



# THE EFFECTS OF WEATHER SHOCKS ON ECONOMIC ACTIVITY: HOW CAN LOW-INCOME COUNTRIES COPE?

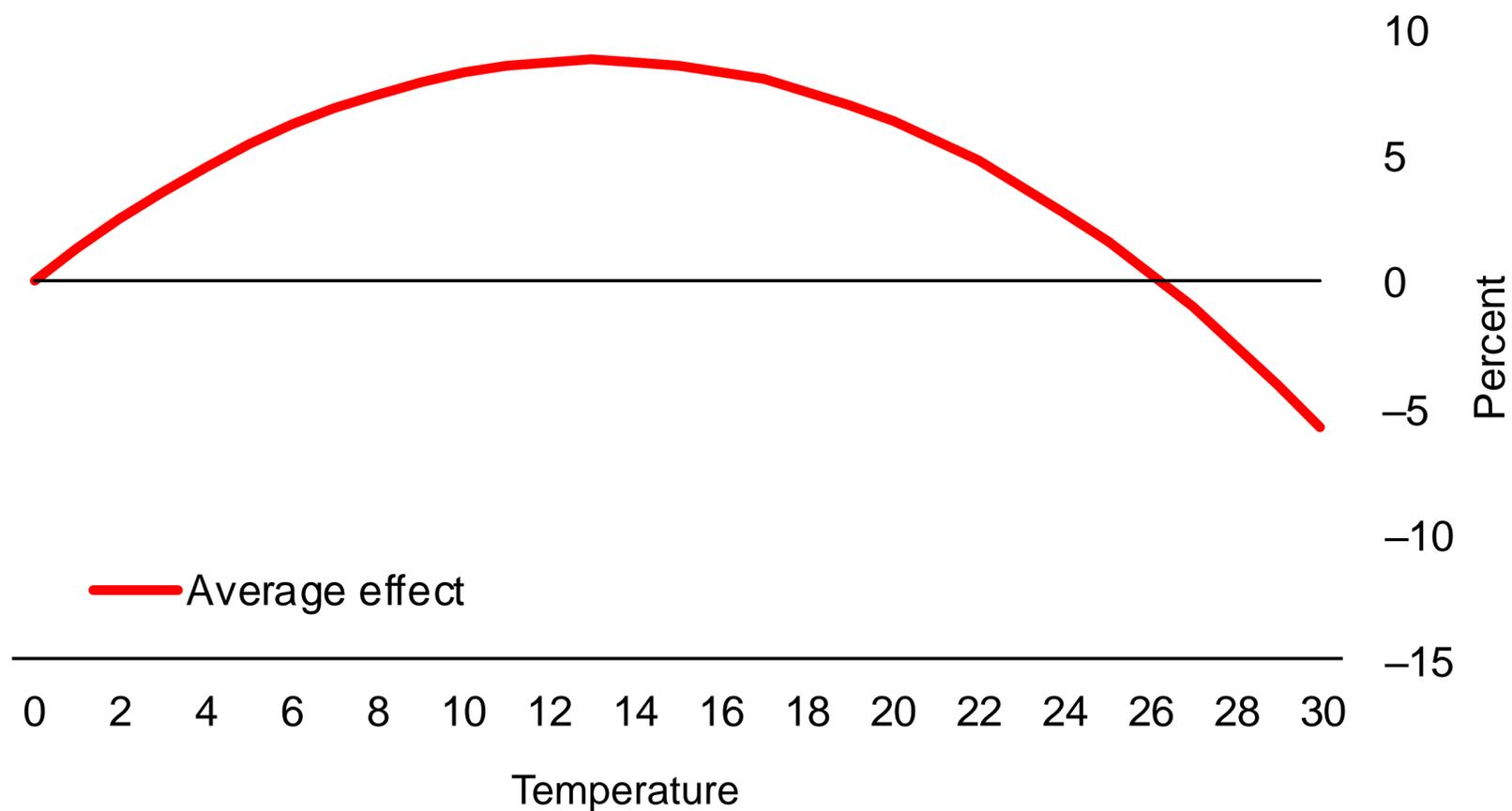
