Land Misallocation and Structural Change: Evidence from The Great Depression

Pranjal Drall*

(Click here for latest version)

Abstract

This paper studies the impact of land misallocation on the pace of structural change and the distributional consequences of this slowdown. I estimate the impact of farm foreclosures during the Great Depression on individuals and regions. While foreclosures have negative short-term effects, they can also facilitate the reallocation of labor and capital by allocating land to its most productive use through auctions. To test this hypothesis, I exploit the passage of state-level foreclosure moratorium laws, which temporarily prevented creditors from foreclosing on delinquent farmers in 27 states, to generate quasi-experimental variation in exposure to foreclosures. Using linked Census microdata, I show that preventing foreclosures improved earnings and reduced migration for farm owners and workers between 1930-1940. However, I also find that the foreclosure moratoria had persistent negative effects on land values, labor markets, and agricultural and manufacturing productivity in the long run. These results emphasize the importance of centralized allocation mechanisms in improving productivity and growth.

*Pre-Doctoral Fellow, Becker-Friedman Institute at the University of Chicago. Email: pdrall@uchicago.edu. I would like to thank Ian Ayres, Eric Ohrn, Richard Hornbeck, and Ryan Kellogg and participants of the UChicago RP Workshop for their feedback and helpful comments. All errors are my own.

1 Introduction

The structural transformation of an economy, the shifting of economic activity from agriculture to manufacturing and services, is a major driver of economic growth (Kuznets, 1973). As countries develop, labor and capital are reallocated not only across sectors, but also towards more productive firms within each sector. Economic crises can accelerate this process by allowing for the replacement of outdated production methods with newer, more efficient ones through market competition (Schumpeter, 1943; Caballero and Hammour, 1996).

This transformation not only improves productivity, known as technical efficiency, but also increases allocative efficiency by redirecting resources and market share towards more productive firms (Olley and Pakes, 1996; Petrin and Levinsohn, 2012). This latter relationship is particularly important to study, as misallocation is a significant factor in lower aggregate productivity (Hsieh and Klenow, 2009; Asker et al., 2019).

Although structural transformation is good for overall economic growth, these gains are not evenly distributed. The process can create distinct winners and losers in the short term. Empirically measuring these distributional consequences is difficult due to the lack of regional or individual variation in exposure to structural change.

This paper studies the impact of land misallocation on the pace of structural change and the consequences of this slowdown on individuals and regions. Specifically, I estimate the impact of farm foreclosures during the Great Depression on individuals and regions. On average, over 96,000 farms were foreclosed per year between 1921 and 1940 (Alston, 1983). Recent research shows that foreclosures have significant negative effects on short-term consumption and investment (Diamond et al., 2020). However, farm foreclosures can also have positive long-term effects by facilitating the reallocation of land to more productive uses, which may also speed up the transition from agriculture to manufacturing. I test these competing hypotheses by estimating the impact of farm foreclosures on land values, labor markets, and agricultural and manufacturing productivity.

Clearly, regions with higher rates of foreclosures were also more heavily impacted by the Great Depression, which can affect long-term outcomes. To address endogeneity, I exploit the passage of state-level foreclosure moratorium laws that temporarily prevented creditors from foreclosing on delinquent farmers in 27 states (Alston, 1984).[1] An extensive literature uses differences in state foreclosure law to study its impacts. For example, Mian et al. (2015) utilize variation in judicial requirements and a border county design to study the impact of the Great Recession on housing markets.

Foreclosure rates are only available at the state level so I use the percentage of farms that were mortgaged in each county in 1930 as a proxy for county-level rates (Hausman et al., 2019). I interact this measure of "foreclosure intensity" with state-level variation in foreclosure regimes to generate county-level quasi-experimental variation in exposure to foreclosures. I combine this variation with data on farm ownership, land values and revenue, agricultural and manufacturing investment and productivity at the county-level (Fishback et al., 2005). I then link full count census records from 1930 and 1940 to track changes in migration, employment, and earnings (Abramitzky et al., 2021).

[1] See Ghent (2014) for an extensive discussion of state level developments in foreclosure law.

I estimate a differences-in-difference model with a rich set of fixed effects, including state-by-year dummies, and standard errors that deal with spatial correlation. I also allow counties with different baseline characteristics to react differently to foreclosures following a la Hornbeck (2012). The key identifying assumption underlying this empirical strategy is that, in the absence of the policy, outcomes for counties in Moratoria states—with similar mortgage rates—would track those of the counties in states without the policy.

I find that preventing foreclosures had positive short-term effects on individuals. Farmers in counties with lower exposure to foreclosures had better labor market outcomes and were less likely to migrate in 1940. However, despite these gains for individuals, the policy caused significant and persistent relative declines in land values, revenues, and agricultural productivity of 1-2% for a one percent increase in fraction of mortgages. Manufacturing productivity, capital investment and value added also saw relative declines that are similar in magnitude. These results are robust to a variety of specifications and estimation methods. I also show that more exposed counties did not receive less federal assistance during the Great Depression which provides further support for the Moratorium channel.

These estimates highlight the distributional consequences of structural transformation. Preventing foreclosures had negative long-term consequences for regions undergoing structural transformation by slowing down the transition from agriculture to manufacturing and keeping land in the hands of less productive farmers. This benefited some farmers in the short term, but had negative effects on regions over the long term. These findings suggest that US land markets may have been less efficient than previously thought (Edwards et al., 2022).

