The Distributional Impacts of Structural Change: Evidence from the Great Depression

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Abstract

Estimating the distributional consequences of structural change is an empirical challenge. I gain purchase on this question by measuring the impact of farm foreclosures during the Great Depression on individuals and regions over the 20th century. Foreclosures, despite having negative impacts on short run consumption and investment, facilitate the reallocation of labor and capital by allocating land to highest use via auctions. I exploit the passage of state foreclosure moratorium laws between 1933-1935 which temporarily prevented creditors from foreclosing on delinquent farmers in 27 states to generate quasi-experimental variation in exposure to foreclosures and structural change. Using linked Census microdata, I first show that preventing foreclosures improved earnings and reduced migration for farm owners and workers between 1930-40. Despite these individual benefits, I find that the Moratoria caused large and persistent decreases in land values, farm revenues, and agricultural productivity at the county level. Most of the decrease in agricultural output is driven by per capita productivity declines as acres in farmland remain steady over time. The Moratoria also caused caused significant decreases in manufacturing value added per worker, capital investment and productivity. The timing of these relative declines suggests that they are driven by the misallocation of land and resources stemming from lower exposure to centralized auctions in counties where a greater number of foreclosures were prevented. These results highlight the distributional consequences of structural change and the long run costs of misallocation.

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1 Introduction

Structural transformation–the reallocation of economic activity across agriculture, manufacturing, and services–is a key driver of economic growth (Kuznets, 1973). As countries grow, labor and capital reallocate not only across sectors but also towards more productive firms within a sector. Economic crises can hasten this process by facilitating creative destruction: the replacement of obsolete production units with new ones through market competition (Schumpeter, 1943; Caballero and Hammour, 1996).

This process not only increases productivity directly, dubbed technical efficiency, but also improves allocative efficiency by reallocating market share and scarce resources towards more productive firms (Olley and Pakes, 1996; Petrin and Levinsohn, 2012). This latter relationship is especially important to study as misallocation is a key contributor to lower aggregate productivity (Hsieh and Klenow, 2009; Asker et al., 2019).

A large literature documents the positive contributions of structural transformation to aggregate economic growth. However, these gains are unevenly distributed as even though sectoral transitions "lift all boats" in the long run, they create a distinct set of winners and losers in the short run. Empirically estimating these distributional consequences is difficult as regional or individual variation in exposure to structural change is hard to come by.

I make progress on this question by exploiting quasi-experimental variation in exposure to structural change stemming from differential exposure to farm foreclosures during the Great Depression. Between 1921 and 1940, an average over 96,000 farms were foreclosed each year (Alston, 1983). Recent evidence shows that foreclosures have strong negative effects on consumption and investment in the short run (Diamond et al., 2020). Conversely, farm foreclosures can have positive long-run effects by facilitating the reallocation of land to more productive use which might also speed up the transition from agriculture to manufacturing. I test these competing hypotheses empirically 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 adversely affected by the Great Depression, which simultaneously affects long run outcomes. To deal with this 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]

Foreclosure rates are only available at the state level so I proxy for county-level rates with percentage of farms that were mortgaged in each county in 1930 (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). To measure the foreclosure's impact on individuals, I link full count census records from 1930 and 1940 to track short run outcomes such as migration, employment, and earnings.

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

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

(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 indeed benefited individuals in the short-run. 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 at the margin slowed down the transition from agriculture to manufacturing and left land in the hands of relatively less productive farmers. This benefited some farmers in the short run but had significant negative consequences for regions over the long run. These results also indicate that US land markets, especially during the 20th century, were likely less efficient than previously thought as initial misallocation due to foreclosures has significant long run impacts (Edwards et al., 2022).

