Comments on Auction vs. Allocation of CO2 Allowances

October 14, 2004

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Background: Allocation vs. Auction

- **Experience to-date:** US SO2 and NOx programs, EU CO2 trading
- ***Counterintuitive notion:*** *GHG reduction program* ***increases*** *profits and asset values for electric companies*
  - Electricity revenues (prices or rates) projected by RFF to rise more than compliance costs for electric generators
  - Only small allowance allocation needed, with remainder auctioned (or withheld) with proceeds to consumers or government

… is there a free lunch ?

Is the Lunch Free?…Auction vs. Allocation: What is the Debate?

- **Premises of auction rationale:**

1) *Improves economy's efficiency – "auction" funds marginal tax cuts or other "efficient" redistribution---BUT this has rarely happened in practice, usually the opposite*
2) *CO2 allowances = assets with large value, if allocated gratis, provides big windfall*
3) *'Excess' profits associated with historical allocation because value of allowances included in electricity prices and exceeds compliance costs*

Premise # 2: CO2 Allowances Provide Big Windfall

- Large CO2 asset value is **gross** asset value not **net** asset value
- Net asset value = Assets minus **Liabilities**
  - Example: Company emits 100 tons annually. Allocated 90 tons of allowances as assets (10% reduction). Company still has a liability of surrendering 100 tons at year-end. Thus, **net** assets are **negative**.

Bottom-line: Allocation doesn't create a windfall because of the liability of complying with the CO2 cap.

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Premise # 3: Excess Profits

- **Prediction of electricity prices has been notoriously inaccurate – electricity price/profit modeling of auction vs. allocation issue tends to ignore many key issues:**

1) Difficulties of cost pass-through in “real-world” regulated and quasi-deregulated markets
2) Electric power pricing model problems:
   - Long-run cost vs. real-world behavior
   - Capacity and ancillary service markets
3) Effects of risk, volatility, and compliance behavior in deregulated markets
4) Distributional issues

Issue # 1: Cost Pass-through in "Real-World" Regulated and Quasi-Deregulated Markets

- **Most of US power still regulated:**
  - Regulated price (P) set no higher than average cost (AC)
  - Regulatory lag, disallowances often mean P<AC
  - Profits and net asset values tend to **decline** not increase
  - Auction will tend to increase disallowances, regulatory lag, etc., and **reduce profits and asset values further**

- **Many 'deregulated' markets subject to provider-of-last-resort requirements, often with rate freezes/caps:**
  - With rate freezes, integrated utilities unable to recover incremental compliance costs
  - In deregulated markets, wholesale price caps limit cost recovery in some hours

Issue # 2: Projecting Deregulated Prices – Long-Run Cost vs. Real-World Behavior

- RFF and other economic models assume long-run marginal cost pricing:
  - BUT power prices in the wholesale markets are usually set by short run marginal costs, and in tight markets by very high values reflecting scarcity, ***the "commodity cycle"***
- Other problems inherent in many economic models include simplistic aggregated regional dispatch, no electrical transmission representation or constraints, non-chronological dispatch, etc.

Issue # 2: Projecting Deregulated Prices – Capacity and Ancillary Service Markets

- Electricity price models sometimes ignore capacity and ancillary service markets
- In addition to hourly electricity prices, a major part of generator revenues are derived from:
  - Installed capacity or ICAP
  - Ancillary service markets (such as spinning reserves and non-spinning reserves)
- A CO2 constraint that raises energy prices will also encourage additional market entrants. Greater supply will lower the prices received for capacity or ICAP as well as ancillary services. Thus, models that focus on hourly electricity spot prices may overstate profits.

Issue # 3: Effects of Risk, Volatility, and Compliance Behavior in Deregulated Markets

- Significant US or regional GHG program would increase power price volatility, means higher "risk-adjusted" returns needed for investment
- "Auction" involves more allowance purchases and sales, and hence exposure to more volatility and risk. Thus, lower risk-adjusted returns and higher cost of capital.
- Likely compliance behavior build more gas capacity, idle but not retire inefficient oil and coal
  - Resulting high reserve margins
  - Dampens peak-prices and lowers profitability

Issue # 4: Distributional Issues

- To the extent electric prices increase, CO2 program increases profits for deregulated nuclear, hydro, and new gas
- However, net losses for coal units
- **Problem:** Redistributive auction takes most allowances from coal units and exacerbates already negative financial impacts, while taking few allowances from low/zero emitting nuke, hydro or gas units
- **Remedy:** Historic emissions allocation distributes burden fairly, and prevents non-emitting units from getting an even greater windfall (such as would occur through an “output-based allocation”)