

Carbon Taxes, Tax Reform, and Deficit Reduction

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Background

- The projected U.S. federal budget deficit and corresponding growth in the national debt are well above levels that are sustainable in the long run
- Many other nation's fiscal situations are similarly unsustainable
- The world also faces the challenge of reducing carbon emissions in order to mitigate global climate change
- A carbon tax has the potential to address both of these problems

Goals of This Project

- Assess the effects of different uses for revenue from a carbon tax
 - revenue-neutral tax swaps
 - deficit reduction

- Look both at efficiency and distributional implications

Model Overview

We build a new model with three key features:

- 1) An overlapping-generations structure, similar to Auerbach & Kotlikoff (1987)
- 2) Multi-sector production, with particular focus on energy sectors
- 3) Fiscal structure includes taxes, government spending and transfers, and budget deficit/surplus

Model Overview: Overlapping Generations

The overlapping generations structure provides three advantages:

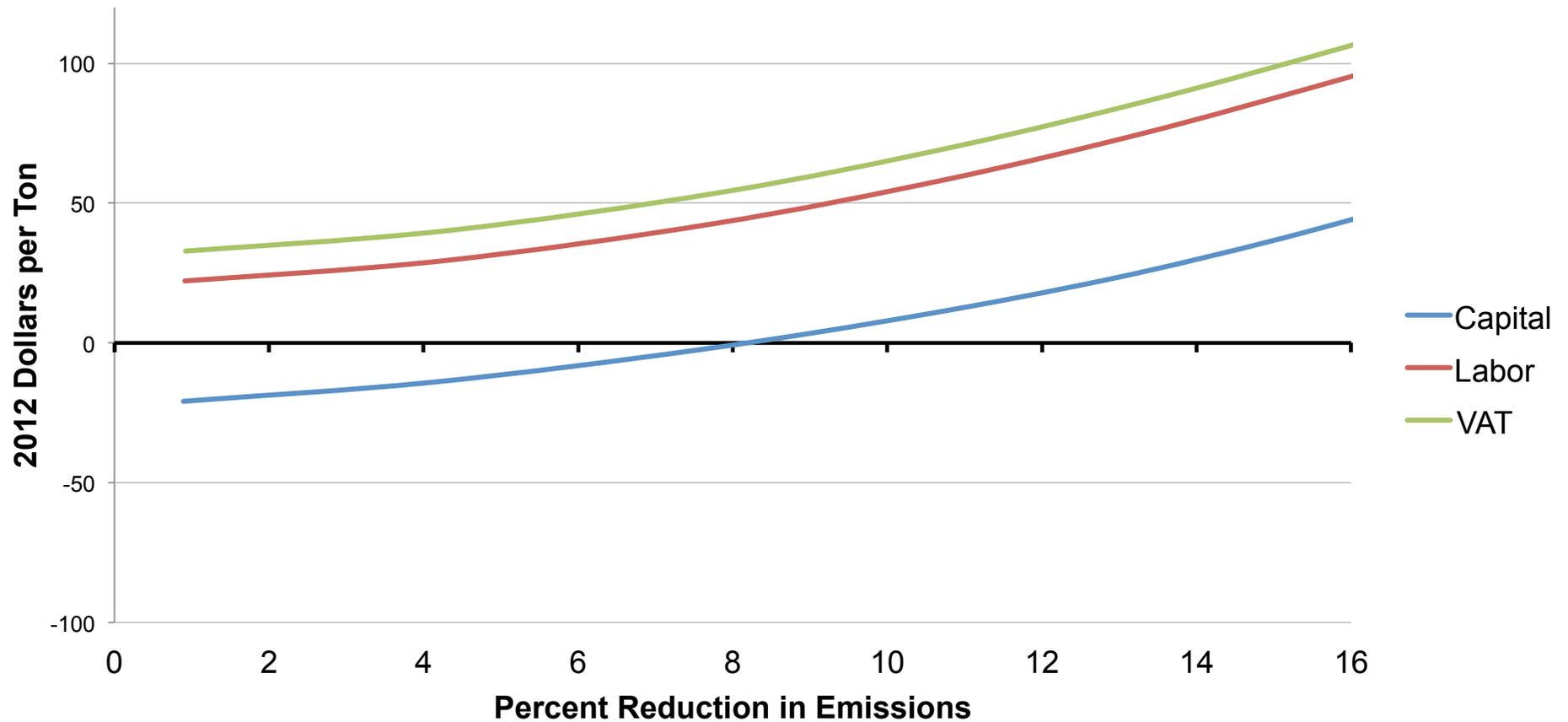
- 1) The model doesn't exhibit full Ricardian equivalence, so deficits matter.
- 2) Unlike in an infinitely-lived-agent model, the elasticity of capital supply is finite.
- 3) We can look at distributional effects across generations.

