Reducing Greenhouse-Gas Emissions: Five Lessons of Economic Analysis

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Lesson #1

To reduce greenhouse-gas emissions at the lowest social cost, the government should put a price on emissions.

Lesson #1

- Putting a price on emissions creates incentives for conservation, substitution in production, and technological innovation.

- However, other policies are an important complement to establishing a price.
  - Price signals don't always work.
  - Government has a key role to play in funding for basic research, support for adaptation, and changes in other policies related to energy (such as regulation of nuclear power).

Lesson #2

To reduce greenhouse-gas emissions at the lowest social cost, the price of emissions should rise gradually over time and should avoid unnecessary volatility.

Lesson #2

- A gradual increase in price and a price that is not too volatile over short time periods would lead to gradual reductions in emissions relative to what would otherwise occur.

- Gradual reductions are important because it takes time for research to be conducted and technology to be designed, tested, refined, and disseminated widely; time for patterns of production and consumption to change; and time for business and household capital to wear out and be replaced with different sorts of capital.

Lesson #3

To reduce greenhouse-gas emissions at the lowest social cost, the scope of emissions that are priced should be as broad as possible.

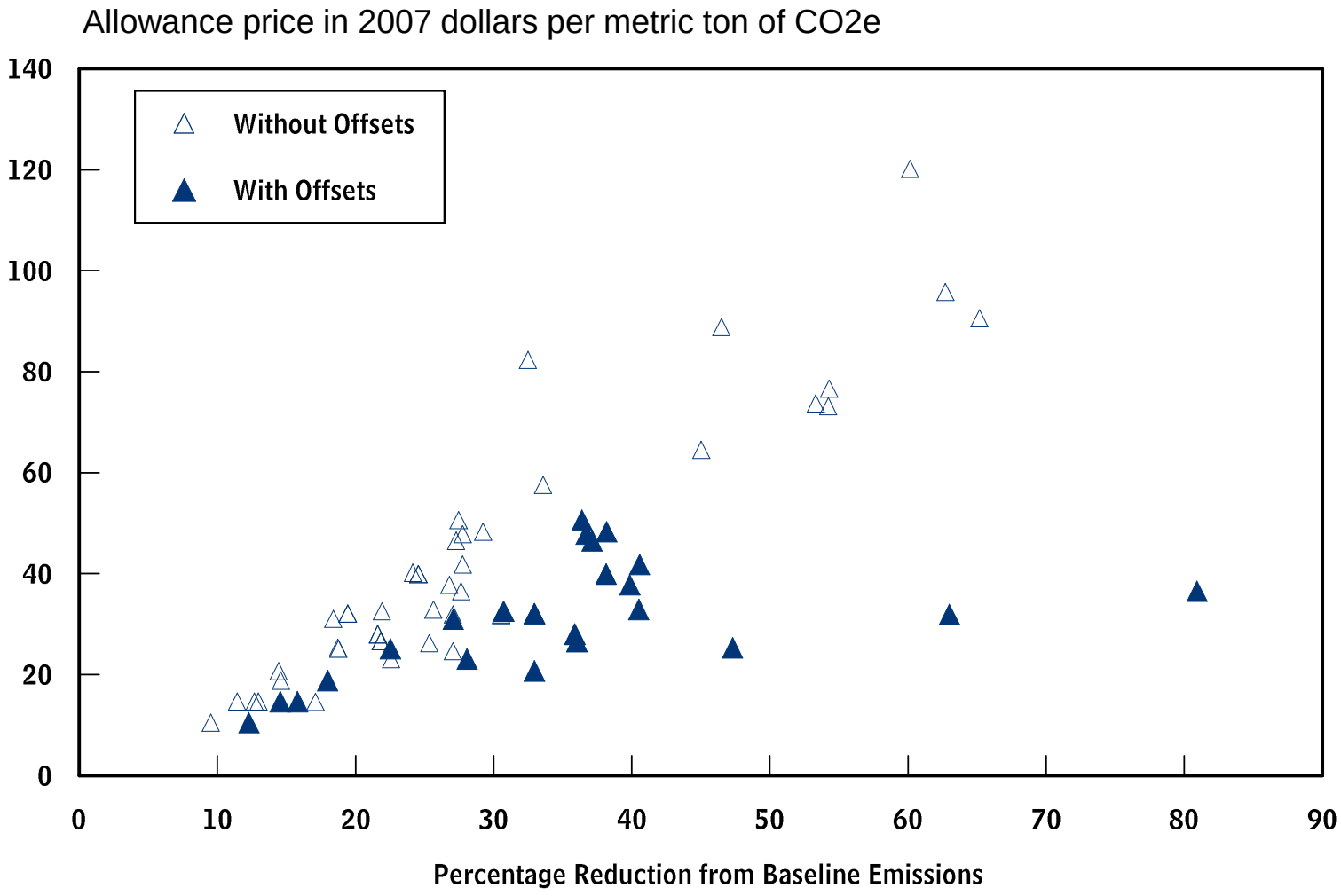
Lesson #3

- In a cap-and-trade or similar system, this issue arises in deciding whether the whole country needs to be in the same system or whether different systems can be established for different parts of the economy.

