Comments on:

Benefit-cost analysis of phasing out coal in power and for household usage: An empirical analysis of the Chinese Action Plan applied to Beijing (BCABC for short...)

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Conference on The Economics of Energy and Climate Change

TSE, Toulouse, September 2015

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The big picture (1)

- The title is long...but states the purpose clearly: ...a CBA
  - with 2 sectoral focuses
    - energy production and household energy consumption
  - with 2 environmental focuses
    - ambient AND indoor air pollution
  - with 2 main technological approaches
    - cleaner production and consumption processes
  - with 2 outcome focuses:
    - air quality and heath effects
  - But...with a single regional focus
    - 1 of 3 regions (Beijing) for which a coal consumption cap to be reached by 2017 has been imposed through a 2013 National Action Plan

The big picture (2)

- **Main conclusion is just as clear**
  - **Net social benefit from households consumption technology change**
  - **Net social cost from replacement of coal plants by gas plants**
  - **Total payoff is unlikely to meet expectations and policy needs to be tightened**

- **But there is a lot more going on (maybe a bit too much to keep track of it all…)**
  - **Advocacy "side shows" since argue for:**
    - ***Adoption of CBA and impact assessment for policy evaluation in China***
    - ***A more explicit focus on HH coal consumption and indoor air pollution***
    - ***A diversification of technological and policy solutions to be considered, including local options***
    - ***A re-focus of policy goals on health & welfare outcomes rather than on only emission levels and technology.***

Comments on Methodology (1)

(its discussion covering about a third of the paper…)

- **Paper <u>really</u> delivers actually 2 CBA:**
  - (1) phasing out and replacement of coal fired power plants by gas fired ones
  - (2) substitution of the equivalent amount of coal used in HH by clear fuels and/or reconstructions
- **Useful unusual feature**
  - Local authorities can pick technology to achieve coal reduction target
    - Authors use this to compare Social Net Benef for a given cut across sectors
      - i.e. the "net cost effectiveness" of achieving a comparable goal

Comments on Methodology (2)

- **Approach:**
  - Pick a representative power plant consuming 600K tons annually of coal
    - ...NO INFORMATION ON TECHNO, AGE, ...
      - Yet reasonable to assume some heterogeneity along all these criteria it seems
        - Some of this comes out in the Monte Carlo but not really detailed enough
  - Equivalent for HH is 200,000 HH consuming 3 tons annually (=600K...)
    - Easy to think through but a bit odd to get a clear sense without some normalization to population concerned
  - Focus on health and environmental benefits in each sector
    - Useful and best practice
    - Some concerns with risk of double counting...but maybe bcse I did not fully understand some of the details
      - Are health benefits and aesthetics gains not already part of the environmental benefits?
  - Cost are quite detailed (opex, capex, and incremental fuel costs)
    - ...but may too standardized in a country in which investment has been FAST and hence technological progress has been quite strong within the industry (efficiency stories)
  - Monte Carlo to deal with uncertainty
  - All values in 2011 US$

Comments on Methodology (3)

- Scenarii
  - Simple for power plants
    - with somewhat odd assumption on price of gas vs coal
      - (controlled vs mkt based)
  - Various options for HH with somewhat complex CBA
    - Thermal isolation, electricity heating stove rather than coal
    - Adjusting HH vs non-adjusting HH
      - full use HH gets full health benefit and generate max environmental benefits
        - Ignores learning costs

Big picture – Part 2

- Solid CBA anchored in well tested evaluation methods for both costs and benefits
- Solid policy implications
  - Which do raise some concerns not just for China
- Some more issues however…

Issues (1)

- **Key interactions may have been left out by choice of method**
  - CGEs are now quite popular to look into these interactions across product and labor markets that result from changes linked to climate change concerns built in energy policies…
    - Most of the time, these effects impact for economic costs and benefits in unsuspected ways
      - Think of interactions through labor market and education
- **Differences across Chinese regions for instance is a realistic concern**
  - would at least argue for a replication of this paper to other regions
- **Discount rate choice and meaning**
- **Historical Opex and Capex heterogeneity in costs**
  - this means expenditure timing more than standardized CBA NPV computation would imply
  - No recognition of learning by doing which has really been quite impressive in China
    - Which is related to me earlier comment on relevance of the multiplicity of technologies which overlap…not picked up by model firms/HH

Issues (2)

- **No clear sense of lower and upper bound (or of confidence interval for results)**
  - **Even with Monte Carlo**
- **No clear discussion of various incentives designs to stimulate behavioral change**
  - **i.e. Adopting vs non-adopting HH**
- **Editorial:**
  - **Too many details on earlier studies**
  - **Biblio a bit odd…**

Overall

- Really useful paper at the policy level
- In particular in the current context of global negotiations pointing towards the fast growing emerging economies as key players in the CC debates
- As is it would work as a policy report
- For an academic publication…
  - may need some shrinking…
  - And a fuller discussion of some of the limitations
    - Including some reflected in the comments