Revenue-Neutral Tax Swaps

- All policy changes announced in 2015, begin immediately, permanent thereafter
- Introduce carbon tax
- Offsetting cut in capital, labor, or consumption tax rate, or lump-sum transfer
- Real government transfers, spending, revenue, and deficits held constant

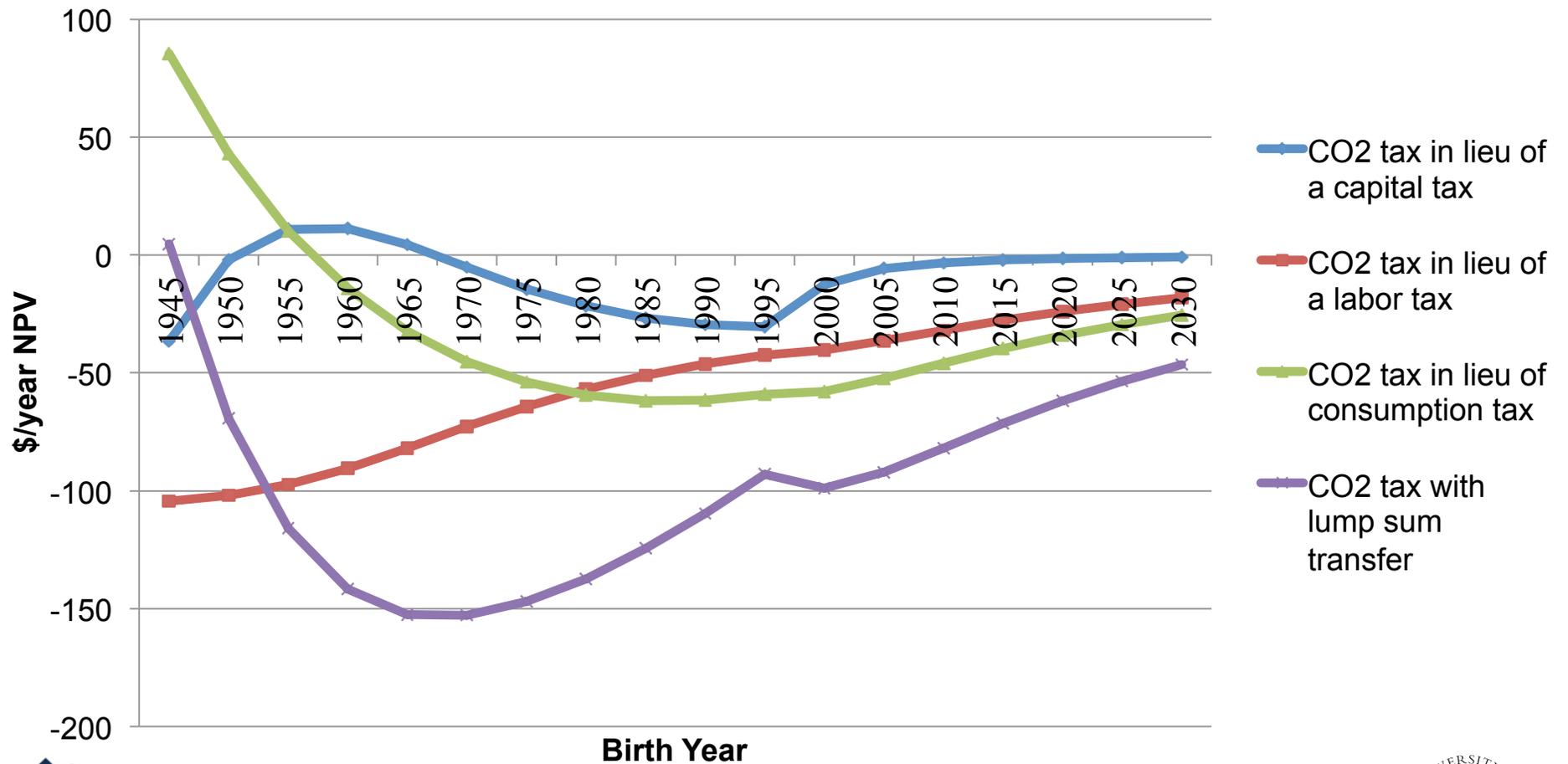
Marginal Cost of CO₂ Abatement

Marginal Cost Per Ton of Carbon Abated: Revenue-Neutral Swap



Intergenerational Effects

Intergenerational Effects of a revenue-neutral \$30 CO₂ tax, by birth year

