

# DISCUSSION OF “CLIMATE POLICE IN THE WIDE WORLD”

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# The paper in a nutshell

- Governments, businesses and households worldwide are taking/considering steps to curb emissions
- This paper:
  - Develops a dynamic general-equilibrium, multicountry, multisector, very large-scale model
  - Has clever assumptions to imply a relatively simple solution and a “plug-and-play” form
  - Provides a framework to provide a tool to analyze the impact of different policies

# What they do

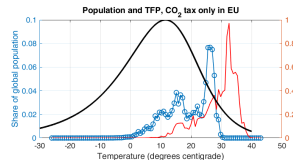
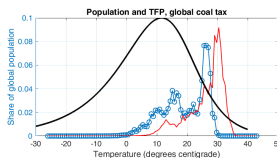
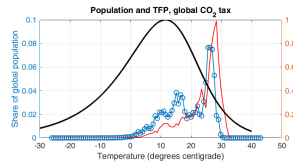
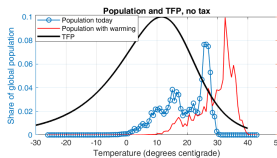
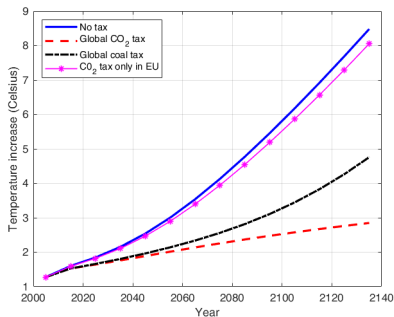
- Present the model in detail
  - Strengths, simplifying assumptions and solution method
- Consider three policy experiments:
  - A modest carbon tax applied uniformly worldwide
    - Limits warming substantially
  - A carbon tax that exempts poor countries
    - Too costly and politically challenging
  - Decline in relative cost of green energy globally vs in the U.S. and EU only
    - Does not sufficiently reduce fossil-fuel use

# Model: main ingredients

- World economy block
  - Regions within countries
  - Inputs: workers/consumers, capital, labor, energy
  - Energy sources: oil, coal, fracking, green
  - Two types of countries: oil vs non-oil (inputs, consumption-goods) producers
  - Labor and production inputs (ex-oil) mobile within but not across countries
  - TFP: regional and country-specific, impacted by climate change
- Climate block
  - Carbon content of energy sources through their impacts on atmosphere, surface, and deep oceans
  - Temperature: global and local temperatures, past emissions

# Policy: a modest uniform carbon tax

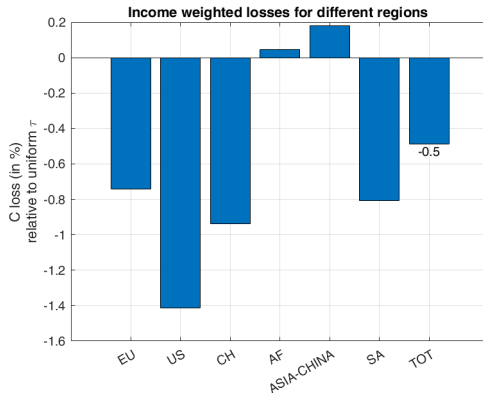
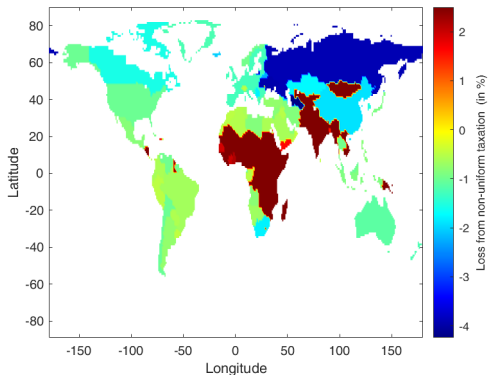
- Carbon tax: start at \$20/ton and grows at world growth rate



- Q1: Which country-list makes a difference? How about taxing the 10 biggest polluters?
- Q2: Sizable implications for population. Is the no-immigration assumption too restrictive? How is migration impacted within countries?

## Policy: a non-uniform tax

- High carbon tax on high income countries only ( $> 25\%$  of world GDP per capita)
  - Impossible to reduce emissions enough



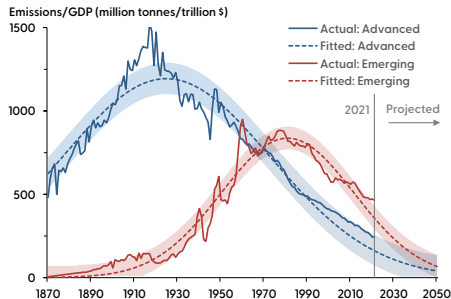
- Q3: What if the threshold for the carbon was based on emissions?

# Advanced vs emerging economies

- Six largest carbon-emitting countries: United States, Japan, Germany, China, India, Russia ( $\approx 75\%$  of world emissions)
- Emerging economies to continue to contribute a large share of emissions\*

Figure 2

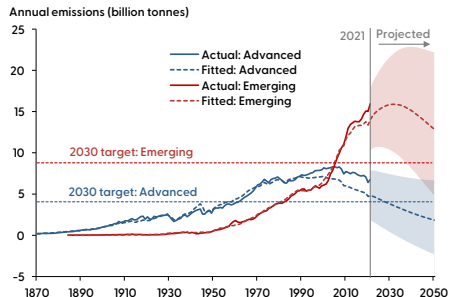
CO<sub>2</sub> emission intensity by country group



Sources: Emissions: Ritchie, Roser, and Rosado (2020), based on Global Carbon Budget data. GDP levels: Maddison Project Database, accessed through Our World in Data, and authors' calculations. GDP growth rates and 2019–2021 levels: Organisation for Economic Co-operation and Development (OECD).

Figure 4

Projected emissions by country group

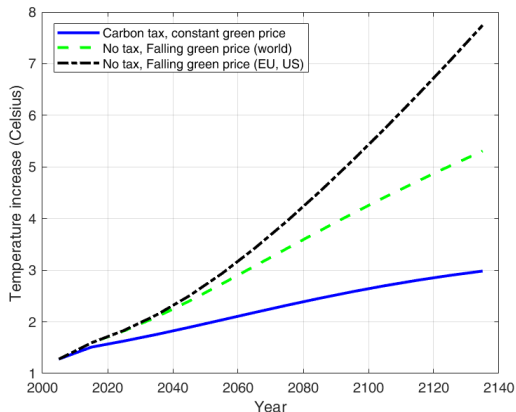


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\*Arnaut, Jordà, and Nechio (2023) "The Bell Curve of Global CO<sub>2</sub> Emission Intensity," FRBSF Economic Letter 2023-27

## Policy: green energy boost

- At zero cost, price of green technology falls by 2% per year



- Q4: Quite disappointing effects of green technology. What would it take?



## To conclude

- Great and careful paper
- Important lessons and implications for policy
- Plug-and-play form to provide important contribution to our field
- Scope for answering many questions