

The Role of Urbanization in Accelerating the Pace of Climate Change Adaptation in the Developing World

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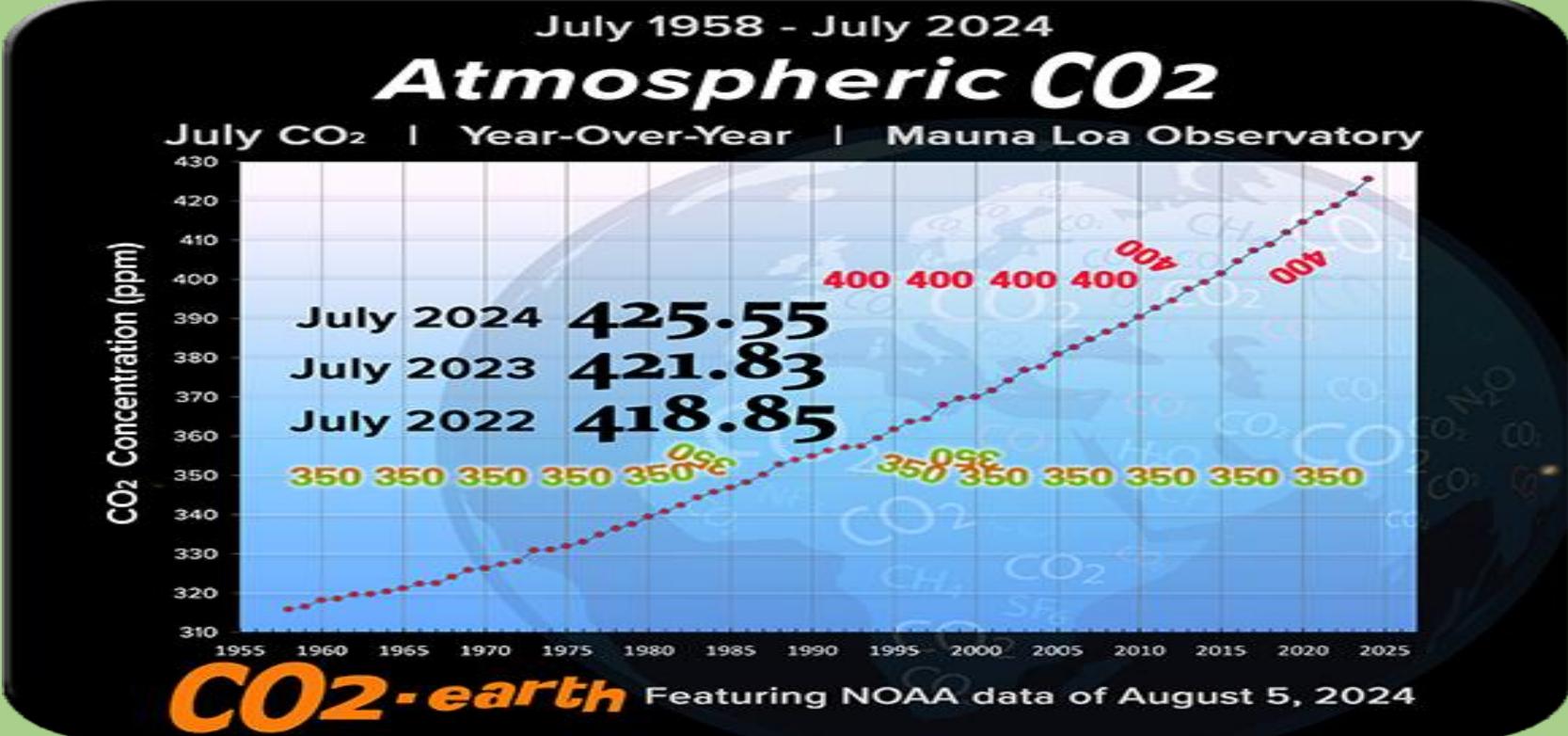
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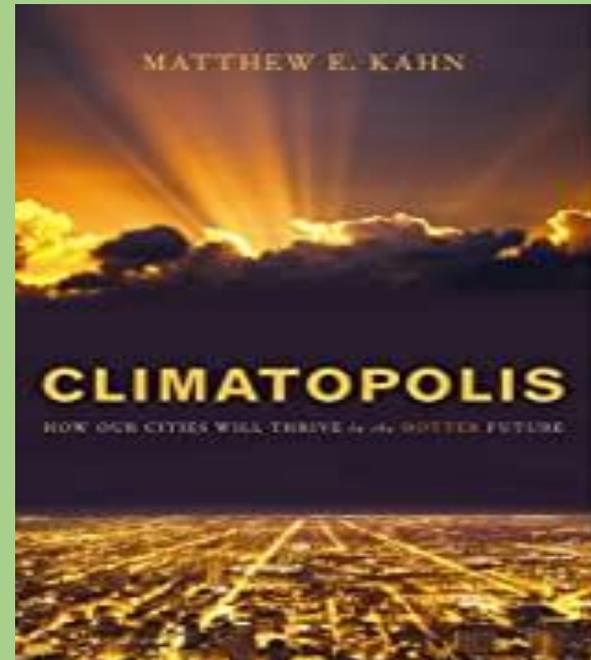
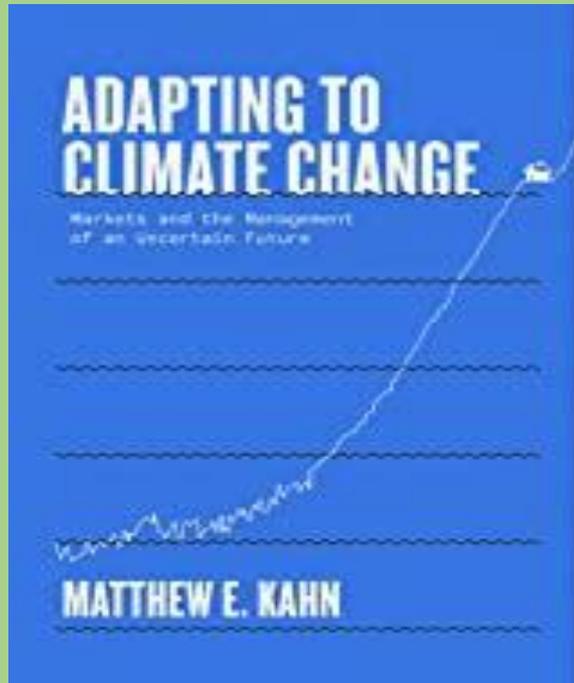
NBER and IZA and the Hoover Institution

