NRDC Legislative Facts

Forecasts of the Economic Effects of Climate Change Legislation: What Can We Conclude?

A number of agencies and organizations have made forecasts of the economic impacts of the Lieberman-Warner Climate Security Act (CSA).[1] This summary provides a brief overview of what these studies tell us.

The most important finding is that, regardless of whether the study is a peer-reviewed academic or government analysis, or a non-peer reviewed industry-backed forecast, one prediction is the same: per capita household income (as measured by per capita gross domestic product, or GDP) will not decrease from today's levels. In fact, *all of the projections forecast robust economic growth*, despite the limits on global warming pollution contained in the CSA. The most pessimistic GDP projection, from the Energy Information Administration (EIA), predicts GDP increasing by about 57 percent between 2011 and 2030. The business-as-usual projection for this study is growth of 57.26 percent.

The studies do, however, differ in a very crucial way with respect to how they present their results: some give the impression that average household income will decrease from today's level (generally, these are the industry-backed studies), while others are careful to present their estimate more accurately as how much *less* a household's income is likely to *grow* as a result of the CSA. Estimates largely center on a 1 percent reduction in GDP growth by 2030.

Equally critical is the fact that *none* of the cost analyses compare their forecasted reduction in GDP growth with any *savings* expected from reducing the impacts of climate change, such as those associated with reducing extreme weather events, drought, rising sea levels, and increased energy costs. They also exclude other ancillary benefits, such as reducing dependence on oil imports and reducing non-CO_2 pollutants caused by the burning of fossil fuels.

A recent study for NRDC by Tufts University economists estimates that four impacts alone—more violent weather, increased drought, rising sea levels, and increased electricity costs—will reach more than 1.1 percent of GDP in 2025, costs that will accelerate rapidly in later years.[2] Lost lives, species, and entire ecosystems are excluded from this calculation, and would swamp this result. In addition, the benefits of reducing ancillary pollutants would be quite large: a retrospective study by the Environmental Protection Agency valued pollution reduction achieved by the Clean Air Act at $1.5 trillion dollars per year, a number that also excluded many health and environmental benefits that could not be quantified.[3] By comparison, current annual GDP is almost $12 trillion. If one considers all of the costs of *inaction*, its clear that doing nothing is by far the worse-case scenario.

All of the cost analyses predict continued economic growth, and ignore benefits, but it is still important to examine what drives the smaller versus larger estimates. **Higher cost forecasts do not model critical provisions in the Energy Independence and Security Act of 2007 (EISA) and CSA, and make arguments that contradict more than 30 years of experience with environmental regulations.** In contrast, the lowest estimates have the most extensive accounting for EISA and CSA provisions, and make assumptions that are consistent with the historical record.[4]

In reviewing the cost estimates predicted from regulating sulfur dioxide (SO_2) under the Clean Air Act, the Congressional Research Service (CRS) noted that *all* estimates (by government and industry alike) were significantly higher than the program's actual costs, and were "essentially the product of models' failure both to fully incorporate the flexibility that a cap-and-trade program provided participants and to employ sufficient imagination to explore the potential for technological breakthroughs and enhancements."[5] The high-end cost estimates for CO_2 regulation are *worse*: they fail to account for numerous provisions in EISA and CSA that augment technological innovation, a feature that did not accompany SO_2 regulation.

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Macroeconomic forecasts that generate higher cost estimates contain the following kinds of assumptions:

- **High-cost studies assume low-carbon alternative energy sources will not advance,** such as carbon capture and sequestration (CCS), renewables, or energy efficiency, despite dramatic increases in research and development (R&D) spending, more stringent fuel economy standards (CAFE) for passenger cars and light trucks, higher efficiency standards for appliances and lighting, higher efficiency requirements for government buildings, requirements for reduced carbon content of fuels, increased funding for energy efficiency programs, and expanded rebates and incentives to consumers for purchasing low-carbon sources of energy and more efficient appliances. To give just one illustration of the importance of these provisions, during its first 10 years of implementation the CSA would invest $13 billion to help domestic vehicle manufacturers retool their facilities to build advanced technology vehicles.[6] In comparison, the Department of Energy currently spends between $200 and $400 million dollars per year on advanced vehicle and hydrogen fuel R&D.