This paper is the first to study the impact of farm foreclosures during the Great Depression. I use variation in foreclosure regimes to estimate their effects on individuals and the economy, comparing the impact of centralized auctions to private property transfers (Hornbeck, 2010; Dippel et al., 2020; Smith, 2019; Covert and Sweeney, 2019). The results highlight the costs of misallocation of capital and land on long-term economic development. This paper adds to a growing literature on the importance of centralized allocation mechanisms and strong property rights for productivity and growth (Banerjee et al. (2002), Hsieh and Klenow (2009), Dippel et al. (2020), Adamopoulos and Restuccia (2014)).

The rest of the paper proceeds as follows. In Section 2, I describe the extent of the farm crisis during the Depression and the various policy responses. Section 3 describes data sources and presents my identification argument. Sections 5 and 6 present result and offer some mechanisms. I conclude with policy implications in Section 7.

2 Farm Foreclosures during the Great Depression

During the late 1920s and early 1930s, farmers faced mounting debt as their incomes collapsed. Agricultural mortgage debt totaled $7.7 billion, or 24% of the value of farm structures and land, in 1933 (Hausman et al., 2019). This led to a sharp increase in farm foreclosures, with over 100,000 farms foreclosed between 1926 and 1940, and 200,000 in 1933 (Alston, 1984).

Farm debt increased significantly during the 1910s due to rising prices for cash crops and overly optimistic expectations. However, as farm prices fell in the early 1920s, these increased

debt obligations became harder to meet. Land values also fell during this time, leading to higher equity to debt ratios. This created a situation in which many farmers were unable to meet their debt obligations, leading to a rise in foreclosures.

There was significant variation in farm distress and foreclosures across states and even within states. The Plains region was particularly affected, compared to the North East and most of the South. This variation was due to a variety of factors, such as dependence on cash crops and local lending criteria. For example, the percentage of farms mortgaged in 1930 at the county level ranged from 10% to 80%.

In response to high foreclosure rates, 27 states imposed moratoriums on farm foreclosures between 1933 and 1935. These moratoriums were implemented through "Procedural Relief" statutes that disallowed creditors from enforcing mortgage contracts.[2] For example, a Minnesota law allowed farmers to defer payment obligations to creditors while remaining in possession of their land. The Supreme Court upheld this statute in 1934, indirectly affirming similar laws in other states.[3]

There was significant variation in state statutes that offered relief to farmers from foreclosures. Some states completely banned foreclosures for a few years, while others had less favorable policies. Even the blanket bans were not fully enforced and there were still foreclosures in states with Moratoria. These statutes used different aspects of the foreclosure process to offer relief, such as enhancing redemption rights or limiting deficiency judgments. State courts had discretion in deciding which borrowers received relief (Skilton, 1946). I define Moratoria laws/states as those that made it difficult for creditors to foreclose on farmers, whether through a blanket ban or more procedural means.

Foreclosure Moratoria laws were more common in states with higher foreclosure rates and greater reliance on agricultural output (see Table 1). This presents an empirical challenge as states are "selecting into treatment." To address this, I include state-year fixed effects.

State level foreclosure moratoria were not the only tools used by states and the federal government to help farmers during the Great Depression. States also provided other forms of debt relief, and the federal government passed the Frazier-Lemke Farm Bankruptcy Act of 1934, which was later struck down by the Supreme Court in 1935.[4] The Roosevelt Administration also improved access to credit and refinanced mortgages at below market interest rates through the Farm Credit Act of 1933. All of these policies likely reduced foreclosures, but there is no evidence that they had differential impacts on certain regions, states, or counties.[5] Even if certain states or counties were affected differently by federal policy, these impacts would not bias my estimates unless they are directly correlated with both my measure of foreclosure intensity and the states that passed the moratorium laws.

It is important to note that the policy instrument I study, foreclosure moratoria, should be considered as reducing foreclosures at the margin. Due to data limitations, it is not possible to directly test whether the policy actually reduced foreclosures. However, I do show that the policy improved farm ownership rates in 1940 at the county-level, and my individual-level analysis using

[2]The American Response to Farm Crises: Procedural Debtor Relief, 1988 Univ. Illinois L. Rev. 1037-1067 (1988).

[3]*Home Building Loan Assoc. v. Blaisdell.* 290 U.S. 398 (1934)

[4]*Louisville Joint Stock Land Bank v. Radford*, 295 U.S. 555 (1935)

[5]Pawal Janas has early stage work that exploits the ability of the Federal Reserve to extend credit in some regions to measure the impact of financial intermediaries on local economic outcomes. He finds no effect in outcomes.

full count census data shows that foreclosure moratoria had significant impacts on households.

3 Data and Empirical Strategy

Foreclosure rates are only available at the state level, so I proxy for county-level rates with the percentage of households that were mortgaged in each county in 1930 (Hausman et al., 2019)[6] This is a measure of "treatment intensity" as counties with a higher fraction of farms under mortgage would be more likely to be affected by the policy.

I collect county-level data on demographics, agriculture, manufacturing, and productivity for the 20th century from (Haines et al., 2010). The sample period is 1910 to 1997, with 1940 as the first post-Depression year for which data is available. I follow Hornbeck (2012) to construct a rich set of controls for each county which include: (1) county characteristics for all available pre-1930 periods, (2) the outcome variable in 1930 and all available pre-1930 periods, and (3) the interaction between each year and the outcome variable in 1930 and in each lagged year. These controls allow counties to experience differential impacts from the moratorium policy along these observables, which are equivalent to including fixed effects for counties.

To analyze the impact of the foreclosure moratorium on individuals, I link full count Censuses of 1930 and 1940 using the linking procedure in Abramitzky et al. (2021). Since the census data does not distinguish between full ownership and mortgages, I use the same "treatment" variable as in the county level analysis.

