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Revenue-Neutral Carbon Tax: Design Issues

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Background

- American Clean Energy and Security (ACES) Act passed by the House of Representatives on June 26, 2009; was not voted on in the Senate
- In the 113th Congress, seven carbon-pricing proposals have been introduced or released in draft form

  - Six would establish a tax; one would establish a cap-and-trade program

- Since ACES Act, several regulatory measures aimed at reducing GHG emissions have been proposed or finalized

Regulatory Measures Finalized or Proposed Since 2009

- CAFE standards for 2012-2016 vehicles finalized April 1, 2010
  - Raise average fuel economy for new vehicle fleet to 34.1 mpg in 2016
- CAFE standards for 2017-2025 vehicles finalized August 28, 2012
  - Reduce GHG emissions to 163 grams per mile and raise average fuel economy for new vehicle fleet to 49.6 mpg in 2025 (54.5 mpg if GHG limit met by solely by improved fuel economy)
- Clean Power Plan (CPP) for electricity generators proposed on June 18, 2014
  - Projected to reduce emissions from power sector by 30 percent relative to 2005 levels by 2030
  - Sets state-specific rate-based goals based on building blocks: more efficient coal boilers, increased use of natural gas, more clean energy, more efficient use of energy
  - Allows states flexibility in how to meet those goals
- State emission-reducing programs, such as California's cap-and-trade program and increasing use of renewable portfolio standards

Design Issues and Considerations for a Carbon Tax:

- How would the tax interact with existing regulations and state programs?
- What would be the initial level of tax, and how fast would it rise?
- How much revenue would it raise?
- How would it effect the economy?
- How would costs be distributed across households and businesses?
- How would various uses of the revenue affect distributional outcomes and economic efficiency?

Interaction with Existing Regulations and State Programs

- Would the tax replace existing and proposed programs?
  - The CPP
  - State and regional cap-and-trade programs
  - State renewable portfolio standards
- Effects if the tax is layered on existing programs or if entities in states with existing programs were exempt from the tax
  - Marginal cost of reducing emissions would vary across states
  - Revenue would be less than if federal program superseded state programs
    - Amount of revenue reduction would be greater if entities in states with existing programs were exempt from the tax than if tax was layered on existing programs

Level of a Tax and Rate of Increase
Similarities and Differences from Cap-and-Trade Programs

- Under cap-and-trade, price of allowances and rate of increase determined by the cap and by firms' decisions about banking and borrowing allowances.
- For ACES Act, CBO estimated that the initial price of allowances would be $15 and that price would rise at 5.6 percent annually
- In contrast, policymakers would choose the initial tax and the rate of increase. Could be based on:
  - Initial tax and rate of increase expected to achieve desired emission reduction
  - Initial tax and rate of increase expected to equal marginal benefits of emission reductions
  - Other factors

Levels if Tax Set at Interagency Working Group's Estimate of Social Cost of Carbon

----------Discount Rate----------			
	5 Percent	3 Percent	2.5 Percent
SCC (2011 dollars)			
2015	12	39	61
2020	13	46	68
2025	15	50	74
2030	17	55	80
2035	20	60	85
2040	22	65	92
2045	26	70	98
2050	28	76	104
Average Rate of increase in SCC, 2015–2050	2.6	2.0	1.6

Source: Interagency Working Group on Social Cost of Carbon, United States Government, Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis - Under Executive Order 12866 (May 2013), www.whitehouse.gov/sites/default/files/omb/inforeg/social_cost_of_carbon_for_ria_2013_update.pdf

The efficient level of the tax is not necessarily equal to the SCC and depends on numerous considerations, including existing regulations, the use of the revenue, projected offsetting increases in emissions overseas, and potential co-benefits.

