Discussion of "The global water footprint of distortionary agricultural policy" by Tamma Carleton

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July 2021

Overview

- **Nice:**
  - ▶ Global water data
  - ▶ Causal links to policy
  - ▶ Execution

- **Comments**
  1. Research design
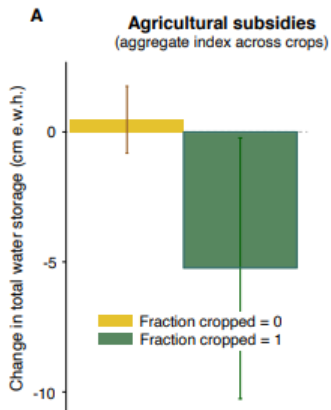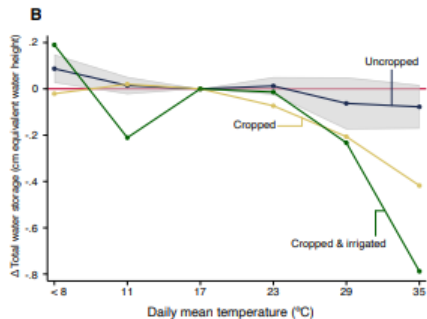 2. What regression?
  3. Theory

Summary

$$\Delta W_{ict} = f(T_{imt}, A_i, R_i) + g(P_{imt}, A_i, R_i) + \psi_i + \alpha_m + \mu_t + \epsilon_{imt}$$

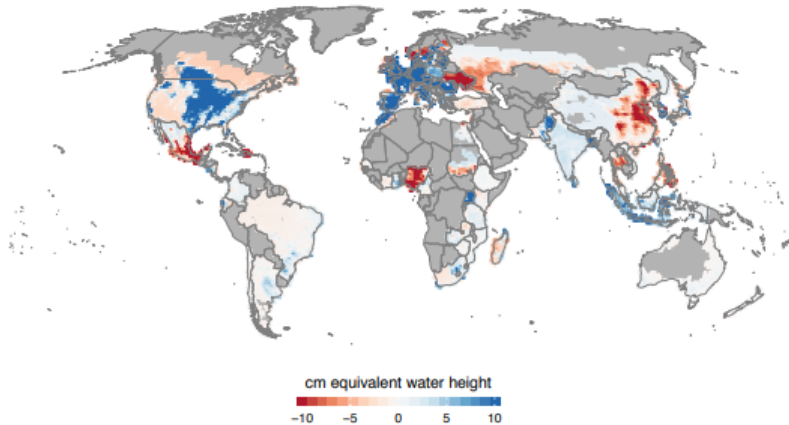$$\Delta W_{ict} = \beta S_{ct} + \gamma S_{ct} A_i + X'_{ict}\phi + \psi_i + \mu_t + \epsilon_{it}$$

- Water W, temperature T, cropped area share A, irrigation share R, precipitation P, agricultural subsidies S
- location i, country c, year t, month m

Summary

Summary

Simulated effect of agricultural policy liberalization on total water storage
(2003-2011)

cm equivalent water height

−10   −5   0   5   10

Comment #1: Research design

$$\Delta W_{ict} = \beta S_{ct} + \gamma S_{ct} A_i + X'_{ict}\phi + \psi_i + \mu_t + \epsilon_{it}$$

- Where is residual variation coming from?
- Example: water policy in ϵ_{it}?
- Another example: directly examine tariffs as driver of subsidies?
  - Do we want to use tariff variation?

Comment #1: "Does water policy affect agricultural policy? Evidence from I-5"

$$\Delta W_{ict} = \beta S_{ct} + \gamma S_{ct} A_i + X'_{ict}\phi + \psi_i + \mu_t + \epsilon_{it}$$

Comment #2: What regression?

$$\Delta W_{ict} = \beta S_{ct} + \gamma S_{ct} A_i + X'_{ict}\phi + \psi_i + \mu_t + \epsilon_{it}$$

- Crop area A_i a possible outcome
- Why interact policy with A_i?
  - Identification? Placebo? Heterogeneity? Other?
- Should subsidies instrument for crop choice? For crop area? Water intensity?
- Example: estimate how agricultural policies affect area for different crops, then apply standard water intensity; benchmark effect?

Comment #3: Theory

$$Y = (1 - \theta)F(K, L)$$

- Appealing environmental technology (Copeland-Taylor)
- But, is water a source of productivity or a factor of production?
- Ideally theory derives/motivates the equation
- e.g., are agricultural subsidies changing technology (this model) or the price of output (different model)?

Comment #3: Theory

$$Y = (1-\theta)F(K,L)$$

- Water as a factor: is this just testing an extension of the Stolper-Samuelson theorem?

  Stolper Samuelson theorem: increasing relative price of agriculture increases real return to factors used intensively in producing agricultural goods

- More generally, is sign unknown here or just magnitude? If magnitude, then numerical details matter.

Comment #3: Theory

- How do these regressions relate to global effect of agricultural policy? Reallocation across geography?

- Valuable if some way to link this and global agriculture-trade literature
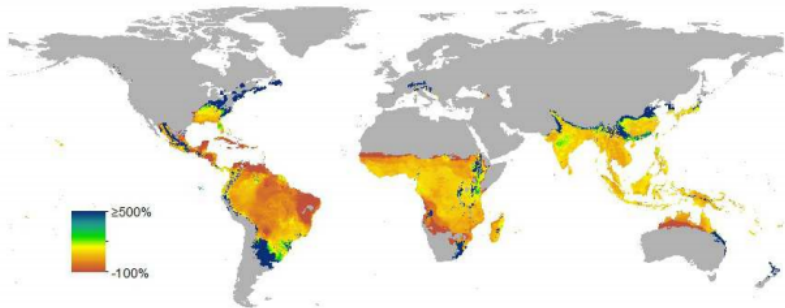
Panel (b): rice

Figure 1: Predicted Yield Changes. Percent changes in yield due to climate change in GAEZ model. Gray areas denote regions for which predicted yields are zero both before and after climate change.

Summing up

- Water Matters
  - Zero day