An important empirical concern is that counties with different pre-1930s characteristics may react differently to the moratoria policy. To address this, I follow Hornbeck (2012) by allowing more affected counties to "experience systematically different changes after 1930" based on their pre-1930s characteristics. Outcome variables in 1930 and all available pre-1930s periods are also included in the regression. I include state-year trends to ensure identification comes from within-state differences in county level exposure to mortgages.

The key identification assumption is that a county with similar fraction of farms under mortgage (in 1930) would have similar outcomes under the absence of moratorium laws. Following Hornbeck (2012), this assumption must hold after controlling for differential changes over each period that are correlated with the state and by including pre-1930s county characteristics. I employ the following specification:

$$\ln(Y_{sct}) = \alpha + \beta(L_s \times \ln(M_{sc}) \times \mathbb{1}_{t>1930}) + \theta X_c + \sigma_{st} + \epsilon_{ct}$$

where,

- c indexes counties, t indexes years, and s indexes state
- Y are a variety of county level outcomes
- L is a state level dummy which is "on" in states with foreclosure moratorium

[6]There were 38.8 foreclosures per 1,000 farms or nearly 100 per 1,000 mortgaged farms. Using percent foreclosure for 1935 results in similar foreclosure incidence (Hausman et al., 2019).

- M is the percentage of farms with mortgages in 1930
- X are a rich set of pre-Depression county characteristics, the interaction between each year and each county's characteristics, lagged values of county characteristics, and the interaction between each year and the outcome variable in 1930 and in each lagged year.
- σ_{st} are state-year fixed effects
- Standard Errors are clustered at the county level to deal with county correlation over time. All regressions are weighted by percent farmland or county population depending on the outcome.

The coefficient of interest is the interaction term which is zero for counties in states wihout moratoria and percent of farms mortgaged (in 1930) for counties in which foreclosure moratorium was in effect. I get identical results when simply comparing counties with above median (or those in the top quartile) mortgage rates to others. By including state-year fixed effects, I control for state-level policy changes and other factors that may affect the outcome variable. This, combined with rich county-level controls, allows me to make inferences from within-state variation in foreclosure intensity across foreclosure regimes.

Since I don't have variation in the treatment at the individual level, I cannot measure the policy's impact on individual farmers directly. To address this, I keep a similar set-up as above and include controls for individual characteristics like age, race, industry of employment and employment status in 1930. The main goal of this exercise is to estimate the policy's impact on short-term outcomes at the individual level. By linking censuses, I am able to directly measure the impact on migration by tracking the same individuals over time. I employ the following specification:

$$\ln(Y_{1940_i}) = \alpha + \beta(F_{1930_i} \times L_s \times \ln(M_c)) + \theta X_{1930_{ic}} + \sigma_c + \epsilon_c$$

where,

- i indexes household heads, and c indexes counties
- Y are a variety of individual outcomes in 1940
- F is a dummy variable for farmers/farm owners/farm related workers in 1930
- L is a state level dummy which is "on" in states with foreclosure moratorium
- M is the percentage of farms with mortgages in 1930
- X are individual-specific demographics in 1930
- σ_c are county fixed effects
- Standard Errors are clustered at the county level
- Weighted to deal with missing links as in ABE (2020)

4 County Level Results

The effects of the foreclosure moratorium on farm ownership are clear: it significantly increases the fraction of farms in full ownership in areas where foreclosures were prevented. This can be seen in Table 2.

Table 3 shows that the moratorium also has a negative impact on land value and revenue outcomes. A 10% increase in the fraction of farms under mortgage at the county level leads to a long-term reduction of 0.5-1% in the value of land buildings, farm revenues, and total agricultural revenue per county acre. Manufacturing value added also decreases by almost 7% for a 10% increase in the fraction of mortgages. Counties affected by the moratorium also have fewer manufacturing establishments and lower value added per worker (see Table 4).

These reductions in land value and revenue are not caused by changes in land use, though land concentration does increase. Table 3 shows that counties where foreclosures were prevented have a similar fraction of farmland. However, these counties have significantly lower levels of investment, with lower levels of capital machinery and a lower labor to capital ratio. Cropland and pasture productivity also decrease significantly. These negative long-term outcomes are correlated with a large relative reduction in population (0.2% for every 1% increase in the fraction of mortgages).

Most of the reductions in land values and revenues come after the end of the Great Depression, which coincides with growth in American manufacturing (see Figure 1). This suggests that the decline is driven by the misallocation of land due to a lack of centralized mechanisms. This is supported by estimates using data from the Biennial U.S. Census of Manufactures between 1927-1937.[7] I find no change in the number of manufacturing establishments, value-added, and wages for workers immediately following this policy.

Counties with fewer foreclosures also have a higher share of farmland under tenant control (see Table 6 and Figure 2). This offers a potential mechanism for reductions in agricultural production. Smith (2019) finds that absentee ownership leads to under-investment and reduced productivity in agriculture. At first, it may seem puzzling why increased friction in the land transfer market would lead to a higher share of tenant farming. However, as Gates (1942) points out, tenancy is likely linked to "large-scale purchasing by speculators." The foreclosure moratorium policy, at least in certain states, was regressive in the sense that it favored landowners with larger land holdings. It required individual farmers to use the judicial system, which wealthier landowners were more likely to be able to do. Moreover, most statutes gave courts the ability to decide who received relief based on certain criteria, one of which was the ability of farmers to pay back their debts (Skilton, 1946).

