The Impact of USDA Disaster Designations on Farmland Values in the US

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Overview

USDA disaster declarations also activate various tax benefits and trigger eligibility for low-interest loans for producers in affected counties

Persistent and recurrent agricultural disasters are anticipated to influence agricultural land prices. Variations in land prices in response to USDA disaster declarations offer insights into the valuation of land following costly weather occurrences

Adjustments to such events imply a short-term decline in farmland values, followed by recovery in the long term due to farmers' adaptation strategies. Literature suggests that disaster assistance may be capitalized into land values

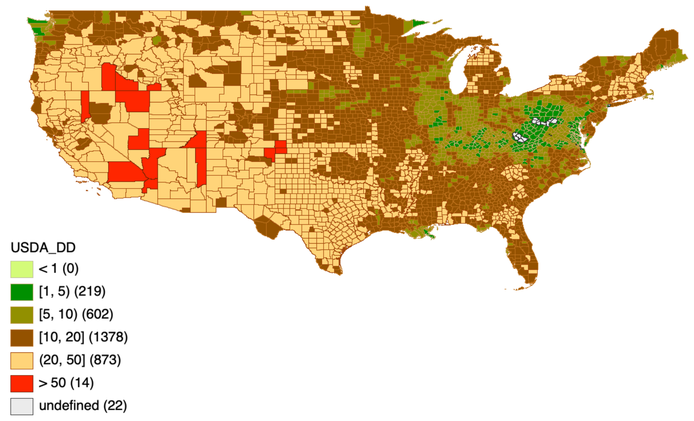
Objective(s)

- This study aims to enrich the discourse on agricultural decision-making and the crowding-out effects of policy instruments
- To empirically explore the relationship between disaster related assistance programs and farmland values

Data

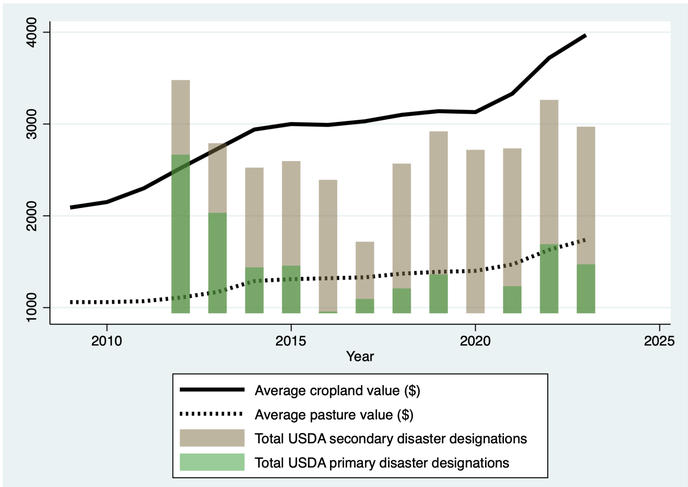
- Farmland transaction data from CoreLogic Inc.
- USDA, Farm Service Agency, Disaster designations information
- NOAA, National Integrated Drought Information System, gridMET Dataset

Total USDA (primary and secondary) disaster designations by county (2012-2023)



Source: USDA, Farm Service Agency, Disaster Designation Information

Annual average cropland and pastureland values (US $) and total USDA disaster designations



Source: USDA, Farm Service Agency, Disaster Designation Information ; USDA, National Agricultural Statistics Service

Methods

$$p_{ijt} = \beta_0 + \beta_d D_{ijt} + \beta_x X_{ijt} + \beta_w W_{ijt} + J + T + \zeta_{ijt}$$

p_{ijt} - real farmland values per acre
D_{jt}- count of USDA disasters designated in county
X_{ijt} - parcel-level characteristics
W_{ijt} - longer-term weather and climate variables
J – county FE, and T – year FE (2012-2019)

Identification strategy – 2SLS

$$D_{jt} = \gamma_0 + \gamma_v V_{jt} + \beta_w W_{ijt} + J + T + \eta_{jt}$$

V_{jt} - share of 3rd party votes in the last presidential election

	OLS 10Y avg. weather	2SLS 10Y avg. weather	2SLS 25Y avg. weather
USDA DD	-4.602	80.03	81.71
	(5.595)	(53.68)	(54.89)
Precipitation	-0.437*	-0.356	-1.514***
	(0.216)	(0.222)	(0.286)
Growing DD	3.126***	3.162***	3.206***
	(0.174)	(0.176)	(0.182)
Extreme DD	-1.555***	-1.561***	-1.868***
	(0.281)	(0.281)	(0.304)
Intercept	-1159.2***		
	(286.5)		
Obs.	236595	236595	236595

Discussion

- USDA disaster designations exhibited no discernible impact on farmland values (2012-2019)
- Frequent extreme weather events and resultant production losses may be adequately mitigated by existing policy instruments
- Although the instrument is robust and supported by literature, it is correlated with longer-term weather data; therefore, caution is warranted in interpreting findings

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