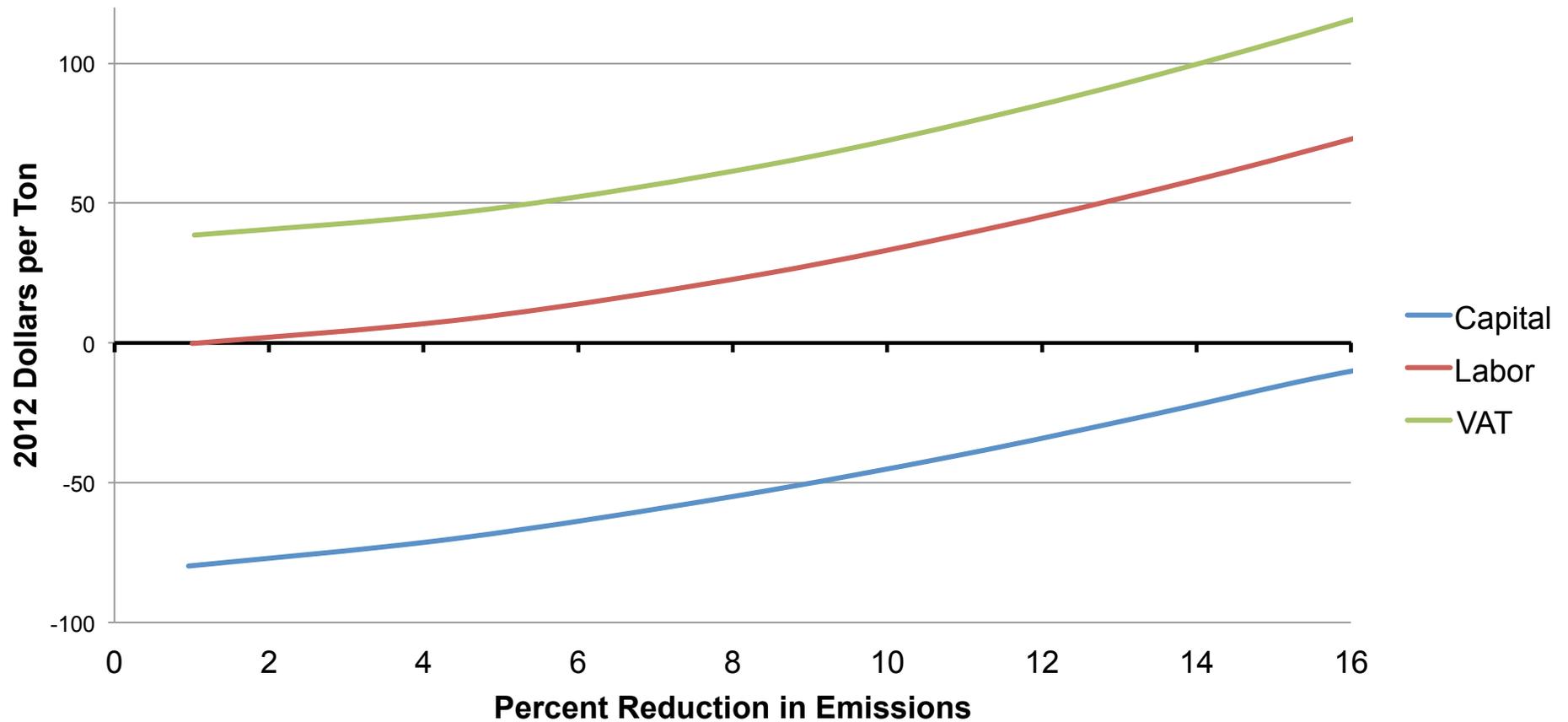


Deficit-Reduction: Now vs. Later

- CO₂ tax starting in 2015, revenue used for deficit reduction
- Starting in 2035 years, debt must be put on a sustainable path (eventually converging to 60% debt/GDP ratio), using 50/50 mix of tax cuts and spending increases
- Using carbon tax revenue for deficit reduction now means a smaller tax increase in 20 years
- Still a tax swap: carbon tax now vs. other tax later

