Extreme Weather Events and the Support for Democracy

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Motivation

- Global reversal of the trend towards greater democracy
  - Populist governments are gaining increasing traction, support for democracy is falling & polarization is rising (Guriev and Papaioannou, 2022)
  - SSA sample: 68% of respondents support democracy
- How do people form beliefs about political system they want?
  - Economic development $\longrightarrow$ democracy (e.g., Lipset, 1959)
  - Economic downturns $\longrightarrow$ democracy (e.g., Acemoglu and Robinson, 2001)
- Attitudes about the system are a function of (economic) conditions

This Paper

1. Does climate change make people update about the system?
   - Large economic, social, and political impacts (Carleton and Hsiang, 2016)
   - Climate change is one of the most urgent policy challenges (IPCC, 2021)
   - "Proxy" climate change by natural disasters (droughts)

2. If so, what are the channels driving this relationship?
   - Exposure to non-democratic systems of governance
   - Foreign influences drive beliefs (Tabellini and Magistretti, 2022; Wellner et al., 2023)

Outline

Measuring the Support for Democracy

- Geolocalized Afrobarometer surveys, rounds 2—6 (2002-2015)
  - N = 129,002 from 16 SSA countries; 51.7% of SSA population
- Support for democracy is constructed from this survey question:
  - "Which of these three statements is closest to your own opinion? A: Democracy is preferable to any other kind of government. B: In some circumstances, a non-democratic government can be preferable. C: For someone like me, it doesn't matter what kind of government we have."
- Two codings:
  - **Coding 1: A vs. B** **mean: 85.9%**
  - Coding 2: A vs. (B and C and "don't know") mean: 68.2%

Measuring Droughts

- Droughts are not only characterized by a lack of precipitation, but also by the soil's ability to retain water, which is a function of temperature, sunshine exposure, latitude, wind speed, and pressure
- Rely on a drought index that takes all of this into account
  - The Standardized Precipitation Evapotranspiration Index (SPEI) (Vicente-Serrano et al., 2010)
  - Continuous and standardized drought index where $-$ values indicate wet weather conditions and $+$ values indicate drought-like conditions
- Weather inputs for index: ERA5 reanalysis dataset from 1960 until 2015 for a 0.25×0.25 degree ($\approx 27 \times 27$km) grid

Outline

Empirical Specification

$$\text{Support for democracy}_{iegt} = \delta_g + \tau_t + \beta \text{Drought Index}_{gt} + \mathbf{x}_{iegt}\gamma + \epsilon_{iegt}$$

- Main assumptions:
  - Exogeneity of drought index
  - Homogeneous treatment effects
  - No sample selection
    - ⋆ Timing of survey
    - ⋆ Cond. on timing, balancedness of interviewees
    - ⋆ Adaptation behavior of individuals

Outline

Table: Extreme Weather Events and the Support for Democracy

	Respondent supports democracy			
	Coding 1		Coding 2	
	(1)	(2)	(3)	(4)
Drought index	-0.011**	-0.012**	-0.018***	-0.019***
	(0.005)	(0.005)	(0.005)	(0.006)
Drought index x country is autocratic		0.009		0.011
		(0.013)		(0.016)
Coefficient of index + interaction		-0.003		-0.008
p-value: Coefficient of index + interaction		[0.787]		[0.594]
Mean of outcome	0.859		0.682	
Effect of one drought (2 SDs) (no interaction)	-2.56%	-2.79%	-5.28%	-5.57%
Effect of one drought (2 SDs) (interaction)		-0.70%		-2.35%
Household controls	Yes	Yes	Yes	Yes
Cell fixed effects	Yes	Yes	Yes	Yes
Month by year fixed effects	Yes	Yes	Yes	Yes
SEs clustered at cell level	Yes	Yes	Yes	Yes
Observations	63077	63077	76792	76792

Outline

The Exposure to Non-Democratic Systems of Governance

- What drives the main effect?
  - Exposure to non-democratic systems of governance
    - ⋆ Foreign influences drive beliefs (Tabellini and Magistretti, 2022; Wellner et al., 2023)
  - Use proximity to development projects funded by World Bank (technocratic) and China (autocratic) as proxy for "outside influence"
  - Geocoded datasets on WB and China projects from AidData
- Policy perspective:
  - Tackling climate change is associated with huge flows of money into developing countries (e.g., $38.6 billion in FY2023 from WB alone)

Table: The Exposure to Non-Democratic Systems of Governance

	Respondent supports democracy			
	(1)	(2)	(3)	(4)
Drought index	-0.002	-0.001	0.003	0.010
	(0.005)	(0.005)	(0.006)	(0.007)
Drought index x Chinese project (50km)	-0.022***			
	(0.007)			
Drought index x Chinese project (100km)		-0.021***		
		(0.007)		
Drought index x World Bank project (50km)			-0.016**	
			(0.007)	
Drought index x World Bank project (100km)				-0.025***
				(0.007)
Coefficient of exposure to project	-0.024	-0.022	-0.013	-0.015
p-value: Coefficient of exposure to project	[0.002]	[0.001]	[0.010]	[0.004]
Mean of outcome		0.859		
Effect of one drought (2 SDs) (no project exposure)	-0.47%	-0.23%	0.070%	2.33%
Effect of one drought (2 SDs) (project exposure)	-5.59%	-5.12%	-3.03%	-3.49%
Household controls	Yes	Yes	Yes	Yes
Country by year effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
SEs clustered at cell level	Yes	Yes	Yes	Yes
Observations	63216	63216	63216	63216