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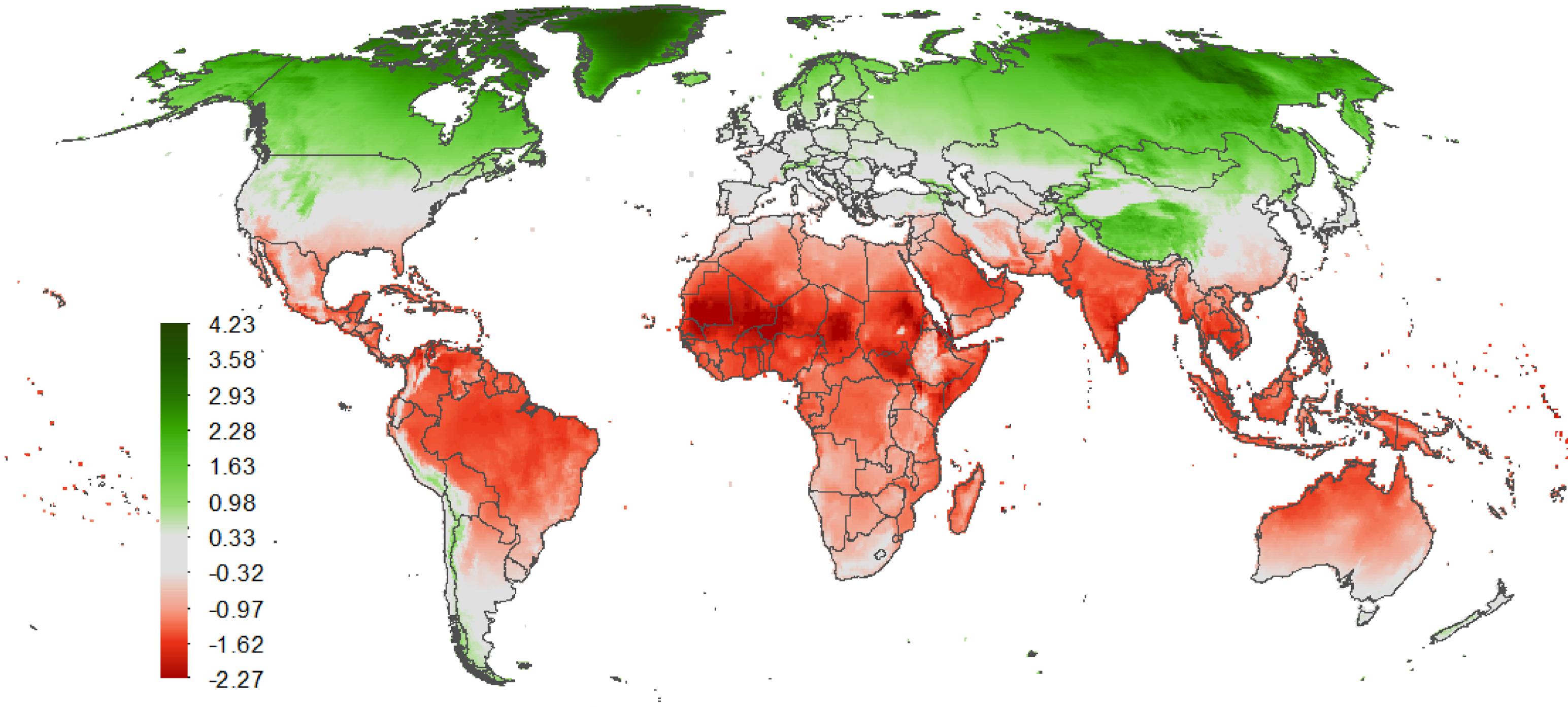
# Does temperature matter for the economy?

