(Overly) Great Expectations: Disillusion with Cap-and-Trade in California

James Bushnell,
Remarks draw upon

“Expecting the Unexpected: Emissions Uncertainty and Environmental Market Design”
by
Severin Borenstein, James Bushnell, Frank Wolak, and Matthew Zaragoza-Watkins

And other new material
California’s GHG Policy

• 2006 Law requiring CA GHG emissions reach 1990 levels by 2020
  – Roughly a 25% reduction in 2006
  – Cal Air Resources Board (CARB) Caps based upon reductions from estimates of 1990 levels
  – Linked with Canadian provinces of Quebec and Ontario
• California’s Cap and Trade Mechanism is a hybrid of caps and taxes
  – Auction reserve price (floor)
  – Price containment reserve (“ceiling?”)
  – Cal sells more or less permits in response to extreme prices
• The Cap and Trade market also co-exists with many other policies directed at reducing CO2 emissions
  – Aggressive renewable electricity and vehicle mileage standards
  – Low Carbon Fuel Standard for transportation fuels
• 2016 Law sets new carbon targets for 2030, notably omits cap-and-trade from its language
  – Wide belief that a 2/3 vote is necessary for C&T (or a tax) to be part of the picture
Results So Far

Source: Climate Policy Initiative California Carbon Dashboard
Becoming a familiar pattern

RGGI

EU-ETS

CALIFORNIA
California’s cap and trade auction another washout

February’s quarterly auction of carbon dioxide emission allowances under California’s cap and trade program was another financial washout for the state.

Results for last week’s auction were posted Wednesday morning, revealing that just 16.5 percent of the 74.8 million metric tons of emission allowances were sold at the floor price of $13.57 per ton.

“Today’s anemic auction results demonstrate that the state’s landmark cap and trade program is in need of reform and the kind of market certainty that only the Legislature and governor can provide via statute,” Senate President Pro Tem Kevin de León said in a statement. “We need a program that both reduces pollution and provides stable funding to clean up climate emissions.”
California AB 32 Supply of Abatement

Allowance Price

$50

$40

$10.5

0

Complementary Measures
Costless Reshuffling or Leakage
Costly Reshuffling
Offsets

GHG Reductions
Emissions

Industrial Processes Changes; Fuels consumption

40 – 65 mmTons

475– 710 mmTons

$40 – $50
Forecast of Business as Usual (BAU) Emissions

Actual and Forecast Values
Broad Scope Emissions

Hi outcome: Abatement Needed to reach the cap
Low outcome: No Abatement Needed to reach the cap
BBWZ Estimated Price Range Probabilities:
Price Almost Certain to be at Floor or Ceiling

Allowance Price

Price Floor

92.1% (0.9%)
97.2% (0.5%)

Complementary Measures

Costless Reshuffling

Costly Reshuffling

Offsets

Price Ceiling

1.7% (0.4)
0.1% (0.1)
1.7% (0.4)
1.3% (0.3)
4.5% (0.6)
1.4% (0.3)

Allowances released from APCR

Using 2010 data
Using 2012 data

GHG Reductions
Carbon Revenues Can Fluctuate Widely

**Figure 5: Estimated Use of AB 32 GHG Cap-and-Trade Allowance Value,**

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<th>Industry Assistance</th>
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Price vs. Revenue Stability

• Economist’s work on price collars (caps & floors) has focused on price stability and sending less volatile signals about the price of carbon
  – Trying to capture advantages of a tax
• California experience demonstrates the (political) importance of revenue stability
  – Floor has kept prices very stable, but the mechanism used to enforce the floor has made revenues less stable.
• Here, I examine alternative allocation policies applied to forecast outcomes from BBWZ
California Allowance Allocation: Three Channels of distribution

• Output-based allocation for trade exposed industries
  – About 25% of allowances

• Allocation to Gas/Electric distribution companies
  – About 30% of allowances
  – Used to defray energy cost increases and as a climate “dividend”
  – Most “consigned” to quarterly auctions

• Direct auction with funds going to the State
  – About 45% of allowances (expected)
  – All unsold amounts come out of State’s share
BBWZ Implied Allowance Values

CDF of Allowance Revenues

- Elec.
- NGU
- Ind
- Other
- State
BBWZ Implied Allowance Values: Conditional on price at floor

CDF of Allowance Revenues if Price at Floor

BBWZ Implied Allowance Values:
Conditional on price at floor
Expected Auction Allowance Sales
8-year totals under Alternative Allocation Schemes

Percent

mmTons

Actual Policy
Pro-Rata Split of Shortfall
Summary

• Economists focus with carbon pricing is on the marginal incentive provided by the prices
  – Revenue is a “side effect”
• Increasingly Policy focus is on the revenue generated by the carbon pricing mechanism
• But Carbon is a volatile revenue stream
  – CO2 emissions vary widely (and pro-cyclically)
  – Under cap-and-trade can cause volatile prices
  – Even with a CO2 tax revenues can be volatile
• Allowance allocation schemes can be used to smooth public revenues from carbon pricing
  – But of course would create more volatility for others
Thank You

James Bushnell