This is the the first paper to directly study the impact on farm foreclosures during the Great Depression. A few studies have used similar variation in foreclosure regimes to estimate their impact during the Great Recession (Mian et al., 2015). More broadly, this paper contributes to a literature that documents the importance of centralized allocation mechanisms and strong property rights on productivity and economic growth. I am able to compare the impact of allocation via centralized auctions, that typically follow foreclosures in this setting, to property transfers resulting from transactions between private parties (Hornbeck, 2010; Dippel et al., 2020; Smith, 2019; Covert and Sweeney, 2019). The estimates also highlight the significant costs associated with initial (mis)allocation of capital and land on long run development (Banerjee et al. (2002), Hsieh and Klenow (2009), Adamopoulos and Restuccia (2014), Adamopoulos and Restuccia (2020), Adamopoulos et al. (2022)).

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 various institutional constraints. Section 4 presents my identification argument. Sections 5 and 6 present result and offer some mechanisms. I discuss policy implications in Section 7.

2 Farm Foreclosures during the Great Depression

During the late 1920s and early 1930s, farmers were forced to pay fixed interest payments as their incomes collapsed. In 1933, agricultural mortgage debt totaled $7.7 billion, a staggering 24 percent of the value of farm structures and land and 270 percent of farm personal income (Hausman et al., 2019). This led to sharp increase in farm foreclosures and 100,000 farms were foreclosed between 1926 and 1940; this number reached 200,000 in 1933 (Alston, 1984).

Farm debt obligations boomed during the 1910s due to overly optimistic expectations. This increase was also fueled by rising prices for cash crops during World War I. The average mortgage debt by State increased by 131% between 1914 to 1925. These increased debt obligations became hard to meet as farm prices fell starting the early 1920s. Land values fell during the interwar years as earnings expectations got revised; this increased equity to debt ratios (Alston, 1984).

There was significant variation in farm distress and subsequent foreclosures rates across states, and even within states. The Plains suffered significantly more than the North East and most of the South. This variation stemmed from a variety of idiosyncratic factors like dependence on cash crops and lending criteria of local institutions (Alston, 1984). For instance, the percentage of farms mortgaged in 1930 at the county level was between 10% and 80%.

In response to the high foreclosure rates, 27 states imposed moratorium on farm foreclosures between 1933 and 1935. Iowa became the first state to pass such a law in January 1933, and the remaining states followed suit over the next 18 months. States directly disallowed creditors from enforcing mortgage contracts by passing a variety of "Procedural Relief" statutes.[2] A Minnesota law, for instance, allowed farmers to defer their payment obligations to creditors while allowing them to remain in possession. The Supreme Court upheld this statute in 1934[3] This ruling also indirectly affirmed other similar statutes in other states.

There was considerable variation in these state statutes in the kind of relief they offered. Some states completely disallowed foreclosures for a few years (typically about two years) while others passed policies that were relatively less favorable to farmers. Even blanket bans weren't fully enforced and there certainly were foreclosures in states with moratoria. These statutes used different aspects of the foreclosure process to offer relief to farmers. For instance, states enhanced redemption rights for foreclosed land and/or limited deficiency judgements. Regardless of the kind of debt relief states passed, state courts had discretion in which borrowers received relief (Skilton, 1946). I define Moratoria laws/states as those that at least partially made it difficult for creditors to foreclose upon farmers. This could take the form of blanket bans or more procedural routes that I discussed above.

These laws were far more common in states with higher foreclosure rates and states with greater reliance on agricultural output (see Table 1, Wheelock (2008) and Ghent (2014)). This presents an empirical challenge as comparing counties directly across states would lead to biased estimates. My empirical strategy is able to deal with this by including state-year fixed effects, and by allowing counties with different baseline characteristics to react differently to foreclosure moratoria à la Hornbeck (2012).

State level foreclosure moratoria weren't the only tools utilized by the states and federal government to fight farm distress during the Great Depression. States provided a variety of other debt relief to farmers. The Federal government also passed a blanket foreclosure ban (the Frazier-Lemke Farm Bankruptcy Act of 1934) which the Supreme Court struck down in 1935.[4] The Roosevelt Administration also improved access to credit and refinanced mortgages at below market interest rates via the Farm Credit Act of 1933. All of these policy levers likely reduced foreclosures. To my knowledge, there is no evidence that these federal policies had differential impacts

[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)

for certain regions, states, or counties.[5] Even if certain states/counties were affected differentially by federal policy, these impacts would need to be correlated with both my measure of foreclosure intensity and the states that passed the moratorium laws to bias my estimates.