Revenue Potential: Example from CBO's Budget Options

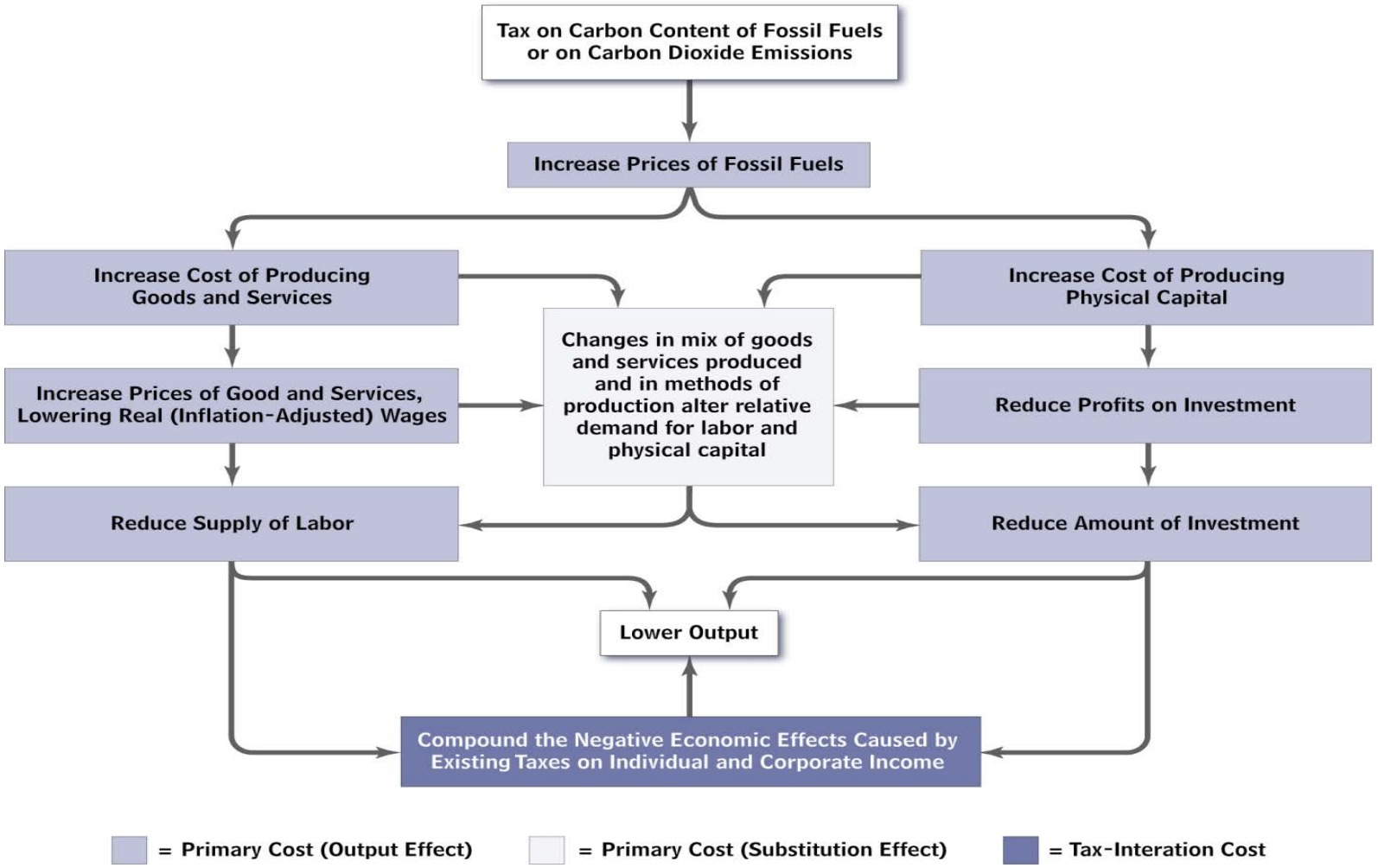
Billions of dollars

Fiscal Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2014 - 2023
Change in Revenues	63	98	100	103	107	111	114	118	121	125	1060

Sources: Staff of the Joint Committee on Taxation; Congressional Budget Office.