- The issue arises in considering international coordination.

- The issue arises in considering offsets, which are reductions in emissions from activities not subject to limits on emissions.

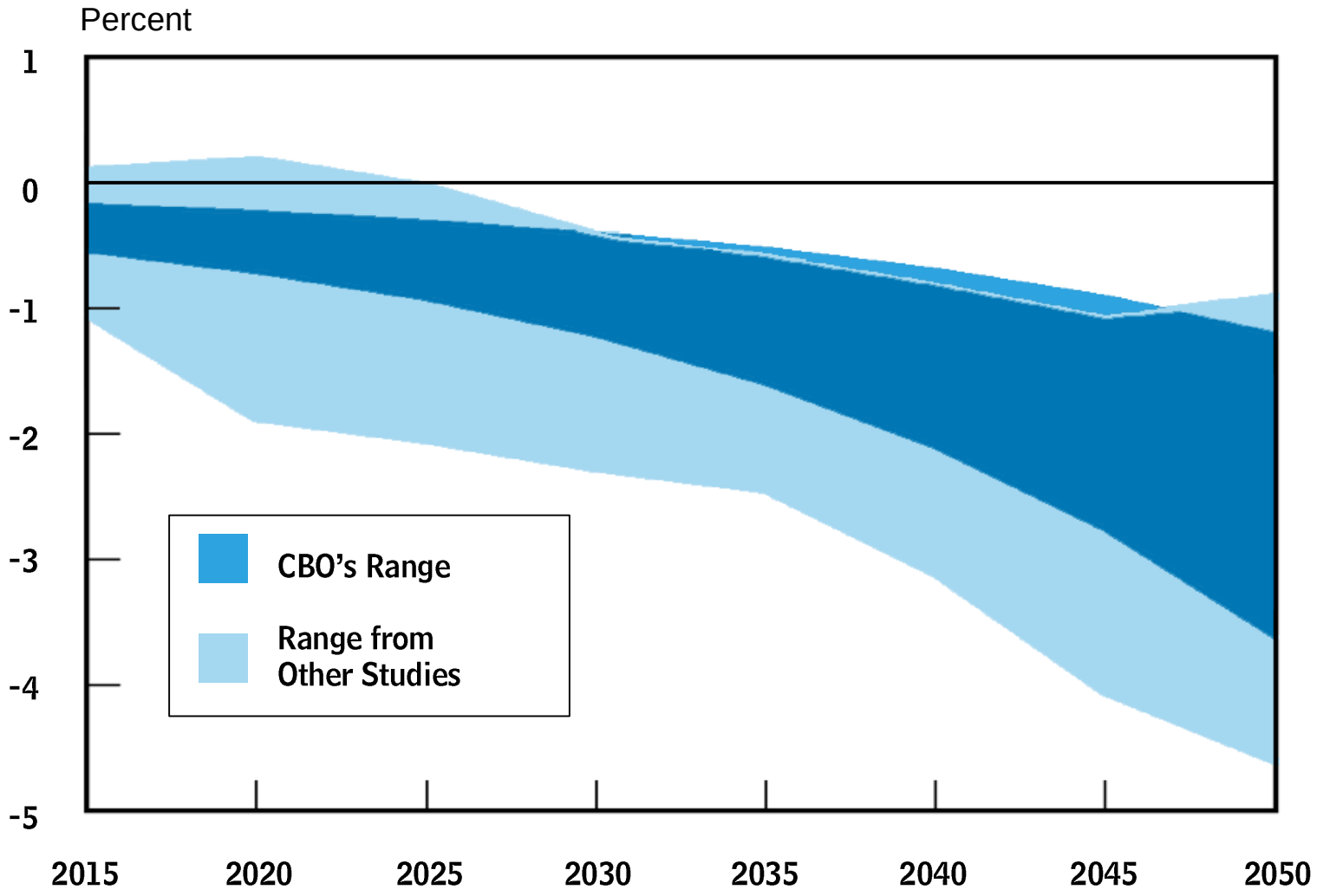
Estimates of the Costs of Reducing Greenhouse-Gas Emissions Under Cap-and-Trade Programs With and Without Offsets