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The Global Free Rider Problem



My 2010 and 2021 books on the microeconomics of Adapting to Climate Change in the USA



My Outline

- The Rural to Urban Transition, the robustness of the urban sector!
- The Human Capital Investment Decision
- Economic Development Facilitates Adaptation
- The Menu of Discrete Spatial Choices and Spatial Competition
- When Does Government crowd out private sector adaptation investment?
- The Relevance of the Lucas Critique!!

The Rural to Urban Transition

Auffhammer, Maximilian, and Matthew E. Kahn. "The farmer's climate change adaptation challenge in least developed countries." In *Handbook of environmental economics*, vol. 4, pp. 193-229. Elsevier, 2018.

Bryan, Gharad, Shyamal Chowdhury, and Ahmed Mushfiq Mobarak. "Underinvestment in a profitable technology: The case of seasonal migration in Bangladesh." *Econometrica* 82, no. 5 (2014): 1671-1748.

The competitive equilibrium versus the pareto optimum distribution?

Human Capital Investment, cities and skills are complements

Glaeser, Edward L., and Matthew G. Resseger. "The complementarity between cities and skills." *Journal of regional science* 50, no. 1 (2010): 221-244.

Jensen, Robert, and Nolan H. Miller. *Keepin"em Down on the Farm: Migration and Strategic Investment in Children's Schooling*. No. w23122. National Bureau of Economic Research, 2017.