It's also important to note that the policy instrument I exploit here–Foreclosure Moratoria–should be thought of as reducing foreclosures at the margin. There's no direct way to test whether the policy actually reduced foreclosures due to data limitations. However, I argue that the results of my individual level analysis using full count census data show that foreclosure moratoria had significant impacts at the household level.

3 Data

Foreclosure rates are also only available at the state level. To deal with this, I proxy for rates with 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; 1940 is the first post-Depression year for which data are 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. These results are identical to simply including fixed effects for counties.

To analyze the impact of the foreclosure moratorium on individuals, I link full count Censuses of 1930 and 1940 via the linking procedure in Abramitzky et al. (2021). Both of these samples technically include a question for "ownership status" of home/farm. However, they do not distinguish between full ownership and on mortgage. Therefore, I rely on the same "treatment" variable as in the county level specification.

4 Empirical Strategy

An important empirical concern is that counties with different pre-1930s characteristics react differently to foreclosures (and moratorium). To deal with this, I closely follow Hornbeck (2012) by allowing more affected counties are allowed to "experience systematically different changes after 1930" based on pre 1930s characteristics. Outcome variables in 1930 and all available pre periods are also included in the regression. I include state-year trends so identification comes from

[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.

[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).

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
- 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.[7] By including state-year fixed effects, I control for state-year trends stemming from state level policy changes and other factors. This combined with rich county level controls allows me to make inferences from within state variation in foreclosure intensity across foreclosure regimes.

As noted above, I don't have variation in the treatment at the individual level as the home/farm ownership question in the Census doesn't classify farmers based on mortgage status. Therefore, in order to measure the policy's impact on individual farmers, I keep a similar set-up as above and include controls for individual characteristics like age, race, industry of employment in 1930, and employment status in 1930. The main goal of this exercise is to estimate the impact of the policy on short run outcomes at the person level. By linking censuses, I am able to directly measure the impact on migration by making sure I am tracking the same individuals over time. I employ the following specification:

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

[7] I get identical results when simply comparing counties with above median (or those in the top quartile) mortgage rates to others.

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)

5 County Level Results

I first regress the Moratoria's effect on county-level farm ownership. It's clear that the policy significantly impacts aggregate outcomes as fraction of farms in full ownership increases significantly in areas where more foreclosures were prevented (see Table 2).

Table 3 shows the impact of foreclosure moratorium on land value and revenue outcomes. A 10% increase in fraction of farms under mortgage at the county level leads to a $\sim$0.5% to 1% reduction in value of land buildings, farm revenues, and total agricultural revenue per county acre over the long run. Manufacturing value added decreases by almost 7% for a 10% increase in fraction of mortgages. Affected counties also have relatively less manufacturing establishments and lower value added per worker (see Table 4).

These reductions in land value and revenues aren't driven by changes in land use although land concentration increases. Table 3 shows that counties where foreclosures were prevented have similar fraction of farmland. However, these counties have significantly lower level of investment; capital machinery and the labor to capital ratio are lower. I also find that cropland and pasture productivity decrease significantly. These negative long run outcomes are also correlated with a large relative reduction in population ($\sim$0.2% for every 1% increase in fraction of mortgages).

Event study and pooled yearly estimates suggest that most of these reductions in land values and revenues come after the end of Great Depression ended coincide with growth in American manufacturing (see Figure 1). These estimates provide suggestive evidence that decline is driven by misallocation of land stemming from lack of centralized mechanisms. I also utilize data from the Biennial U.S. Census of Manufactures (1927 to 1937) to check for short-run impacts for land.[8] I find that there was no change in the number of manufacturing establishments, value-added, and wages for workers immediately following this policy.

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

Counties with fewer foreclosures also have a higher share of farmland under tenant control (Table 6 and Figure 2). This offers a potential mechanism for reductions in agriculture production. Smith (2019) argues that absentee ownership causes landlords to underinvest and reduces agricultural productivity. At first, it is puzzling why increased frictions in the land transfer market would lead to higher share of tenant farming.