Based on a tax of $25 per metric ton of CO_2, which takes effect in January 2014 and rises at a real annual rate of 2 percent

Not Accounting for the Revenue, Carbon Tax Would Have Negative Economic Effects



Using Revenue to Reduce Deficits Would Offset At Least Part of the Economic Cost of the Tax

- The effects of deficits in the long run, if the economy is at its maximum sustainable level
  - Crowd out private-sector investment
  - Require rising interest payments
  - Restrict ability to use fiscal policy to respond to unexpected challenges
  - Increase the probability of a sudden fiscal crisis
- Effects if revenue was used to reduce deficits,
  - Long-term effect on output would depend on the relative size of the negative effect of the tax and the positive effect of lower deficits; CBO has not quantified those effects
  - Earlier CBO analysis found that eliminating certain tax cuts would boost output in long run
  - If the carbon tax was more costly than the changes in taxes considered in that analysis, the increase in output would be smaller, or negative

Using Revenue to Reduce Existing Marginal Tax Rates (a "Tax Swap") Would Also Lower Economic Cost

- Current taxes on individual and corporate income reduce the supply of labor and capital, lowering output
- CBO has not examined the effect of carbon tax swaps; other researchers have found variety of effects
  - Tax swaps could significantly lower the economic cost of carbon tax, but not enough to raise output
  - Tax swaps that lower tax rates on capital would increase output but ones that lower tax rates on labor would not
- Different studies reach different conclusions for several reasons
  - Details of the tax swaps examined
  - Use different measures to evaluate swaps
  - Differences among models