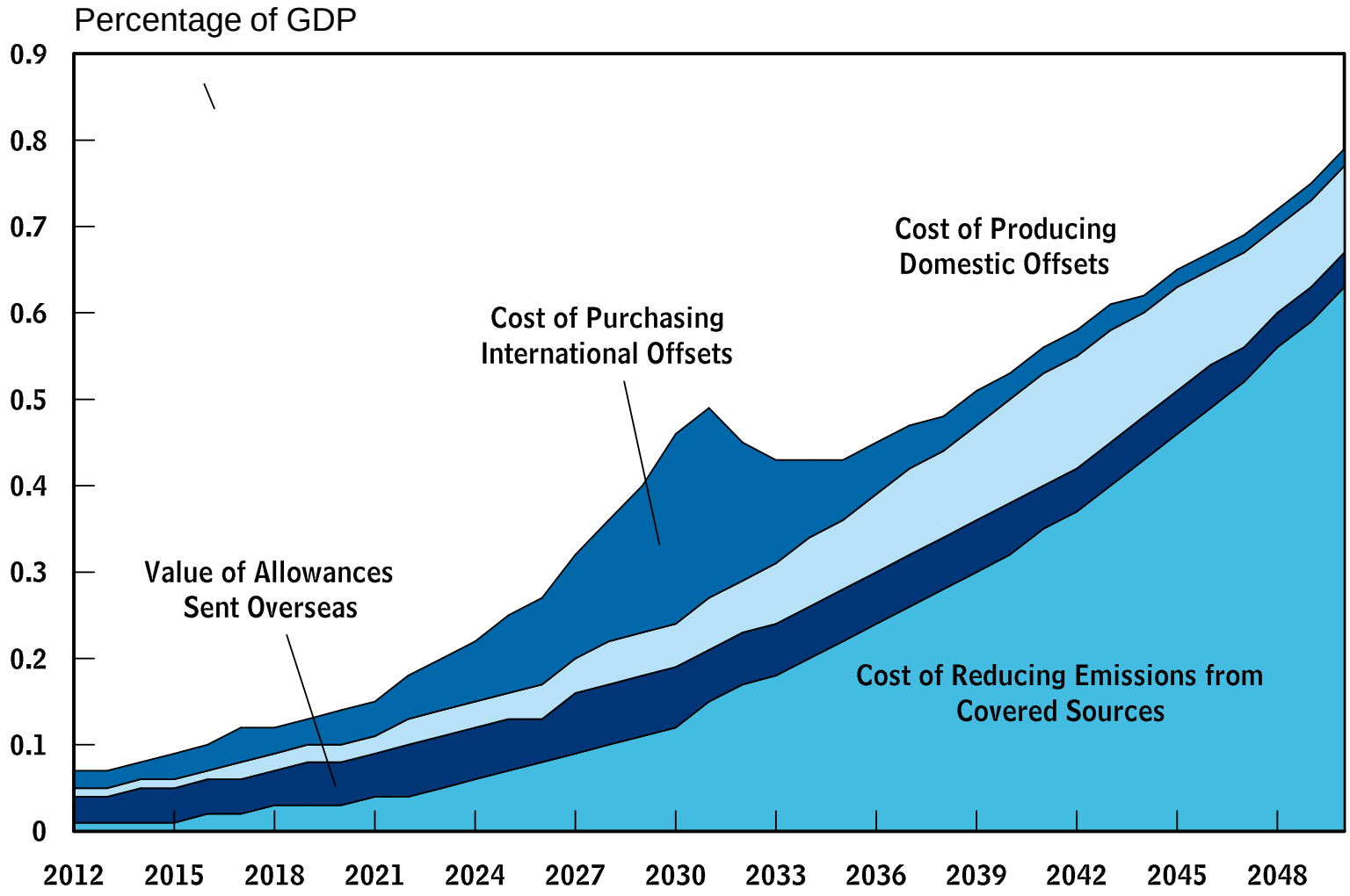
Lesson #4

An efficient system for reducing greenhouse-gas emissions would probably lower overall GDP, employment, and households' purchasing power by a modest amount relative to what would occur otherwise (and leaving aside the economic effects of slowing climate change).