However, as Gates (1942) points out, tenancy is likely linked to "large-scale purchasing by speculators." Foreclosure moratorium policy, at least of certain states, was regressive in the sense that it favored land owners with larger land holdings. It required individual farmers to use the judicial system which presumably wealthier land holders would be able to do so. Moreover, most statutes gave the Courts the ability to decide who got relief based on certain criteria; one of these criteria was the ability of farmers to pay back the debt (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 run differences. One might expect that negative long run outcomes in counties with higher foreclosure rates might be driven by lower levels of relief spending. Table 6 shows that there are no differences in New Deal loans, value of loans guaranteed, public works (WPA) and relief (FERA) spending in counties with moratorium and higher mortgage incidence. Spending through the Agricultural Adjustment Act is higher by 0.04% points for a 1% increase; this corresponds to about $6000 more per county which is unlikely to have significant long run impacts. Moreover, since this is a relative increase in government transfers, it only biases my estimates for the impact of the moratorium downward.

6 Linked Census Results

Now I'll 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/workers in 1940 (Table 8). These results act as "first-stage" test to see if moratoria actually worked. I also estimate this for each quartile of mortgage incidence and the impact is almost entirely driven by the first two quartiles (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 (First column of Tables 9 and 10). This effect isn't precisely estimated for migration but is still negative. The next regression decomposes these effects for farmers vs. non-farmers. The effect is entirely driven by individuals that are either farm owners or farm workers (Second column of Tables 9 and 10) which confirms that my results aren't 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.

7 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 run impacts on land values, investment, and agricultural and manufacturing productivity. These impacts are comparaable 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 increased tenancy share for farms. The patterns in manufacturing are also consistent with reduced demand for high-skilled labour for manufacturing (Jung, 2020). In contrast, lower exposure to foreclosures certainly benefited individuals as they were more likely to be employed and less likely to migrate. These estimates are consistent with other work that looks at similar short run outcomes in present day (Mian et al., 2015).

The paper directly informs farm debt relief policy especially in times of economic crises. I highlight the trade offs associated between short-run outcomes for people versus long-run outcomes for land. I am unable to precisely measure the net welfare gains/losses as the reduced long run impacts need to be carefully balanced with short benefits felt by farm owners and workers. In order to make precise policy recommendations, I need a structural model to estimate the surplus gained from protecting individual farmers from getting foreclosued upon.

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

More broadly, my results contribute to the literature on the salience of allocation mechanisms in settings with scarce resources. The Coase Theorem holds that given sufficiently low transaction costs, initial allocations of productive assets don't matter for long run 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 into auction at the margin. This allows me to compare the long run impact of land allocation via auctions (that typically follow foreclosures) to transactions stemming from informal negotiations between private parties. The results show that foreclosure moratoria have persistent long run 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 don't directly observe foreclosures (and resulting transactions) at the individual level which makes precise estimation difficult. I'm 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 utilize U.S. banking conditions to estimate this policy's impact on the bank lending activity which could also be driving these results.

8 Appendix

Table 8.1: 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: $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