By using data on government transfers between 1930-35, I can also rule out the New Deal spending channel as a reason for these long-term differences. One might expect that negative long-term outcomes in counties with higher foreclosure rates might be driven by lower levels of relief spending. However, as Table 6 shows, there are no differences in New Deal loans, the value of loans guaranteed, public works (WPA) and relief (FERA) spending in counties with a moratorium and higher mortgage incidence. Spending through the Agricultural Adjustment Act is higher by 0.04% points for a 1% increase, which corresponds to about $6000 more per county.

[7] Source: Pawal Janas (Northwestern)/Census Bureau

This is unlikely to have significant long-term impacts. Moreover, since this is a relative increase in government transfers, it only biases my estimates for the impact of the moratorium downward.

5 Linked Census Results

Now I will turn to the individual level analysis. I first show that farmer-related individuals (either owners or workers) in counties with lower exposure to foreclosures were more likely to stay either owners or workers in 1940 (see Table 8). These results act as a "first-stage" test to see if the moratoria actually worked. I also estimate this for each quartile of mortgage incidence, and the impact is almost entirely driven by the last two quartiles (see Table 9).

I then estimate the impact on employment and migration status in 1940 for individuals with different levels of exposure to foreclosures. In these regressions, the sample is all individuals that are successfully linked via Abramitzky et al. (2021). I first show that individuals in counties with fewer foreclosures were more likely to be employed and less likely to migrate (see the first column of Tables 9 and 10). This effect is not precisely estimated for migration, but it is still negative. The next regression decomposes these effects for farmers versus non-farmers. The effect is entirely driven by individuals who are either farm owners or farm workers (see the second column of Tables 9 and 10), which confirms that my results are not being driven by other policy measures, as only farmers seem to be benefiting. Farmers in the top quartile of foreclosure incidence in states with moratoria were almost 12% more likely to be employed and 2% less likely to migrate to a different state or county. These results are robust to directly controlling for county observables and their lags/interactions, as in the county-level specification.

6 Discussion

This paper estimates the impact of foreclosures on individuals and land by exploiting the passage of moratoria laws during the Great Depression. I find that lower exposure to foreclosures at the county level had significant negative long-term impacts on land values, investment, and agricultural and manufacturing productivity. These impacts are comparable in magnitude to those suffered by counties most severely affected by the Dust Bowl (Hornbeck, 2012).

I argue that these declines in agriculture are likely driven by an increase in land concentration and a higher share of tenant farming. The patterns in manufacturing are also consistent with reduced demand for high-skilled labor (Jung, 2020). In contrast, lower exposure to foreclosures certainly benefited individuals, who were more likely to be employed and less likely to migrate. These estimates are consistent with other work that looks at similar short-term outcomes in the present day (Mian et al., 2015).

The paper has direct implications for farm debt relief policy, especially in times of economic crises. I highlight the trade-offs associated with short-term outcomes for people versus long-term outcomes for land. It is difficult to precisely measure the net welfare gains/losses, as the reduced long-term impacts need to be carefully balanced with the short-term benefits felt by farm owners

and workers. In order to make precise policy recommendations, a structural model is needed to estimate the surplus gained from protecting individual farmers from foreclosure.

However, given the large relative declines for affected counties, it is highly likely that the costs outweigh the benefits here. These estimates suggest that policy options such as targeted debt relief might be better than the outright prevention of foreclosures, which prevent the reallocation of land. This is particularly relevant today given policy discussions around farm debt relief in response to farm distress both before and during the COVID-19 pandemic.

More broadly, my results contribute to the literature on the importance of allocation mechanisms in settings with scarce resources. The Coase Theorem states that, given sufficiently low transaction costs, initial allocations of productive assets do not matter for long-term outcomes (Coase, 1960). An emerging literature tests this empirically (Hornbeck (2010), Dippel et al. (2020), Smith (2019), Covert and Sweeney (2019), Brehm and Lewis (2021)).

I provide another example of a setting where this doesn't hold true in practice. Foreclosure moratorium laws reduced the likelihood of land going to auction at the margin. This allows me to compare the long-term impact of land allocation via auctions (which typically follow foreclosures) to transactions stemming from informal negotiations between private parties. The results show that foreclosure moratoria have persistent long-term effects over the 20th century, which suggests that initial misallocation of land is sticky. This is surprising given that the United States land market has a strong property rights regime with relatively low transaction costs (Edwards et al., 2022).

A key drawback of my analysis with the current data set-up is that I do not directly observe foreclosures (and resulting transactions) at the individual level, which makes precise estimation difficult. I am currently working to identify and digitize township-level data on foreclosures, which I can combine with a border county empirical design. I also plan to use U.S. banking conditions to estimate the impact of this policy on bank lending activity, which could also be driving these results.

