



Why Cap and Trade Doesn't Work

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Many people, including many highly trained economists, seem to think the economics of decarbonizing the U.S. economy are simple and straightforward. Reduce the use of fossil fuels for producing goods and services by imposing taxes equal to the estimated economic cost of the CO₂ emissions generated by their production. Increase the production and use of power from wind and solar by subsidizing power from these sources.

The actual impacts of such taxes and subsidies are not this simple. Consider first the tax side. A carbon tax is intended to increase prices of goods or services whose production generates CO₂ emissions, lowering demand and ultimately production and emissions. But in the U.S., demand for many carbon-intensive things — such as gasoline for automobiles and electricity for heating and cooling — is highly inelastic. This means higher prices don't significantly reduce the number of miles that people drive or how much electricity they use. What higher prices for carbon intensive goods and services will almost certainly do is to severely punish poor and middle class households with higher costs for life's necessities — like driving to work and heating the house, leaving less money for truly discretionary spending.

If carbon taxes do more than this, and actually reduce CO₂ emissions, then they actually may succeed too well. A major justification for carbon taxes is that the revenues from such taxes can be used to lower other taxes that distort incentives while allowing funding of public services to remain unaffected. But as the history of state cigarette taxes — used to fund public schools — shows, once governments become dependent on a tax source, their incentive is to increase the tax level to get more funding, even if the data show that this increase may not be achieving its ostensible aim.

Indeed, if CO₂ emissions did not fall or even increased — as would happen if by some miracle the future U.S. economy somehow escaped its Obama-era no growth doldrums — the pressure to increase carbon taxes would be enormous. But if producers of coal, oil, and natural gas and other carbon intensive goods and services were to expect higher future carbon taxes, and hence lower

future revenues, then they would have an incentive to produce as much as possible now. In this way, the imposition of a carbon tax could very plausibly increase current CO₂ emissions.

The flip side of this coin consists of subsidies for or mandated use of renewable energy sources of electric power. These are ostensibly designed to create incentives for a long-term transition toward renewables and away from fossil fuel energy sources. As experience in Germany has shown, however, subsidies for wind and solar not only punish consumers with massive increases in electricity prices, but perversely can ultimately require subsidies for thermal, fossil fuel-fired power plants.

The economics behind this is illuminated by an excellent recent report by the Swiss firm Finadvice. In Germany, producers of electricity from renewable energy sources get fixed price subsidies for power produced called Feed-In Tariffs (FIT's). Costing more than \$412 billion to date, and estimated (by former German Minister of the Environment Peter Altmeier) to end up costing \$884 billion by 2022, the German FIT has been so high that it has doubled household electricity prices in Germany since 2000, with taxes and charges (subsidies) increasing from 25 percent of total price in 1998 to 40 percent in 2012.

Logically enough, the German FIT has also induced massive increases in solar and wind power production capacity. To utilize all the new renewable power, the German power grid operators are in the process of spending up to an additional \$40 billion on a new national transmission line network. But this cost (also to be paid by electricity consumers) is actually much less a problem than is the impact of subsidized solar and wind power on power markets.

When available, solar and wind power have zero variable cost to produce (as there is no fuel cost). With a guaranteed, high FIT and no variable cost, solar and wind producers flood the market with cheap power when they have it, lowering prices paid to power producers. Wind and solar producers can sell power at such low prices and stay in business because the government has paid all or most of their fixed costs.

But wind and solar power is, to stress again, only intermittently available. Indeed, in Germany, at most, wind and solar supply about one-third of average daily power consumption. To ensure a steady electric power supply, the Germans rely for backup power production on old style, thermal plants powered with coal. But these old style, fossil-fueled thermal plants cannot realize economies of scale when they are being used as backup. Their average costs go up when they are used less often. With thermal power average costs going up but renewable driven prices plummeting, the Germans face the prospect of having to subsidize old style coal burning plants in order to ensure that they survive in order to cover the two-thirds of power demand that wind and solar leave unmet.

Apparently surprised by the massive increase in solar and wind power capacity induced by the high FIT, in 2012, the German government announced that in the future, the FIT will fall and a cap will be imposed on overall power production under the FIT program. Given the long

lifetimes of power plants, if developers believe that this policy is credible, then they have every incentive to build even more capacity today, before the FIT goes down and the capacity cap is imposed. This would actually increase the need to subsidize backup coal power production.

Whether one is considering carbon taxes or renewable energy subsidies, the impact of such a policy is almost surely to increase prices for the basic energy and transportation necessities of life, harming especially the poor and middle class. If, as in Germany, renewables subsidies require subsidies for coal-burning power plants, and if, as economics predicts, expectations of a permanent and rising carbon tax generate increases in present day CO₂ emissions, then where will be the environmental benefits to justify the enormous burden put on poor and middle class households? It would seem that the case for carbon taxes and renewables subsidies is not so simple after all.

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