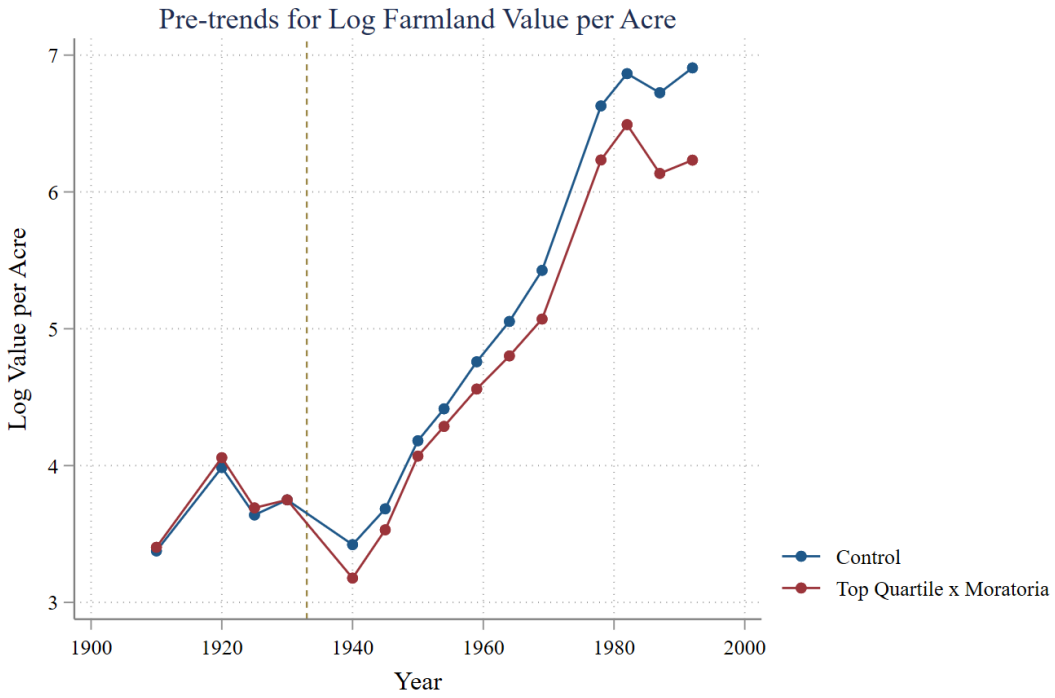
Table 8.2: Ownership Outcomes (upto 1950)

	(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

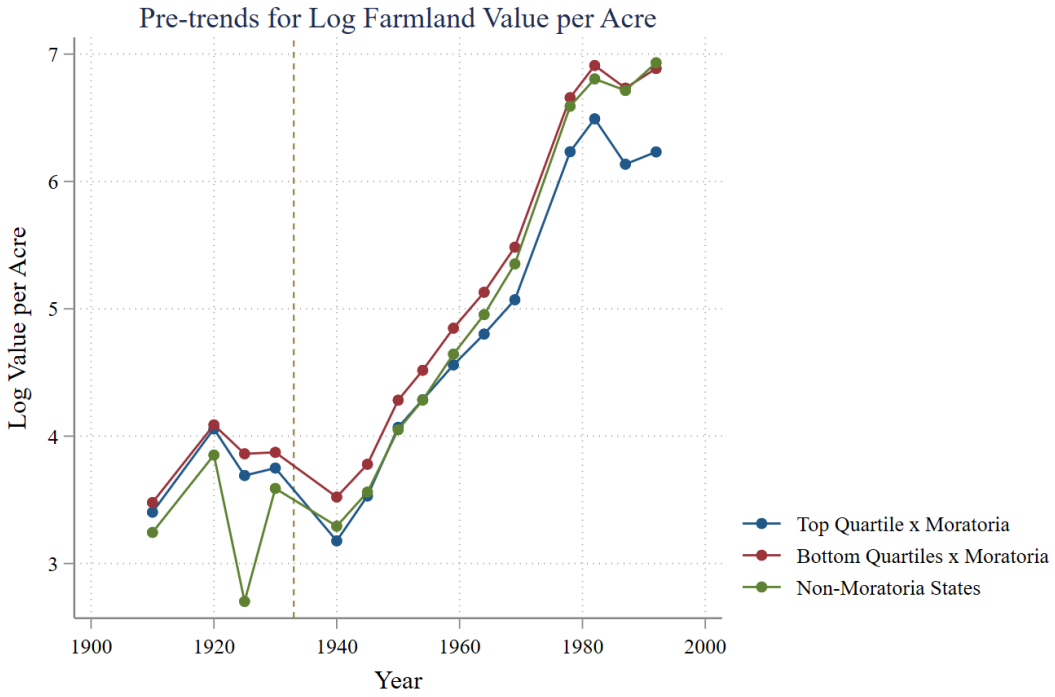
Outcomes are fraction of farms as opposed to fraction of farmland acres. Estimates are weighted by farmland.