7 Appendix

Table 7.1: County Characteristics in 1930: Moratoria vs Foreclosure Counties

	Moratoria		No Moratoria		T-Test
	Mean	St. Dev.	Mean	St. Dev.	Difference
% Farms Mortgaged in 1930	50.09	15.16	38.15	14.87	-12.09***
Value of Land Buildings	3.84	0.76	3.59	0.76	-0.07***
Farm Revenue	2.28	0.74	1.51	0.75	-0.06***
Log Population	9.94	0.98	9.75	0.84	-0.11***
Log Unemployment	1.40	0.56	1.28	0.58	-0.07***
Aggricultural Revenue	15.20	0.75	14.77	1.12	-0.53***
Machinery	1.17	0.87	0.76	0.73	-0.88***
Population, per 100 county acres	9.47	28.52	9.05	19.25	0.34
Fraction of population, rural areas	0.78	0.24	0.83	0.23	0.06***
Fraction of population, on farms	0.49	0.21	0.53	0.23	0.01***
Farms, per 100 county acres	0.54	0.37	0.63	0.39	0.06***
Fraction corn	0.10	0.16	0.01	0.04	-0.06***
Fraction wheat	0.07	0.16	0.01	0.06	-0.05***
Fraction hay	0.06	0.11	0.04	0.15	-0.04***
Fraction cotton	0.07	0.18	0.00	0.02	-0.02***
Fraction oats, barley, rye	0.06	0.11	0.01	0.03	-0.03***
Cattle, per county acre	0.03	0.04	0.00	0.01	-0.04***
Swine, per county acre	0.04	0.08	0.00	0.00	-0.03***
Chickens, per county acre	0.16	0.26	0.00	0.02	-0.10***
Labor/Capital	-4.71	0.97	-3.99	0.88	1.16***
Man. Establishments	3.29	1.13	3.06	0.95	-0.05***
Man. Workers	0.04	0.04	0.04	0.04	0.00***
Observations	1724		1011		44661

Note: $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

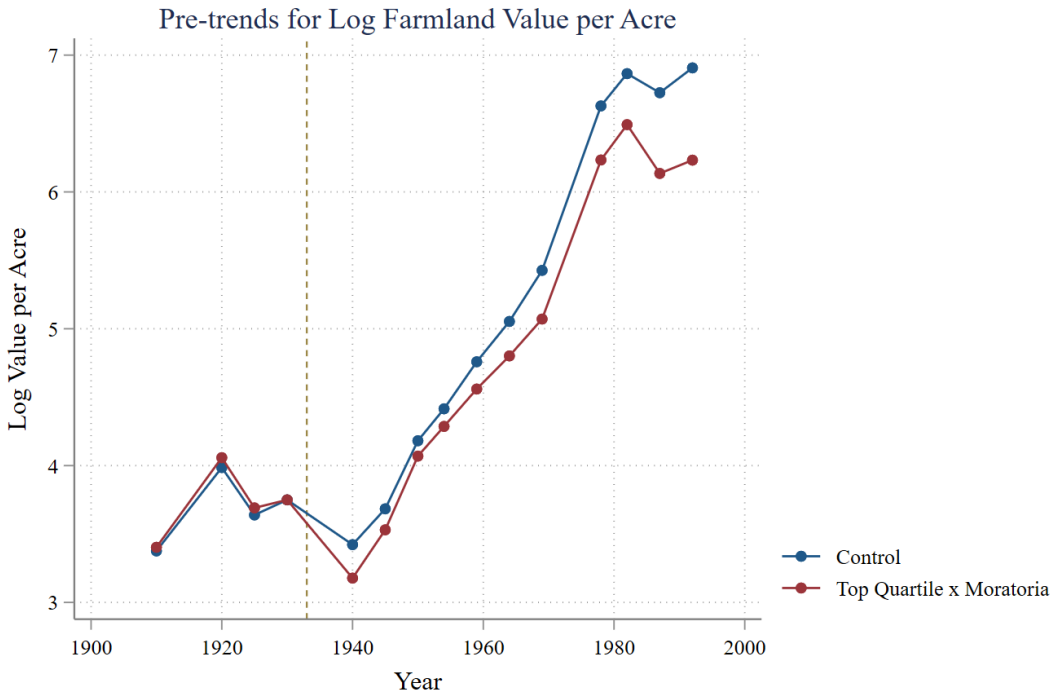
Table 7.2: Ownership Outcomes (upto 1950)

	(1) % Full Owner	(2) % Tenant	(3) % Part Owner	(4) % Manager
% Mortgage x Moratorium	0.047***	−0.001	−0.043***	−0.003**
	(0.01)	(0.01)	(0.01)	(0.00)
State-by-Year FE	*Yes*	*Yes*	*Yes*	*Yes*
Adjusted R-squared	0.777	0.861	0.838	0.699
N	1832	1832	1832	1832

Standard errors in parentheses

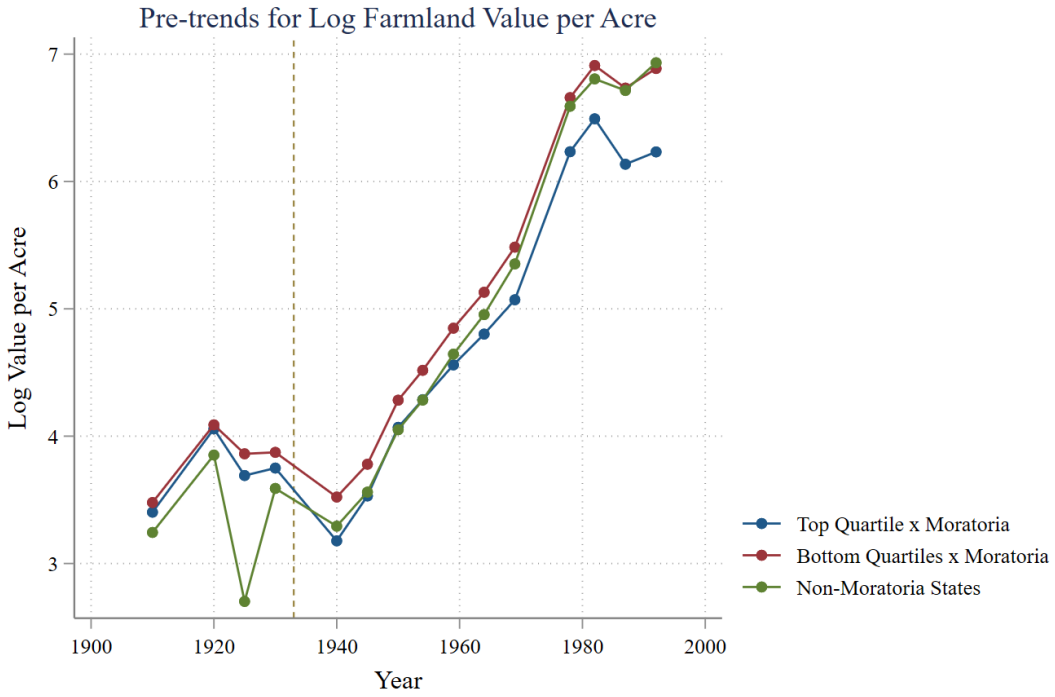
Outcomes are fraction of farms as opposed to fraction of farmland acres. Estimates are weighted by farmland.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$