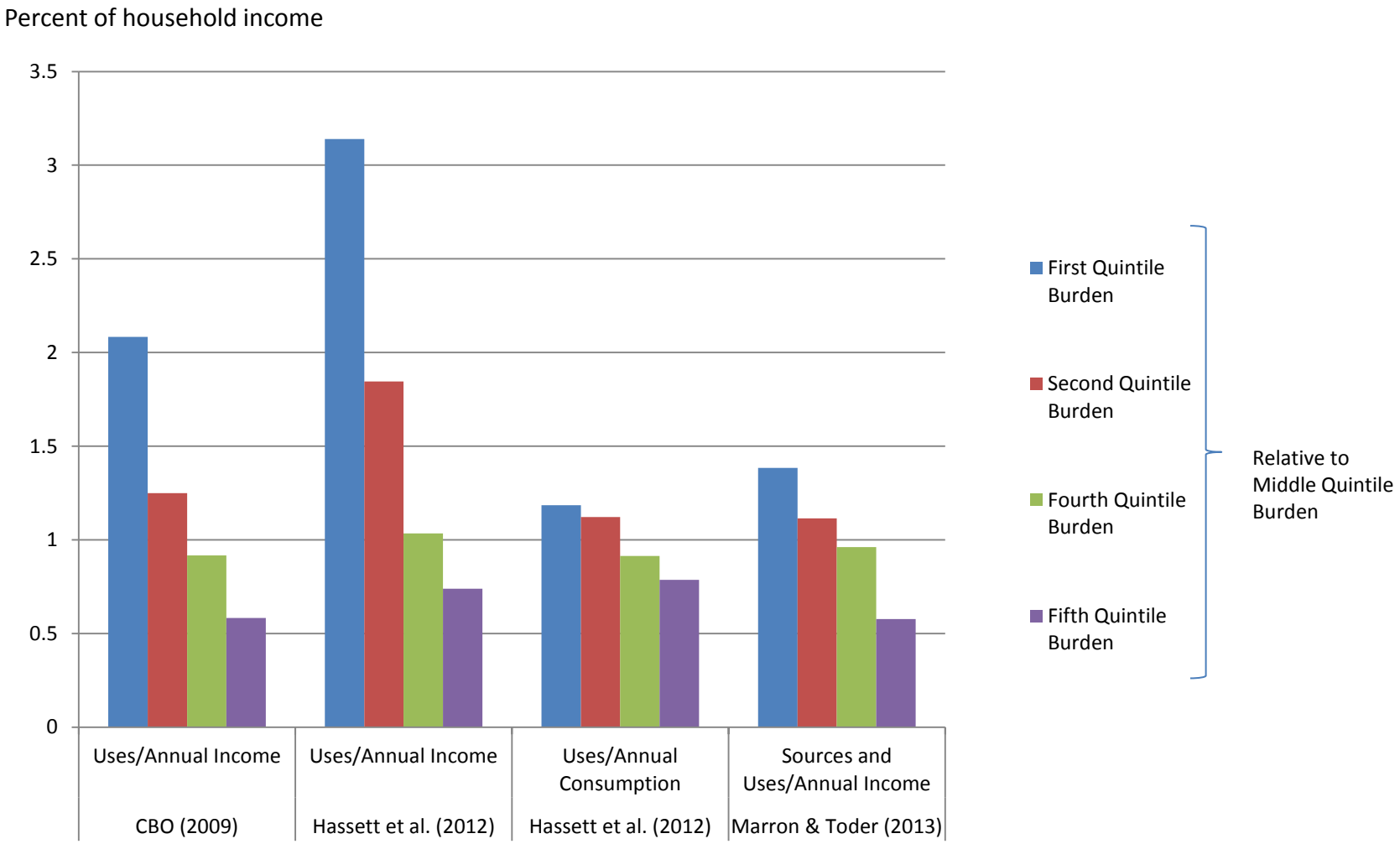
Distributional Effects of a Carbon Tax

- Effects on various households would depend on
  - How they use their income and the mix of goods and services that they consume
  - The area of the country in which they live (e.g., electricity price increases will vary)
  - The source of their income (wages, investments, transfer income)
  - The industries in which they work and invest (transitional effects)
- The ultimate effects on households would depend on how the revenue from a carbon tax was used

Researchers Have Used a Variety of Methods of Examining Distributional Effects

- Most studies primarily focus on effects caused by differences in *uses* of household income
  - Assume tax increases overall price level and changes relative prices
  - Estimate how higher prices increase the cost of purchases for households in different income groups
- Some studies examine effects caused by differences in both *sources and uses* of income:
  - Determine how the tax would affect households' income (assuming that the tax lowers wages and returns to capital)
  - Adjust households' burdens to reflect differences in consumption and changes in relative prices
- Studies rely on different measures of households' ability to absorb the tax, typically annual income or consumption

Based on a Variety of Methods, Most Studies Find a Carbon Tax Regressive (not accounting for use of revenue); Degree Varies



Ultimate distributional effects depend on how policymakers use the revenue

Questions About Potential Uses of the Revenue

- What share of low-income households would benefit from that use of the revenue?
- Would that use provide a proportionally larger benefit for lower income households (offsetting the regressivity of the tax itself)?
- Would that use entail significant administrative costs?
- Would that use reduce the aggregate economic cost of the carbon tax by encouraging people to work and invest?
- Would that use undermine incentives to reduce emissions?

Tradeoffs are likely

Selected Policy Options Demonstrate Trade-Offs

Policy Option	Percentage of Lowest Quintile Affected	Larger Benefit for Lower Income?	Significant Increase in Administrative Cost?	Increase Incentives to Work or Invest?	Reduce Incentive to Cut CO_2 Emissions?
Income Tax Credit	74	Yes	Yes*	No	No
Income Tax Rate Cut	30	No	No	Yes	No
SNAP Supplement	18	Yes	No	No	No
Increase LIHEAP	7	Yes	No	No	Yes

SNAP = Supplemental Nutrition Assistance Program

LIHEAP = Low Income Heating Assistance Program

* If fully refundable

For a more complete discussion and list of options, see Dinan (2012).

Summary

- Revenue and efficiency effects of a carbon tax could vary depending on how it interacted with existing state programs and proposed federal regulations
- A carbon tax would effect economy in complex ways; the ultimate effects would depend on how the revenue is used
- A carbon tax would affect households in many ways; no measure of distributional effects captures them all
  - Sources versus uses
  - Regional effects
  - Transitional effects
- Most studies find that the carbon tax itself is somewhat regressive, but the ultimate effect depends on use of revenue
  - Individual uses of revenue typically entail tradeoffs between competing objectives
  - Policymakers could use revenue in a combination of ways to achieve multiple objectives

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