Effect of temperature on GDP per capita

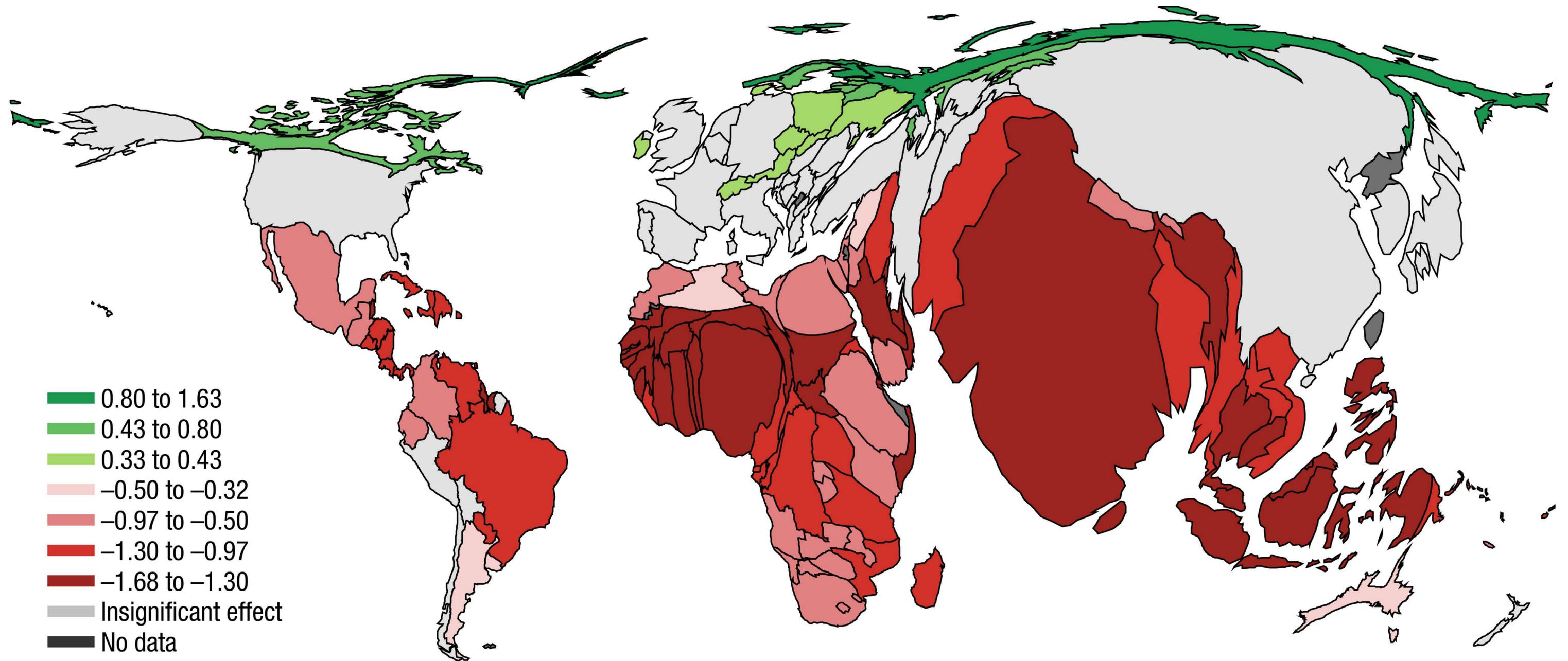


- We find a robust concave relationship between GDP per capita and temperature.
- Temperature is exogenous for a single country → we estimate causal effects
- Low temperatures → can have a positive effect.
- High temperatures → strong negative impact.
- Optimal temperature ~13-15 °C

In sum, the effect of a +1°C is uneven ...