Compares land values per acre for the top quartile of mortgaged counties in Moratoria states to all other counties.

Figure 1: Pre-Trends for Log Land Value per Acre over time (Top Quartile vs. Rest)



Compares land values per acre for the top quartile of mortgaged counties in Moratoria states to (a) bottom quartiles in Moratoria states and (b) control states.

Figure 2: Pre-Trends for Log Land Value per Acre over time (By Morgage quartiles and regime)

Table 7.3: Land Value and Revenue Outcomes

	(1) Value per Acre	(2) Revenue per Acre	(3) Value per Acre	(4) Revenue per Acre
% Mortgage x Moratorium	-0.136^{***}	-0.396^{***}		
	(0.012)	(0.019)		
Top Quartile x Moratorium			-0.089^{***}	-0.156^{***}
			(0.009)	(0.011)
State-by-Year FE	*Yes*	*Yes*	*Yes*	*Yes*
Adjusted R-squared	0.982	0.953	0.982	0.950
N	13735	13733	13735	13733

Outcomes are per county acre. Standard Errors are clustered at the county level. Weighted by farmland in 1930.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7.4: Agricultural Outcomes

	(1) Fraction Farmland	(2) Farm Size	(3) Machinery	(4) Labor/Capital	(5) Crop Prod.	(6) Animal Prod.
% Mortgage x Moratorium	0.00	0.24^{***}	-0.27^{***}	0.09^{**}	-0.14^{***}	-0.25^{***}
	(0.00)	(0.02)	(0.02)	(0.03)	(0.05)	(0.03)
State-by-Year FE	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Adjusted R-squared	0.78	0.95	0.98	0.96	0.75	0.96
N	15541	15563	8235	3663	7315	7317

Controls for pre-1930s characteristics included. Weighted by 1930 percent of county that is farmland.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7.5: Manufacturing Outcomes

	(1) Population	(2) Unemployment	(3) Establishments	(4) Workers	(5) Value Added	(6) Wages
% Mortgage x Moratorium	-0.48^{***}	0.10^{*}	-0.70^{***}	-0.01^{**}	-1.58^{***}	-0.07^{**}
	(0.06)	(0.05)	(0.05)	(0.00)	(0.22)	(0.03)
Adjusted R-squared	0.89	0.81	0.90	0.72	0.76	0.98
N	8244	2748	11425	4648	8766	7697

Controls for pre-1930s characteristics included. Weighted by 1930 county population.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7.6: Tenant Farming Outcomes

	(1) Share	(2) Value	(3) Equipment Value	(4) Cropland Value
% Mortgage x Moratorium	0.04^{***}	0.03	0.03	0.03^{**}
	(0.01)	(0.06)	(0.08)	(0.01)
State-by-Year FE	*Yes*	*Yes*	*Yes*	*Yes*
Adjusted R-squared	0.81	0.96	0.92	0.93
N	12769	3658	1832	2748

Controls for pre-1930s characteristics included. Weighted by 1930 percent of county that is tenant farmland.