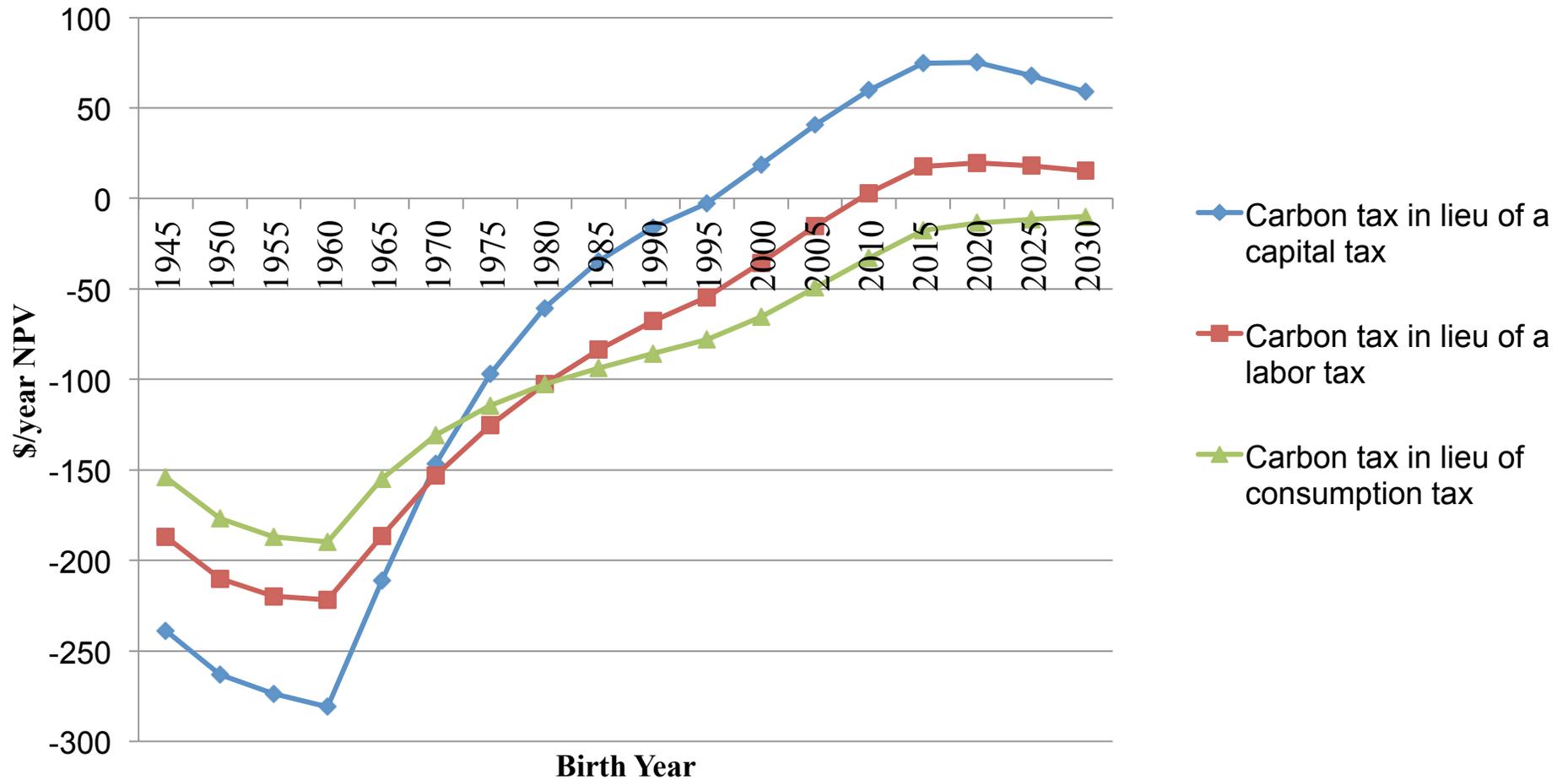
Abatement Costs

**Marginal Cost Per Ton of Carbon Abated:
Deficit Reduction Now vs. Later**



Intergenerational Effects

Net cost of policies by birth year (\$/year NPV) with a \$30 per ton CO2 tax



Conclusions

- Overall cost and distribution of that cost vary significantly based on how carbon tax revenues are used
- For revenue-neutral swaps, most efficient option uses carbon tax revenue to cut taxes on capital (but this is regressive)
- Using revenue for deficit reduction is even more efficient (strong double dividend)
- Intergenerational distributional effects are important – and pose a serious problem for linking carbon tax to deficit reduction