Future Direction of Coal Markets: A Focus on Federal Coal Policy

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Federal Coal Dominates the Market

A major factor in the direction of the coal market

![Graph: Powder River Basin Coal as a share of U.S. Coal Production, 1978-2013](source: Energy Information Administration)

![Graph: Real Average Annual Mine Price of Coal, 1997-2014](source: Energy Information Administration)
DOI PEIS Process

2 year Programmatic Environmental Impact Statement (PEIS) process run by the Dept of the Interior (DOI)

• Secretary of DOI Sally Jewell on Jan 15, 2016:
  – “We haven’t undertaken a comprehensive review of the program in more than 30 years, and we have an obligation to current and future generations to ensure the Federal coal program delivers a **fair return to American taxpayers** and takes into account its impacts on climate change.”
First Criteria: Fair Return

Raises the question: **what is a “fair return to American taxpayers”?**

Currently:

- Royalties are 12.5% for surface coal and 8% for underground coal based on first transaction price (and some waivers)
- Plus a “bonus bid” auction for the right to a 20-year lease
- Very small land rental payments
Why Fair Return is an Issue

White House Council of Economic Advisers (2016):
• Over 90% of leasing auctions have a single bidder
• Most bids come in just above the confidential “minimum bid” that DOI sets
• The price of PRB federal coal is around $10/ton, while the nationwide price is $30-$40
• PRB coal companies are permitted to sell to affiliates
• Self-reported washing and transport deductions
• Take-or-pay contracts with low prices and penalty payments

How to allocate the economic rents from mining?
  – Can we reduce other more distortionary taxes?
Second Criteria: Impacts on Climate Change

- Raises the question: **how do we “take into account its impacts on climate change”**
- Is coal really so cheap?

- Climate damages from PRB coal are **6 times** greater than its market value

Coal, oil and gas spot prices from EIA (2015). $40 SCC. Heating value and carbon emission factors come from the EIA and EPA (2015). Source: Gillingham et al. (in prep)
Royalties Relative to Climate Cost

Federal royalty compared to monetized climate cost: Natural gas, oil, and PRB coal

Notes: Assumed market prices: gas, $3/MMBtu; crude oil, $45/barrel; coal, $9/short ton. Oil and gas royalties are computed at the offshore rate of 18.75%, coal royalty is computed at the surface mining rate of 12.5%. Assumed value of the SCC is $44/metric ton CO2. Source for energy conversion factors and CO2 emissions per MMBtu: EIA.

Source: Gillingham and Stock (in prep)
Taking Into Account Impacts of Climate Change Is Not So Simple

Two key issues:

1. **Substitution** – Do we just shift production to non-federal coal?

2. **Interactions with climate policies** – What if we account for climate damages when we are already doing so with the Clean Power Plan (CPP), local policies, etc.?
Latest Evidence

Gerarden et al. (2015) – models raising royalty rates

• What if we raise royalty rates to incorporate the mean social cost of carbon?
  – Effectively the same as “keeping in the ground”
  – Considerable leakage to non-federal coal

• What if we raised royalty rates to provide a 20% carbon adder?
  – Much less leakage to non-federal coal
  – Much less concern about double-counting with downstream policy
Effects of a 20% carbon adder

• With CPP, a royalty carbon adder
  • Reduces leakage – modest climate effects
  • Reduces CPP compliance cost
  • Could become the binding policy with very low-cost renewables

• Without the CPP
  • Climate effects are larger than with the CPP
  • Logic here justifies increasing carbon adder in absence of CPP

• Eastern, Midwestern coal production and employment rises somewhat

• Royalty revenues increase by ~$3B annually in mid-late 2020s; ~$35B through 2030.
  • Could give half to the affected states. Net impact on states requires assessing severance and sales taxes.
  • Remaining stream available for funding coal community transition program – with Congressional action
Final Thoughts

Coal leasing reform has equity and efficiency implications

• Fair return considerations
  – Really about “who gets the economic rents?” (equity)
  – But if it offsets distortionary taxes, it can improve efficiency

• Climate considerations
  – Second-best approach in the absence of carbon pricing
  – Twin issues: substitution and interactions with downstream climate policy
  – I argue modestly increasing royalty rates with a carbon adder could improve efficiency
    • It may help equity as well by providing funding for hard-hit coal communities making an economic transition