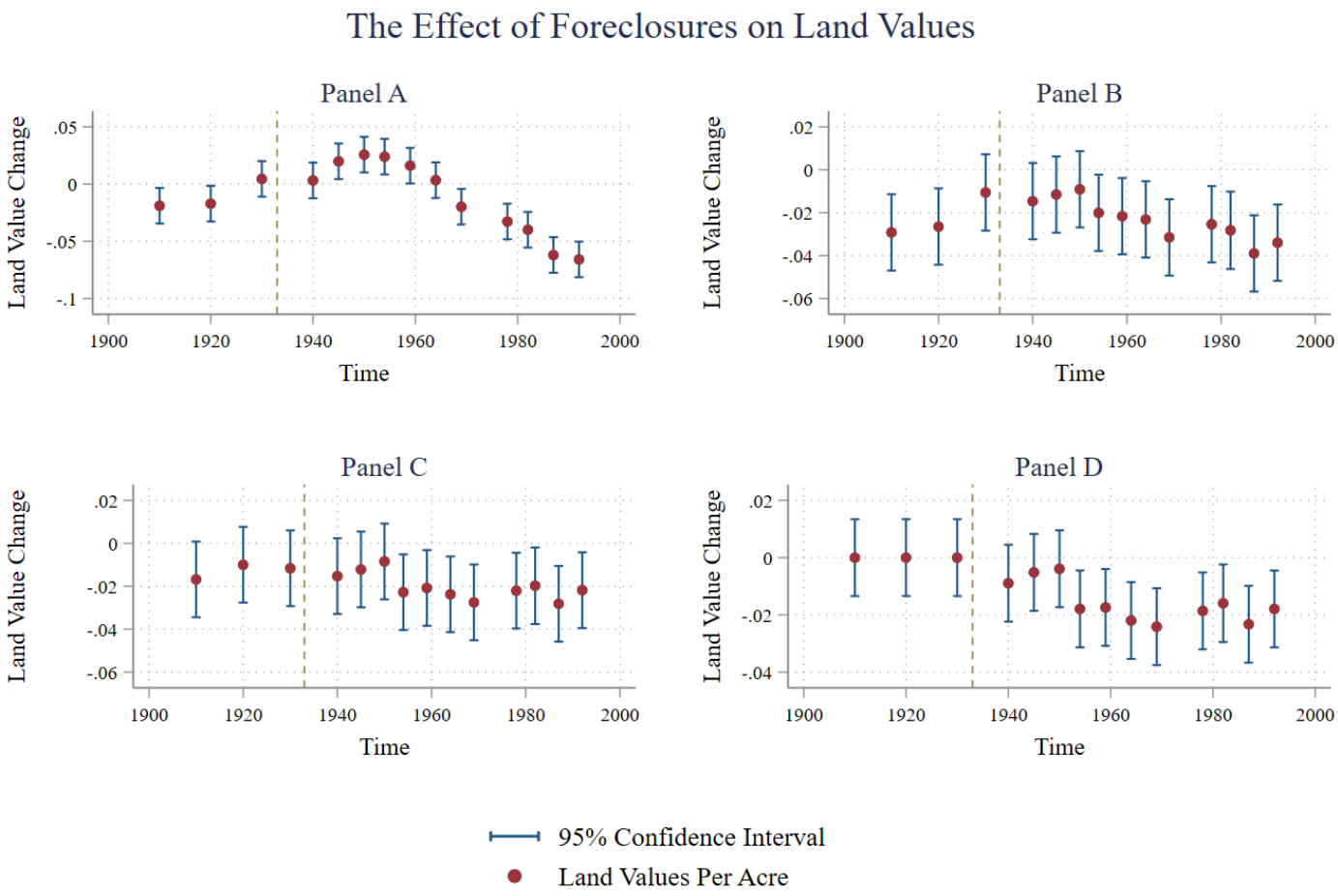
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7.7: New Deal Spending

	(1) Public Works	(2) New Deal Loans	(3) Value of Loans	(4) AAA	(5) Relief
% Mortgage x Moratorium	−0.06	−0.01	−0.05	0.10^{***}	−0.06
	(0.07)	(0.09)	(0.05)	(0.02)	(0.16)
Log % Mortgage in 1930	0.02	0.02	0.06	-0.07^{***}	−0.04
	(0.06)	(0.08)	(0.04)	(0.02)	(0.13)
Adjusted R-squared	0.66	0.83	0.90	0.91	0.87
N	912	912	912	912	912

Outcomes are per farmland acre. Controls for pre-1930s characteristics included. Weighted by 1930 percent of county that is farmland.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$



These plots estimate the aforementioned regression for each year using an event study design. In panel A, these coefficients are estimated by regressing the log per acre value of farmland and buildings on the fraction of a county that is mortgaged in 1930 interacted with states where foreclosure was allowed controlling for state-by-year fixed effects. Panel B includes as controls the interaction between each year and each county characteristics. Panel C also includes as controls the interaction between each year and the available lagged values of each county characteristics. Panel D also includes as controls the interaction between each year and the outcome variable in 1930 and in each lagged year. Estimates are weighted by farmland.

Figure 3: Impact of Foreclosures on Land Values per Acre over time

Table 7.8: Farm Outcomes

	Farm Worker	Farm Owner	Farm Worker	Farm Owner
Top Quartile x Moratoria	0.0245***	0.0453***		
	(0.01)	(0.02)		
% Mortgage x Moratoria			0.0047***	0.0062*
			(0.00)	(0.00)
County FE	*Yes*	*Yes*	*Yes*	*Yes*
1930 Employment FE	*Yes*	*Yes*	*Yes*	*Yes*
1930 Industry FE	*Yes*	*Yes*	*Yes*	*Yes*
Adjusted R-squared	0.0427	0.1116	0.0427	0.1116
N	1420631	1420631	1420631	1420631

Standard errors are clustered at the county level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7.9: Farm Outcomes by County Mortgage Quartile

	Farm Worker	Farm Owner
2nd Quartile x Moratoria	0.0083	0.0147
	(0.01)	(0.02)
3rd Quartile x Moratoria	0.0189**	0.0538***
	(0.01)	(0.02)
4th Quartile x Moratoria	0.0356***	0.0400*
	(0.01)	(0.02)
County FE	*Yes*	*Yes*
1930 Employment FE	*Yes*	*Yes*
1930 Industry FE	*Yes*	*Yes*
Adjusted R-squared	0.0428	0.1116
N	1420631	1420631

Standard errors are clustered at the county level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7.10: Farm Outcomes for Full Sample

	Farm Owner	Farm Manager	Farm Worker
Farm Owner in 1930 x Top Quart. x Moratoria	0.0608***	−0.0001	−0.0073***
	(0.00)	(0.00)	(0.00)
County FE	*Yes*	*Yes*	*Yes*
1930 Employment FE	*Yes*	*Yes*	*Yes*
1930 Industry FE	*Yes*	*Yes*	*Yes*
Adjusted R-squared	0.3451	0.0021	0.0643
N	9896587	9896587	9896587

Standard errors are clustered at the county level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7.11: Employment Outcomes