Bassi, Vittorio, Matthew E. Kahn, Nancy Lozano Gracia, Tommaso Porzio, and Jeanne Sorin. "Pollution in Ugandan Cities: Do Managers Avoid it or Adapt in Place?." (2021).

Economic Development Facilitates Adaptation!

Kahn, Matthew E. "The death toll from natural disasters: the role of income, geography, and institutions." *Review of economics and statistics* 87, no. 2 (2005): 271-284.

Gandhi, Sahil, Matthew E. Kahn, Rajat Kochhar, Somik Lall, and Vaidehi Tandel. *Adapting to flood risk: Evidence from a panel of global cities*. No. w30137. National Bureau of Economic Research, 2022.

Kahn, Matthew E. "Climate Change Adaptation: Lessons from Free to Choose." *Available at SSRN* (2023).

Barreca, Alan, Karen Clay, Olivier Deschenes, Michael Greenstone, and Joseph S. Shapiro. "Adapting to climate change: The remarkable decline in the US temperature-mortality relationship over the twentieth century." *Journal of Political Economy* 124, no. 1 (2016): 105-159.

The Menu of Discrete Spatial Choices and Spatial Competition

- In larger nations with more land area and more cities and neighborhoods to choose from, greater adaptation possibilities.
- Ades, Alberto F., and Edward L. Glaeser. "Trade and circuses: explaining urban giants." *The Quarterly Journal of Economics* 110, no. 1 (1995): 195-227.
- Jensen, Robert. "The digital divide: Information (technology), market performance, and welfare in the South Indian fisheries sector." *The quarterly journal of economics* 122, no. 3 (2007): 879-924.

Information access about risks and opportunities and low transport costs!

Cities compete to attract and retain the skilled, footloose (Detroit versus LA)

Neighborhoods and urban slum living and congestion as the rural poor move in!

Housing Search and Property Specific Exposure to Place Based Climate Risk

- My new Redfin research
- Sandoval-Olascoaga, S., Metcalfe, R., Kahn, M., Fairweather, D., (2024). The Impact of Flooding Information on the Property Market: Evidence from a Nationwide Field Experiment. *NBER*
- Treatment group is exposed to the property specific Flood scores . Treatment group substitutes and search behavior does change. True in Republican and Democrat areas.
- Lessons for cities in the developing world?
- **Hedonic prices and implicit compensation for taking on spatial risks! The poor!!**

When Does Government crowd out private sector adaptation investment?

- Subsidizing place based infrastructure investments and insurance (encourages risk taking)
- distorting price signals for water and electricity.
- The new “Peltzman Effect”; Government investments in place based protection crowd out private adaptation efforts.
- Hsiao, Allan. "Sea level rise and urban adaptation in Jakarta." *Technical Report* (2023).
- New rules such that government investments complement private adaptation efforts? (a great research topic!!)

The Recipe for Publishing a Climate Change “Cause and Effect” paper

Country specificity; benchmarking adaptation progress

Collect outcome and weather effect data, identify exogenous variation in the weather shocks;

Estimate: $\Delta \text{Outcome} = a + b * \text{Shock} + U$

Call “b_hat” causal and imply it is a law of physics such that we can extrapolate future losses based on this “b_hat”

I reject this claim because of the feedback loop! This effect feeds back into causing adaptation!!

Conclusion: The Lucas Critique Revisited

- We are not “passive victims” as Mother Nature throws harder punches!!
- In 1976, Robert Lucas stated that as the Government changes the “rules of the game”, that forward looking households and firms change their optimal decision rules and thus one cannot accurately predict by naively extrapolating using regression reduced form estimates of historical relationships ==> The Social Cost of Carbon could decline over time!
- The cost of adaptation (while difficult to measure) continuously declines when politicians allow market prices to signal scarcity
- Richer people can protect themselves from most local weather risks!
- The whole world is adapting to similar problems of heat, drought and extreme events; adaptation ideas are public goods!! (Paul Romer!!)