The Risk of Fiscal Collapse in Coal-Reliant Communities

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Surface and underground coal mines in the United States

North Antelope Rochelle mine
102 million short tons

MC#1 mine
13 million short tons

Surface mines
Underground mines

https://www.eia.gov/todayinenergy/detail.php?id=38172
US coal use has declined steeply in US power sector

Source: U.S. Energy Information Administration.
Note: Two series have been merged to achieve continuity of data.
Coal’s key competitors:
Natural gas and renewables

What happens to US coal production with climate policy?

US Energy Information Administration’s Annual Energy Outlook (AEO 2018) modeled:

-- a price on CO$_2$ from the power sector (only)

-- $25 /ton CO$_2$ in 2020, rising at 5% real annually

Projections help anticipate a range of possible outcomes

*Large uncertainties around policy & model assumption/parameters*
**CO₂ Price Case: Total US Coal Production**

Absent new policies, production may fall 15%-25% by 2030.

77% reduction from 2016 to 2030.

CO₂ Price Case: Powder River Basin Coal Production

95% reduction from 2016 to 2030

Source: U.S. EIA’s $25 per ton of CO₂ “side case” from Annual Energy Outlook 2018
CO\textsubscript{2} Price Case: Appalachia Coal Production

50% reduction from 2016 to 2030 (80% in northern Appalachia)

Source: U.S. EIA’s $25 per ton of CO\textsubscript{2} “side case” from Annual Energy Outlook 2018
Includes northern, southern, and central Appalachia
Hard to track and quantify local government dependence on coal

**Coal Revenue:**
- Severance tax
- Royalties
- Lease bonus & rents
- Property tax
- Investment income
- Coal conversion tax
- Waste coal tax
- Sales and use tax
- Reallocation tax
- Business income tax
- Personal income tax

**State govt (incl. trust funds)**

**Local Govt**

**Public Services:**
- School systems
- Capital construction funds
- Highways and roads
- Water districts
Roughly 33 streams from coal revenue to recipient

Sources
- Federal royalties
- Coal lease bonus
- State severance
- State royalties
- State investment income

Recipients

Flow Chart of Major Revenue Sources

Source: WY 2017 Budget Fiscal Data Book
12 most coal-reliant US counties by 2015 employment share

Three illustrative counties...

Significant data limitations

Boone County, WV (pop. 22,000)
- 70% decline in coal from 2012-2017;
- -> 38% decline in county govt revenue.

Campbell County, WY (pop. 46,170)
- Two largest revenue sources tied strongly to coal
- Mine bankruptcies thwart tax collection

Mercer County, ND (pop. 8,267)
- Coal severance, coal conversion, and royalties provide around 1/2 revenue to county government (as of 2016)
Downturn in a key industry can set off a fiscal death spiral

Case studies in paper:

Coal in South Wales, United Kingdom
Steel in Aliquippa, Pennsylvania
Automobiles in Detroit, Michigan
Textiles in Greenville, South Carolina
We reviewed 7 outstanding bonds from Campbell and Mercer Counties

- Principal: $3.5 million to $445 million
- Terms of 20 to 30 years;
- Maturing in 2022 – 2039

Risk disclosure in official statements is limited or nil

- Vague references to dependence on the economy
- Only two mentioned climate/environment policy risks
- One characterized coal-intensive economy as positive
- Ratings arguably under-appreciate risks, especially from policy
  - Some bonds received downgrades, e.g. A+ to A
  - All with ratings are investment grade or higher
Conclusions and questions

Climate action is important, if uncertain. Policymakers should prepare for the end of US coal production.

Dependence on coal should be transparent in budget

• Additional disclosure regulations for bonds?
• Voluntary disclosure measures for public sector entities?
• How should stakeholders (borrowers, insurers, ratings agencies, and underwriters) better account for the risks from the coal industry?
• Is private bank debt at risk as well?

And...
Could risks extend to counties with coal-fired power plants?

https://www.eia.gov/todayinenergy/detail.php?id=30812