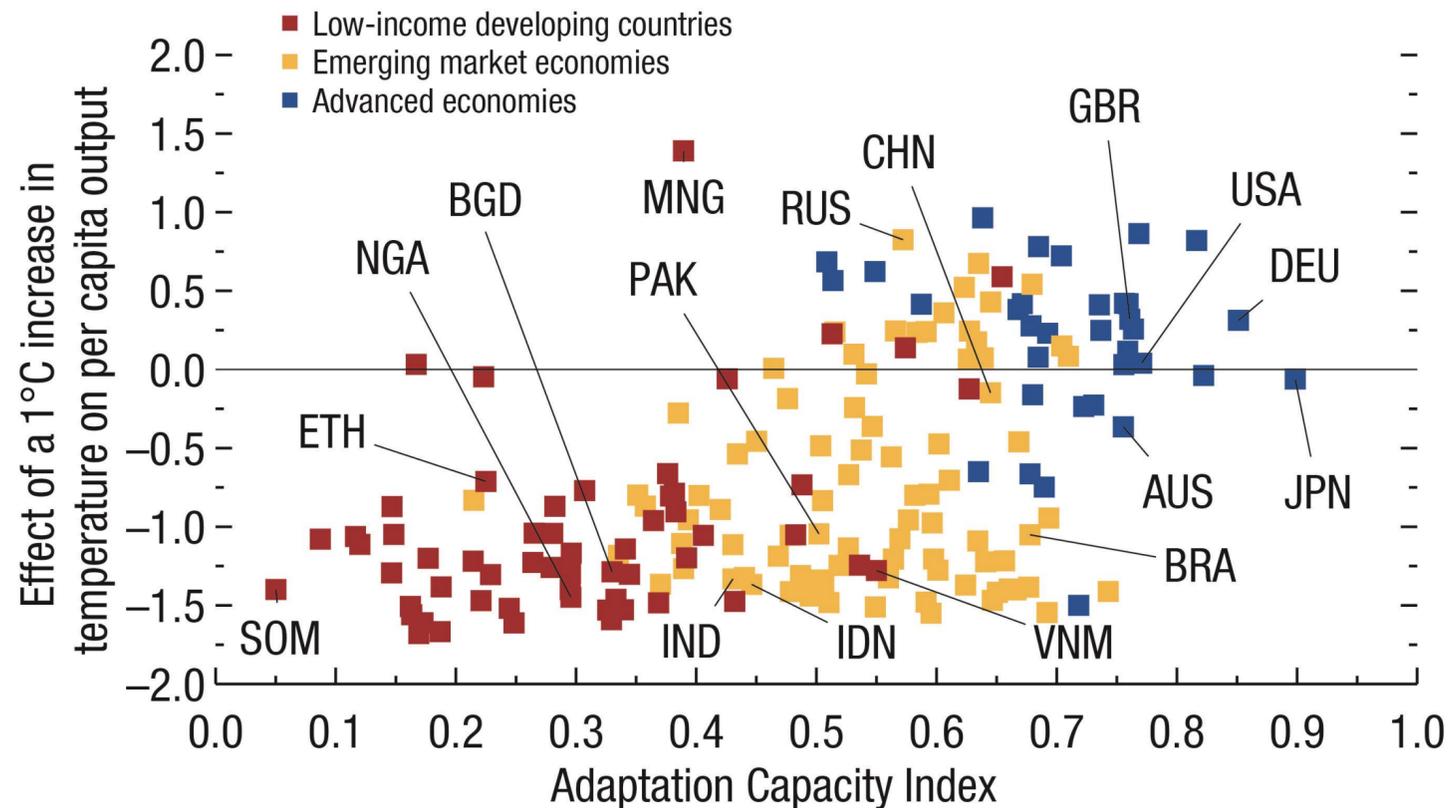


... with adverse effects concentrated in LICs and EMs where the majority of world's population currently lives



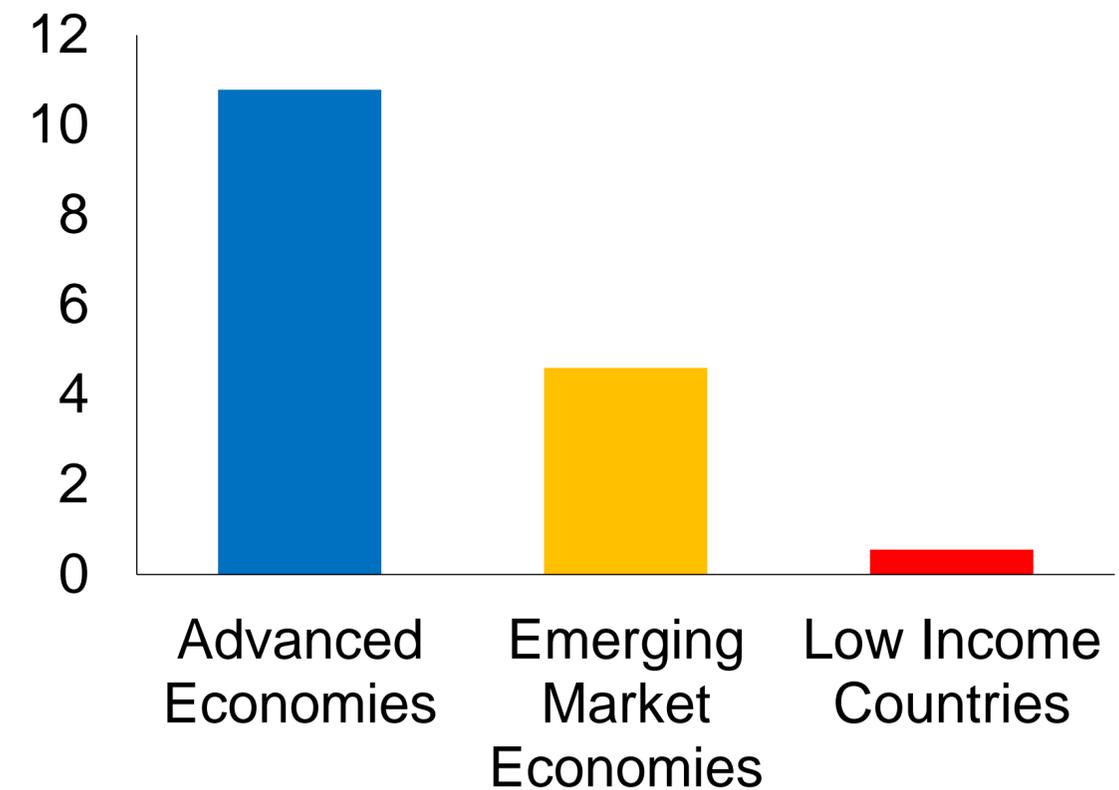
# LICs: low adaptation capacity & not caused the problem