	Employed in 1940	Employed in 1940
Top Quartile x Moratoria	0.0205**	
	(0.01)	
Top Quartile x Moratoria=0 × Farm Related in 1930=1		0.0933***
		(0.00)
Top Quartile x Moratoria=1 × Farm Related in 1930=0		0.0144
		(0.01)
Top Quartile x Moratoria=1 × Farm Related in 1930=1		0.1180***
		(0.01)
County FE	*Yes*	*Yes*
1930 Industry FE	*Yes*	*Yes*
Adjusted R-squared	0.1169	0.1109
N	9896587	9896587

Standard errors are clustered at the county level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7.12: Migration

	Migration in 1940	Migration in 1940
Top Quartile x Moratoria	−0.0242	
	(0.03)	
Top Quartile x Moratoria=1		−0.0140
		(0.03)
Farm Related in 1930=1		−0.0594***
		(0.00)
Top Quartile x Moratoria=1 × Farm Related in 1930=1		−0.0223***
		(0.00)
County FE	*Yes*	*Yes*
1930 Employment FE	*Yes*	*Yes*
1930 Industry FE	*Yes*	*Yes*
1930 Race FE	*Yes*	*Yes*
Adjusted R-squared	0.0903	0.0907
N	9716431	9716431

Standard errors are clustered at the county level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

References

Abramitzky, R., L. Boustan, K. Eriksson, J. Feigenbaum, and S. Pérez (2021, September). Automated linking of historical data. Journal of Economic Literature 59(3), 865–918.

Adamopoulos, T. and D. Restuccia (2014, June). The size distribution of farms and international productivity differences. American Economic Review 104(6), 1667–97.

Alston, L. (1984). Farm foreclosure moratorium legislation: A lesson from the past. American Economic Review 74(3), 445–57.

Alston, L. J. (1983). Farm foreclosures in the united states during the interwar period. The Journal of Economic History 43(4), 885–903.

Asker, J., A. Collard-Wexler, and J. De Loecker (2019, April). (mis)allocation, market power, and global oil extraction. American Economic Review 109(4), 1568–1615.

Banerjee, A. V., P. J. Gertler, and M. Ghatak (2002). Empowerment and efficiency: Tenancy reform in west bengal. Journal of Political Economy 110(2), 239–280.

Brehm, P. A. and E. Lewis (2021). Information asymmetry, trade, and drilling: evidence from an oil lease lottery. The RAND Journal of Economics 52(3), 496–514.

Caballero, R. J. and M. L. Hammour (1996, 08). On the Timing and Efficiency of Creative Destruction*. The Quarterly Journal of Economics 111(3), 805–852.

Coase, R. H. (1960). The problem of social cost. The Journal of Law Economics 3, 1–44.

Covert, T. R. and R. L. Sweeney (2019, March). Relinquishing riches: Auctions vs informal negotiations in texas oil and gas leasing. Working Paper 25712, National Bureau of Economic Research.

Diamond, R., A. Guren, and R. Tan (2020, June). The effect of foreclosures on homeowners, tenants, and landlords. Working Paper 27358, National Bureau of Economic Research.

Dippel, C., D. Frye, and B. Leonard (2020, July). Property rights without transfer rights: A study of indian land allotment. Working Paper 27479, National Bureau of Economic Research.

Edwards, E. C., M. Fiszbein, and G. D. Libecap (2022). Property rights to land and agricultural organization: An argentina–united states comparison. The Journal of Law and Economics 65(S1), S1–S33.

Fishback, P. V., W. C. Horrace, and S. Kantor (2005). Did new deal grant programs stimulate local economies? a study of federal grants and retail sales during the great depression. The Journal of Economic History 65(1), 36–71.

Gates, P. W. (1942). The role of the land speculator in western development. The Pennsylvania Magazine of History and Biography 66(3), 314–333.

Ghent, A. (2014). How do case law and statute differ? lessons from the evolution of mortgage law. The Journal of Law Economics 57(4), 1085–1122.

Haines, M. R., I. university Consortium for Political, and S. Research (2010). Historical, demographic, economic, and social data: The united states, 1790-2002.

Hausman, J. K., P. W. Rhode, and J. F. Wieland (2019, February). Recovery from the great depression: The farm channel in spring 1933. American Economic Review 109(2), 427–72.

Hornbeck, R. (2010, 05). Barbed Wire: Property Rights and Agricultural Development*. The Quarterly Journal of Economics 125(2), 767–810.

Hornbeck, R. (2012, June). The enduring impact of the american dust bowl: Short- and long-run adjustments to environmental catastrophe. American Economic Review 102(4), 1477–1507.

Hsieh, C.-T. and P. J. Klenow (2009, 11). Misallocation and Manufacturing TFP in China and India*. The Quarterly Journal of Economics 124(4), 1403–1448.

Jung, Y. (2020). The long reach of cotton in the us south: Tenant farming, mechanization, and low-skill manufacturing. Journal of Development Economics 143(C), S0304387819305152.

Kuznets, S. (1973). Modern economic growth: Findings and reflections. The American Economic Review 63(3), 247–258.

Mian, A., A. Sufi, and F. Trebbi (2015). Foreclosures, house prices, and the real economy. The Journal of Finance 70(6), 2587–2634.

Olley, G. S. and A. Pakes (1996). The dynamics of productivity in the telecommunications equipment industry. Econometrica 64(6), 1263–1297.

Petrin, A. and J. Levinsohn (2012). Measuring aggregate productivity growth using plant-level data. The RAND Journal of Economics 43(4), 705–725.

Schumpeter, J. A. (1943). Capitalism, Socialism, and Democracy.

Skilton, R. H. (1946). Government and the mortgage debtor 1940-1946. University of Pennsylvania Law Review 95(2), 119–143.

Smith, C. B. (2019). Land concentration and long-run development: Evidence from the frontier united states.