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



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 8.3: 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 8.4: 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 8.5: 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 8.6: 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.

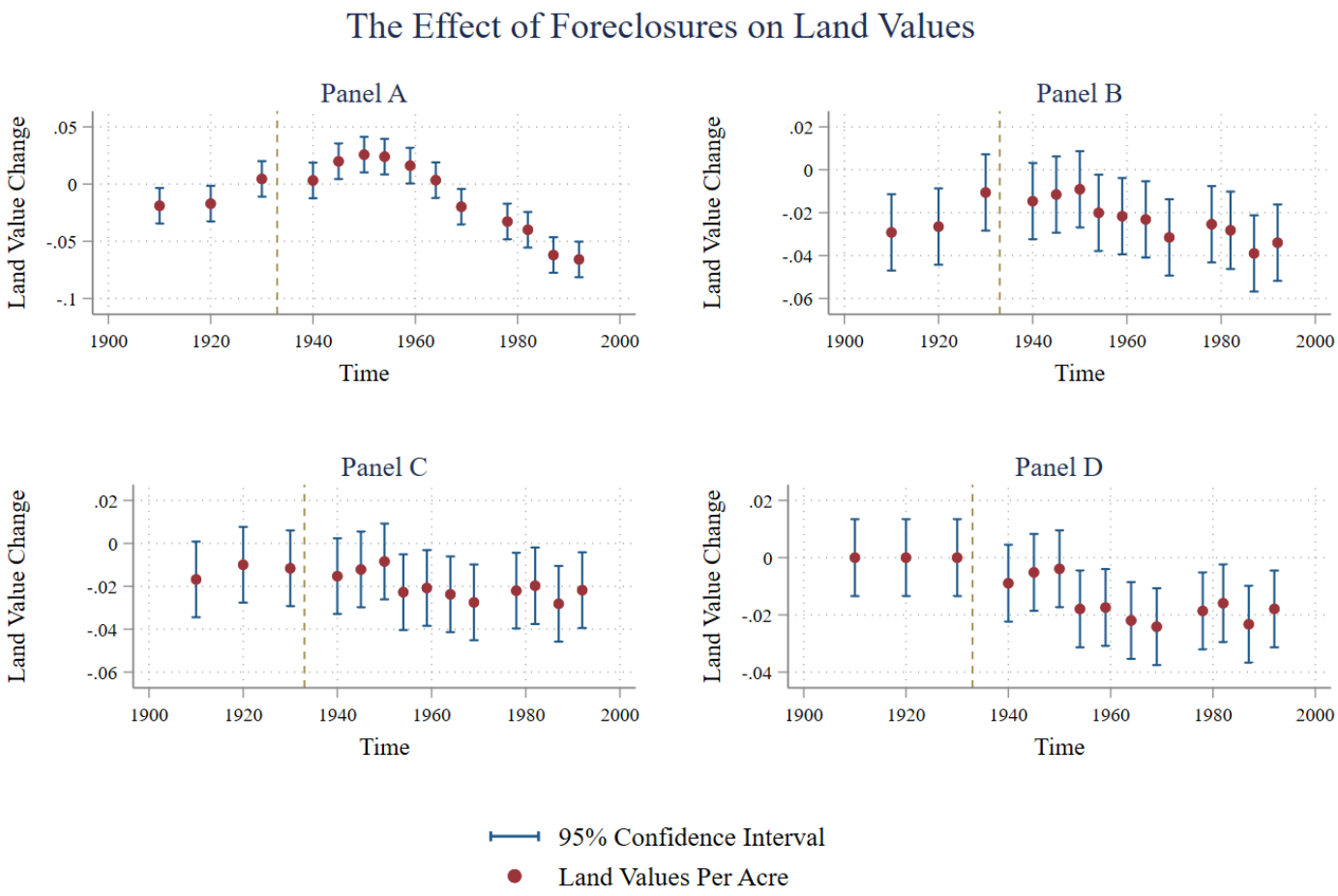
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8.7: 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.