## Adaptation Capacity



Sources: Notre Dame Global Adaptation Index; and IMF staff calculations.

## Average CO<sub>2</sub> emissions per capita, 2014 (Metric tons)



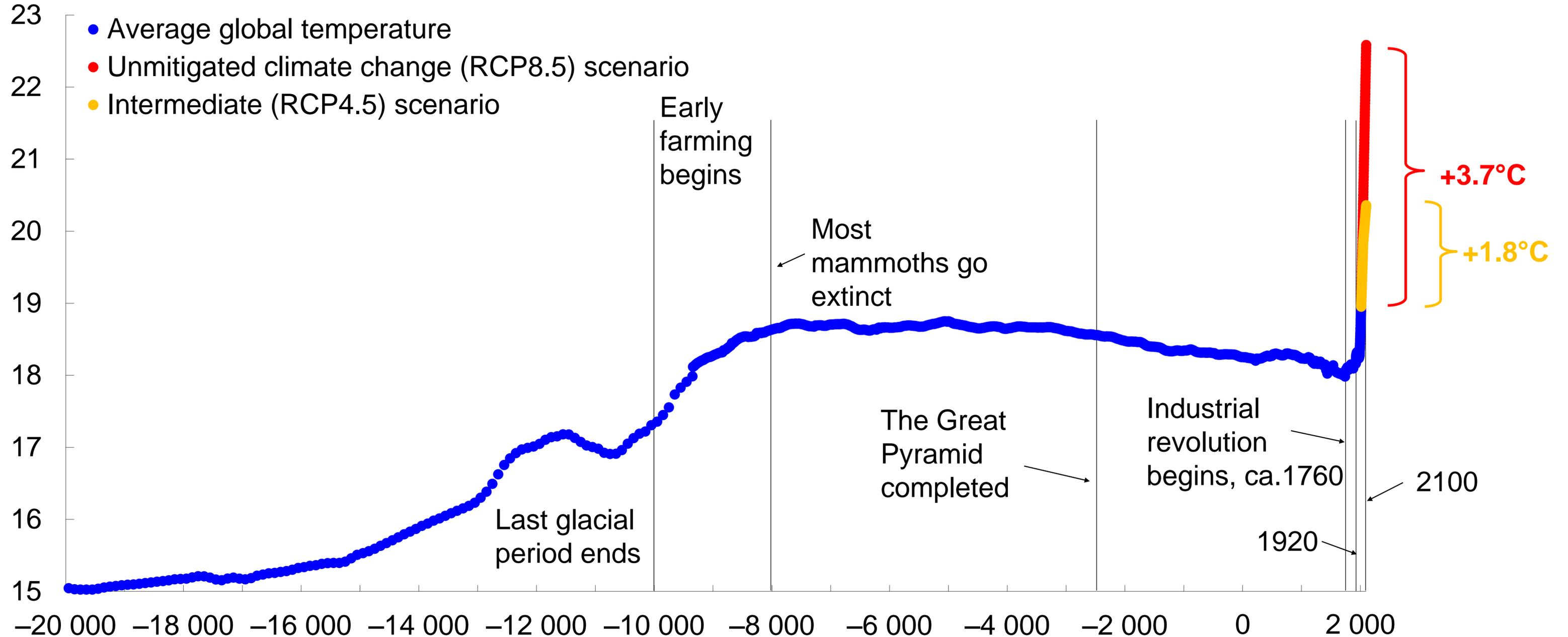
Sources: Carbon Dioxide Information Analysis Center; and IMF staff calculations.