- **High-cost studies ignore the jobs that will be retained and created in producing and installing low-carbon technologies,** despite the provisions in EISA and CSA discussed above. Again, history serves as a guide: prior to SO_2 regulation, millions of lost jobs were forecasted by industry that never materialized.

- **High-cost studies assume energy efficiency measures that are currently cost-competitive with fossil fuels will not be increasingly adopted,** despite the provisions in EISA and CSA discussed above. This assumption is based on the premise that consumers, firms, and the government are currently using all cost-effective energy efficiency measures, i.e., there is no waste in energy consumption patterns. But experts in energy efficiency find significant opportunities for energy efficiency improvements that are not now widely used due to various market barriers. A recent report by McKinsey & Company, supported by several major energy companies and others, found that almost 40 percent of the abatement required by 2030 could be achieved at "'negative' marginal cost."

- **High-cost studies assume firms have very little flexibility in finding ways to reduce emissions.** Compared to the SO_2 trading program, which proved highly flexible in meeting its reduction target *without* special provisions increasing firms' compliance options, CO_2 regulation gives firms numerous ways to satisfy their requirements, such as international trading, offsets, and borrowing. Further, because so many more sectors are covered under CO_2 regulation than was the case for SO_2 regulation, the possibilities for creativity are likely to be substantially higher in a CO_2 trading program.

- **High-cost studies assume rising energy costs will put U.S. products at a competitive disadvantage relative to other countries' goods, causing U.S. firms to suffer losses,** despite the following: 1) there are generous provisions in the bill to offset higher costs in energy-intensive industries; and 2) With the exception of a handful of industries, for more than 30 years economists have found no evidence of firms moving to developing countries for their weaker environmental regulations. The explanation is simple: labor cost differences overwhelm any potential regulatory cost differences for nearly all firms. For example, labor accounts for roughly 70 percent of production costs in the United States, sometimes dwarfing wages in China by a factor of 20 to 1.

In conclusion, macroeconomic cost analyses of CSA suggest that climate change regulation can be enacted at little cost. Even the most pessimistic studies predict only modest decreases in GDP *growth* (as opposed to decreases in current GDP levels), and all the studies exclude the costs of inaction, which will likely greatly exceed these costs. Further, when provisions in recently enacted legislation (EISA) and the proposed CSA are included in cost analyses, reductions in GDP growth are almost imperceptible. The CRS echoed our concerns: "models used to project GHG reduction costs are deficient in treating technology change [and will likely be] a major source of error that will only become cognizable as the future unfolds."[7]

[1] These studies have analyzed S.2191 as reported by the Environment and Public Works Committee. Although there are some important differences between this bill and the Boxer-Lieberman-Warner substitute amendment released on May 21st, these differences are not likely to significantly alter the conclusions of these studies.

[2] Ackerman, Frank A., and Elizabeth A. Stanton, Climate Change and the U.S. Economy: The Costs of Inaction, March 2009, http://www.nrdc.org/globalwarming/cost/contents.asp. Calculations for 2030 are not available.

[3] U.S. Environmental Protection Agency (EPA), Benefits and Costs of the Clean Air Act, October 1997, http://www.epa.gov/oar/sect812/1970-1990/812exec2.pdf, p. ES-8. This number is EPA's central estimate of $22 trillion, adjusted to 2008 dollars, and divided by 20 years, the time frame of the retrospective analysis.

[4] See "Cutting Global Warming at Low Cost with the Lieberman-Warner Climate Security Act" http://www.nrdc.org/legislation/factsheets/leg_08051401A.pdf; and "New Department of Energy Study Shows Limit on Global Warming Pollution Compatible With Robust Economic Growth," http://www.nrdc.org/media/2008/080430.asp.

[5] Congressional Research Service (CRS), Climate Change: Costs and Benefits of S.2191, May 15, 2008, p.11.

[6] For a more complete description of the technology provisions in the CSA see "The Climate Security Act is an Investment in America's Clean and Independent Energy Future," http://www.nrdc.org/legislation/factsheets/leg_08052701A.pdf.

[7] Ibid, CRS, p. 44.

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