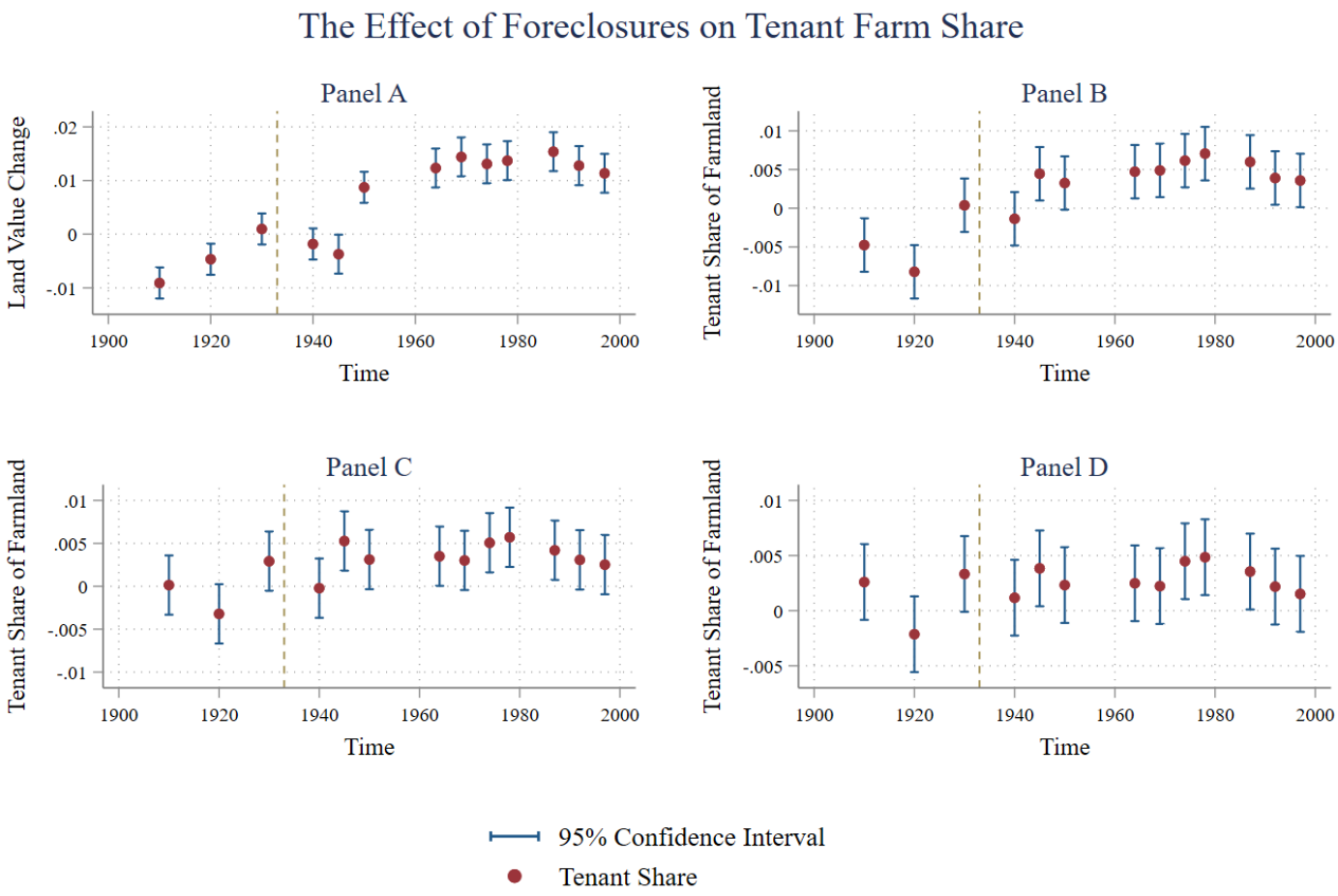
Figure 3: Impact of Foreclosures on Land Values per Acre over time

Table 8.8: 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.

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



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 tenant occupied farmland.

Figure 4: Impact of Foreclosures on Tenant Share over time

Table 8.9: 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 8.10: 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 8.11: 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 8.12: 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.

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

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