Projections of the Effect on Real GDP of the American Clean Energy and Security Act of 2009



Projection of Households' Loss in Purchasing Power from the American Clean Energy and Security Act of 2009

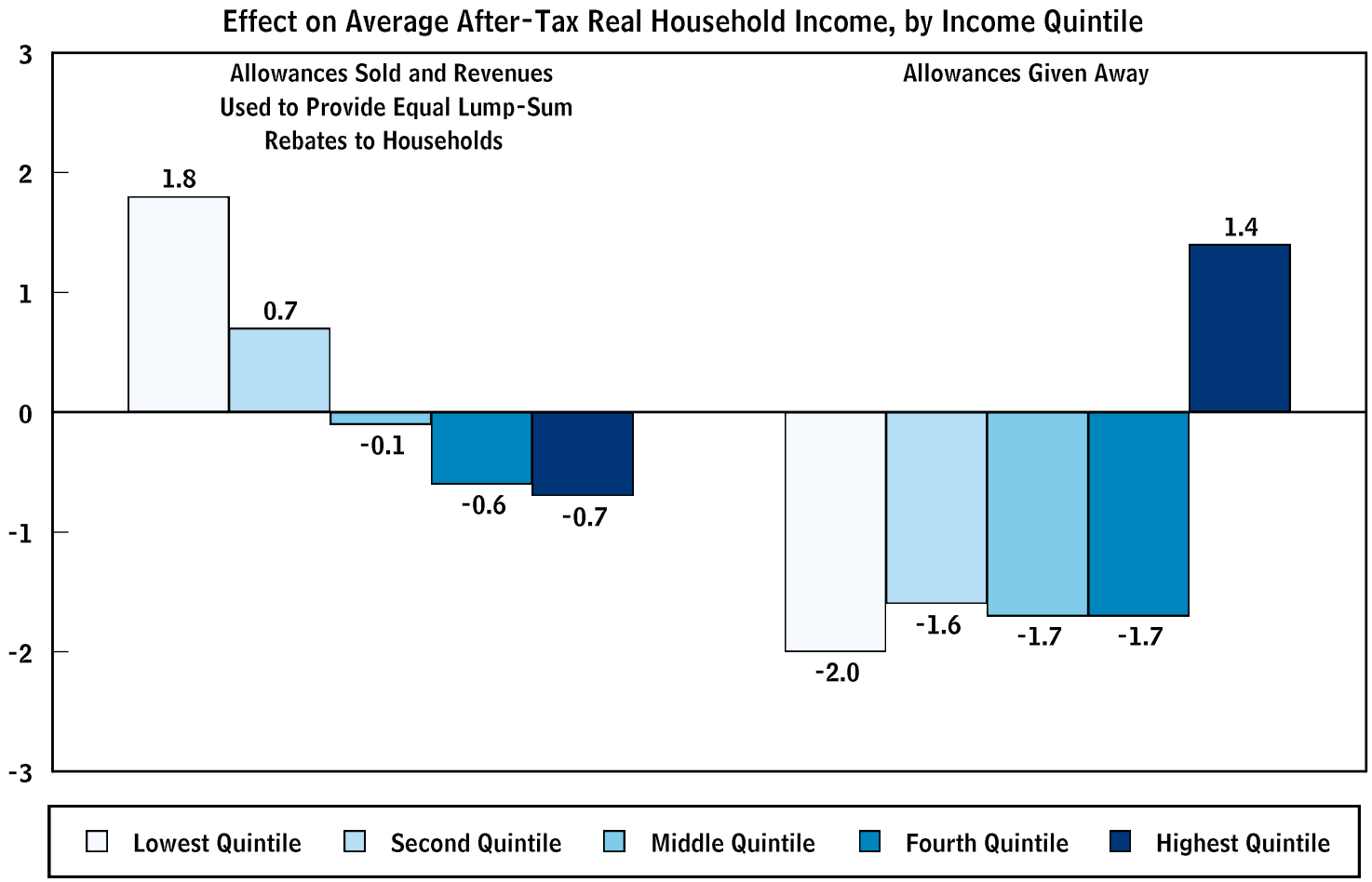


Lesson #5

The details of policies to reduce greenhouse-gas emissions have significant effects on how workers in different industries and households at different income levels are affected.

Effects of a 15 Percent Cut in Carbon Dioxide Emissions, with the Allowances' Value Used in Different Ways

Percentage Change



Lesson #5

Reducing greenhouse-gas emissions at the lowest social cost would require putting a price on a broad scope of emissions and having the price rise gradually and without unnecessary volatility.

Still, reducing greenhouse-gas emissions would probably lower overall GDP, employment, and households' purchasing power by a modest amount relative to what would occur otherwise (and leaving aside the benefits of slowing climate change). Policy design has a significant effect of how people in different circumstances would be affected.