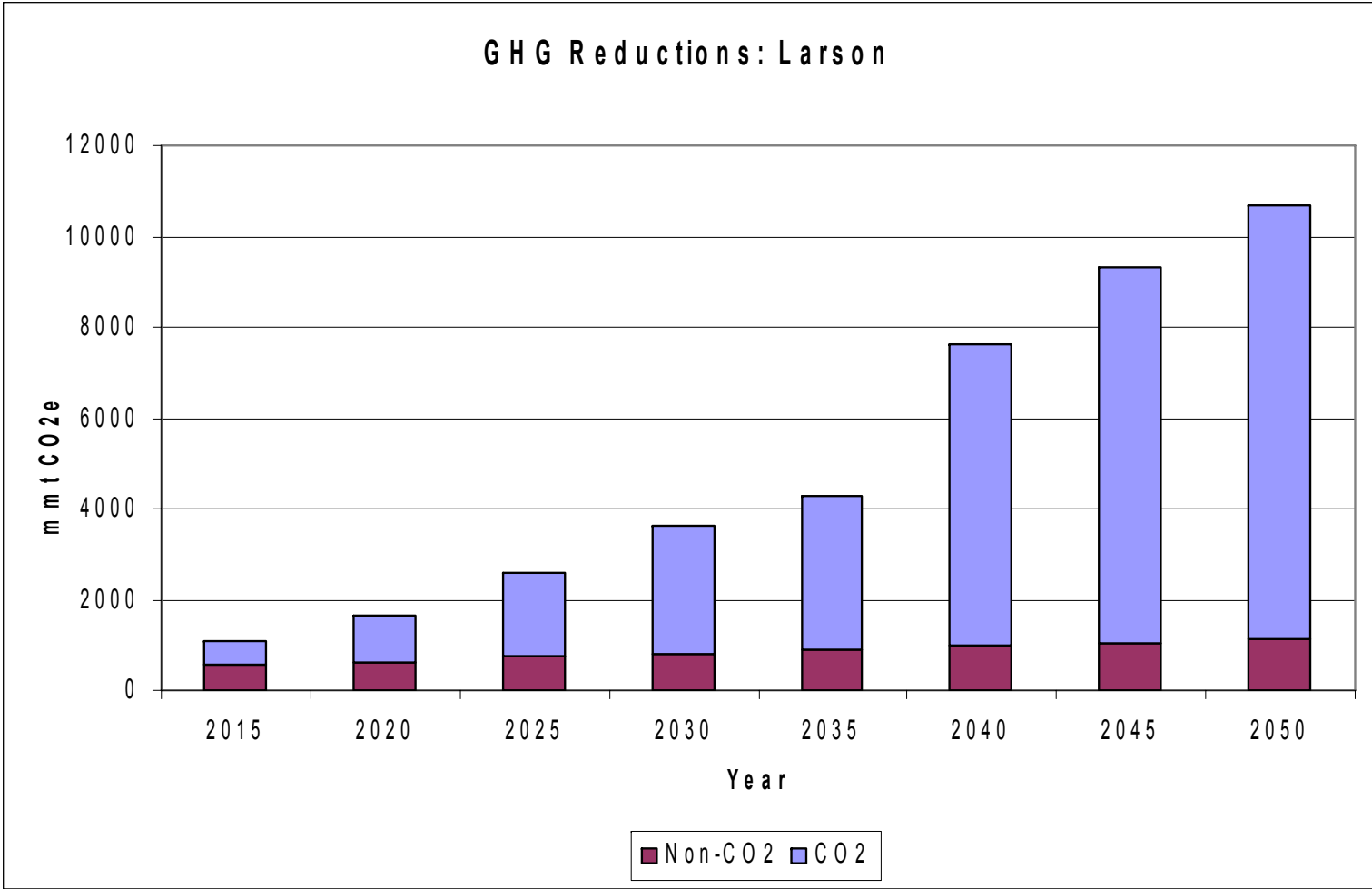
- gmetcalf@tufts.edu



ECX Futures Contracts Settlement Prices



Source: European Climate Exchange



Metcalf et al. (forthcoming)