# In conclusion

- Low income countries
  - will suffer disproportionate economic damages from warming,
  - and have contributed little to the problem.
- Adaptation can help, but capacity to adapt in LICs is limited.
- International community must play a key role in helping LICs cope with climate change
  - Climate change related transfers to LICs will help alleviate a negative externality and are also a moral imperative.
  - Only a concerted global effort to curb emissions can limit the long-term risks of climate change.

# Background Slides

# Average global temperature from 20,000 BCE to present (Degrees Celsius)

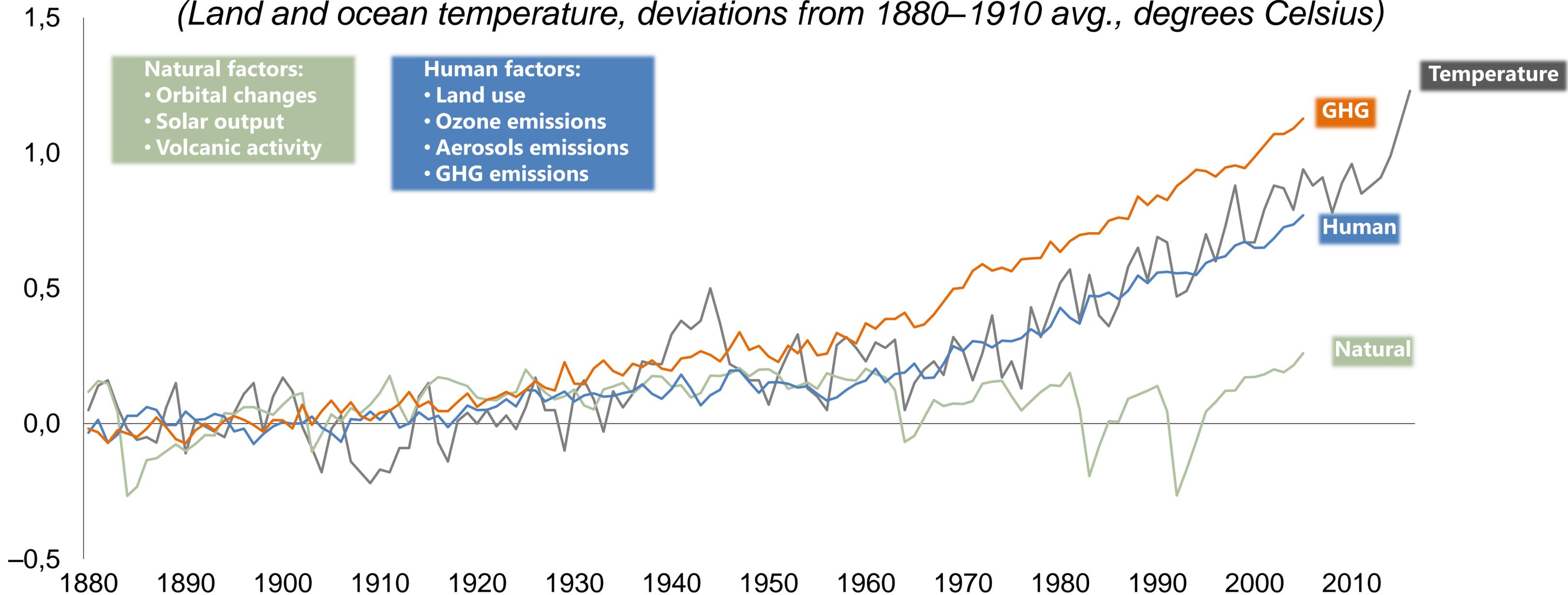


Sources: Intergovernmental Panel on Climate Change (IPCC); Marcott and others (2013); Matsuura and Willmott (2007); Shakun and others (2012); and IMF staff calculations.

