Suboptimal Climate Policy

by Hassler, Krusell, Olovsson and Reiter

Climate Change Workshop
FRB Richmond

Discussion by Anastasios Karantounias

Federal Reserve Bank of Atlanta

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  3. Green energy potential? ⇒ not very *promising*!

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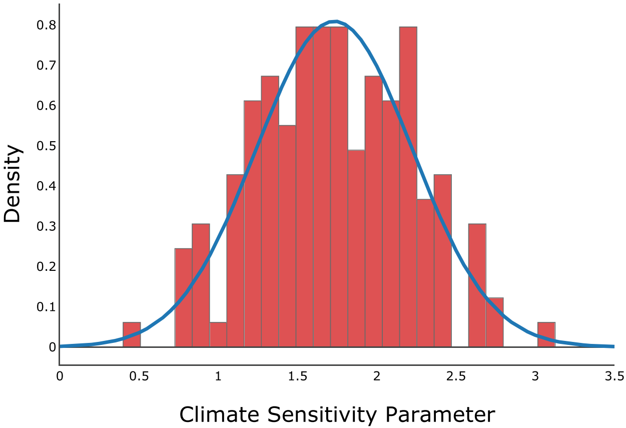
- A_{it}: regional TFP, S_t stock of carbon.
- Substantial uncertainty about both climate sensitivity and damage sensitivity.

Barnett, Brock and Hansen, 2020

Pricing Uncertainty Induced by Climate Change



Experiment I: Errors and Prudent policy

- Acknowledge parameter uncertainty using two scenarios:
  1. Calculate global policy assuming the worst-case scenario of high climate and damage sensitivity.
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- Connect to literature on ambiguity aversion and minimax regret (max-min utility, Hansen and Sargent, optimal policy under ambiguity etc).

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- Let y_t: *stock* of carbon emissions with LoM:

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- y_t is *durable*, *"bad"* and has *non-rival* elements ("public bad").

Two problems: Global planner vs country planner

1. Global social planner (first-best):

$$\max_{c_t^i, x_t^i, y_t} \sum_i \mu^i \sum_{t=0}^{\infty} \beta^t u^i(c_t^i)$$

subject to

$$\begin{aligned} \sum_i c_t^i &= \sum_i e_t^i - \sum_i \kappa^i(x_t^i) e_t^i - \sum_i D^i(y_t) e_t^i \quad (\lambda_t) && (1) \\ y_t &= F(y_{t-1}, x_t^1, ..., x_t^N), \quad (q_t) && (2) \end{aligned}$$

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2. Autarky: Taking x_t^{-i} as *given*, each country $i = 1, ..., N$ solves

$$\max \sum_{t=0}^{\infty} \beta^t u^i(c_t^i) \qquad (3)$$

subject to

$$\begin{aligned} c_t^i &= e_t^i - \kappa^i(x_t^i)e_t^i - D^i(y_t)e_t^i \quad (\lambda_t^i) && (4) \\ y_t &= F(y_{t-1}, x_t^i, x_t^{-i}), \quad (q_t^i) && (5) \end{aligned}$$

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- Intertemporal mitigation efficiency (SCC):

$$q_t = -\sum_{j=0}^{\infty} \beta^j \left(\prod_{i=1}^{j} F_{y,t+i}\right) \lambda_{t+j} \sum_l D_y^l(y_{t+j}) e_{t+j}^l < 0 \tag{8}$$

y_t is "bad."

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1. Different IMRS
2. Ignore effect of mitigation x_t^i on countries $j \neq i$.

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  - *Ramsey* taxation in a DICE model with EZW preferences? *Open question.*

Great paper. Thanks for listening!