Outline

Main Concern

Development projects are not randomly allocated, likely targeting areas with particular characteristics (e.g., poorer areas)

→ results above may conflate mechanisms

Address this in three ways:

- "Anticipation" effects Details
- "Doughnut" effects Details
- Sector-specific effects: results are the same for different sectors Details

Outline

Conclusion

- Original motivation: do people update about political system?
  - Attitudes about the system are a function of "conditions"
  - Condition in this paper: weather shocks/climate change
- Weather shocks significantly reduce the support for democracy
  - Effect persists only in democracies
  - Relationship only exists when exposed to non-democratic regimes

Thank You!

Appendix

Table: Local Conditions as Possible Confounding Mechanisms

	Respondent supports democracy			
	(1)	(2)	(3)	(4)
Drought index	-0.001	0.001	0.006	0.011
	(0.004)	(0.005)	(0.006)	(0.007)
Drought index x inactive Chinese project (50km)	-0.010			
	(0.012)			
Drought index x active Chinese project (50km)	-0.023***			
	(0.008)			
Drought index x inactive Chinese project (100km)		-0.009		
		(0.011)		
Drought index x active Chinese project (100km)		-0.023***		
		(0.007)		
Drought index x inactive World Bank project (50km)			-0.024**	
			(0.010)	
Drought index x active World Bank project (50km)			-0.021***	
			(0.007)	
Drought index x inactive World Bank project (100km)				-0.013
				(0.010)
Drought index x active World Bank project (100km)				-0.026***
				(0.008)
Mean of outcome			0.859	
Household controls	Yes	Yes	Yes	Yes
Country by year effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
SEs clustered at cell level	Yes	Yes	Yes	Yes
Observations	63216	63216	63216	63216

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Table: Local Employment Correlates with Development Projects

	Respondent is employed					
	(1)	(2)	(3)	(4)	(5)	(6)
Chinese project: 10km	0.026**					
	(0.012)					
Chinese project: 20km | not 10km		0.015				
		(0.020)				
Chinese project: 30km | not 20km			0.003			
			(0.021)			
World Bank project: 10km				0.029***		
				(0.006)		
World Bank project: 20km | not 10km					-0.001	
					(0.008)	
World Bank project: 30km | not 20km						-0.002
						(0.010)
Mean of outcome	0.345					
Household controls	No	No	No	No	No	No
Country by year effects	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
SEs clustered at cell level	Yes	Yes	Yes	Yes	Yes	Yes
Observations	128446	86549	69452	128446	86549	69452

Table: Excluding Income as a Mechanism

	Respondent supports democracy			
	(1)	(2)	(3)	(4)
Drought index	-0.002	-0.000	0.002	0.010
	(0.005)	(0.005)	(0.006)	(0.007)
Drought index x Chinese project (50km)	-0.027***			
	(0.009)			
Drought index x Chinese project (100km)		-0.023***		
		(0.008)		
Drought index x World Bank project (50km)			-0.019**	
			(0.008)	
Drought index x World Bank project (100km)				-0.029***
				(0.008)
Coefficient of exposure to project	-0.29	-0.023	-0.017	-0.019
p-value: Coefficient of exposure to project	[0.002]	[0.001]	[0.013]	[0.002]
Mean of outcome		0.859		
Effect of one drought (2 SDs) (no project exposure)	-0.47%	-0.00%	0.47%	2.33%
Effect of one drought (2 SDs) (project exposure)	-6.75%	-5.36%	-3.96%	-4.42%
Household controls	Yes	Yes	Yes	Yes
Country by year effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
SEs clustered at cell level	Yes	Yes	Yes	Yes
Observations	58230	58230	44004	44004

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Table: Exposure to Different Sectors of Development Projects

	Respondent supports democracy		
	(1)	(2)	(3)
Drought index	0.000	0.000	0.005
	(0.006)	(0.005)	(0.006)
Drought index x gov./infrastructure project	-0.014**		
	(0.007)		
Drought index x health/education project		-0.020***	
		(0.007)	
Drought index x sanitation/energy/water project			-0.022***
			(0.007)
Coefficient of exposure to project	-0.013	-0.019	-0.016
p-value: Coefficient of exposure to project	[0.018]	[0.004]	[0.002]
Mean of outcome		0.859	
Effect of one drought (2 SDs) (no project exposure)	0.00%	0.00%	1.16%
Effect of one drought (2 SDs) (project exposure)	-3.03%	-4.42%	-3.73%
Household controls	Yes	Yes	Yes
Country by year effects	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes
SEs clustered at cell level	Yes	Yes	Yes
Observations	63216	63216	63216

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