# The warming coincides with increasing GHG concentration

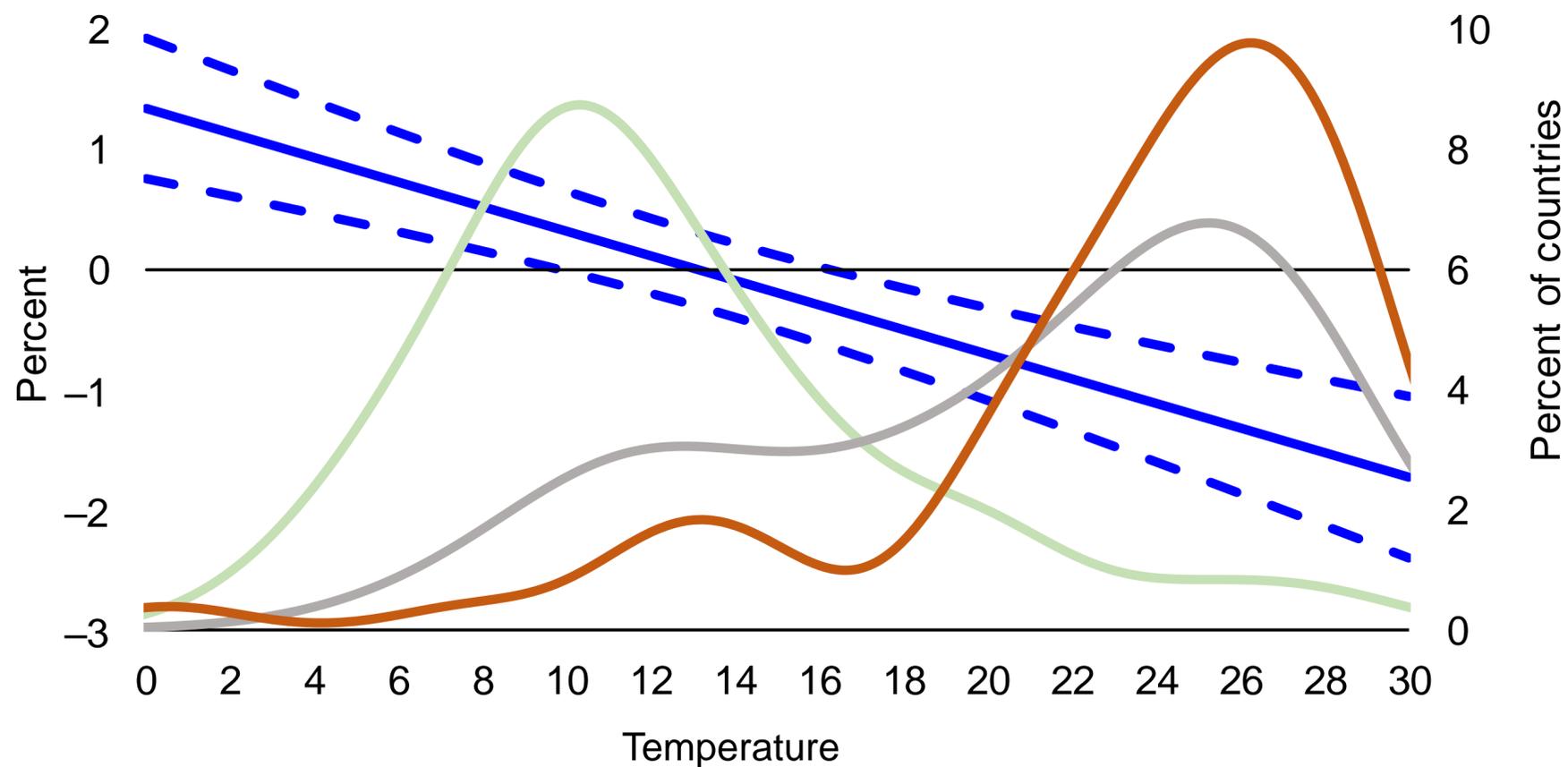
## Global Temperature Forcings

*(Land and ocean temperature, deviations from 1880–1910 avg., degrees Celsius)*



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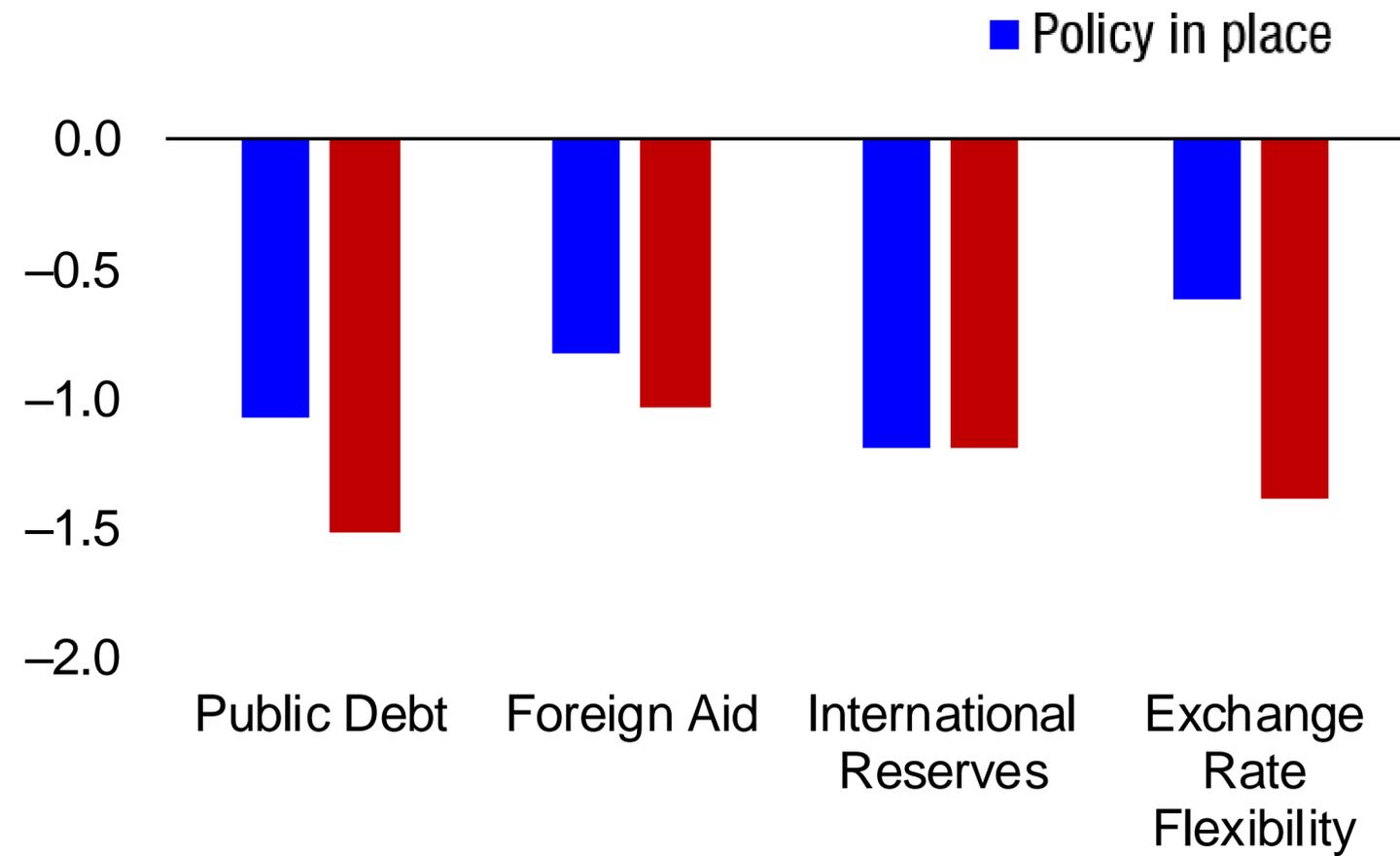


- Effect of temperature increases by country groups
- Varies widely
- AE's are largely unaffected
- EM's are affected negatively
- LICs suffer most



# Buffers and policies matter

## The Role of Policy Buffers



## The Role of Structural Policies and Institutions

