Does Equality Persist? Evidence from the Homestead Act

Abstract: Passed in 1862, the Homestead Act was an important piece of legislation that gave away 160 acres of land in the Western United States to any individual willing to settle, cultivate, and occupy the land for a period of five years. Social scientists have examined the various impacts of the act extensively, but not in terms of its original aims. Many of those who fought for passage of the act rested their case on the moral claim that all persons have an equal right to the soil. This paper examines the extent to which the Homestead Act actually lived up to this moral ideal. We ask: did the Homestead Act lead to greater equality in the ownership of land? We find that the act did achieve greater equality in the short run but, in the long run, this equality proved fleeting, disappearing within 100 years of the act's passage.

Keywords: Homestead Act; property rights; economic development; persistence; inequality.

First Author: Bryan Leonard

School of Sustainability, Arizona State University, 800 S. Cady Mall, Tempe, AZ 85281, USA; bryan.leonard@asu.edu

Second Author: Brian Kogelmann

Department of Philosophy, University of Maryland-College Park, 4300 Chapel Drive, College Park, MD 20742, USA; bkogelma@umd.edu

1. Introduction

Passed by the United States Congress in 1862, the Homestead Act has been called "one of the most important laws which have been enacted in the history of this country" (Gates 1936: 652). The act gave away 160 acres of land in the Great Plains and Western United States to any individual willing to brave the frontier to settle, cultivate, and occupy the land for a period of five years. Before the Homestead Act, property in land was primarily acquired by purchasing it from the federal government (either through cash sales or preemption), who held the land in public domain. The Homestead Act changed this. Now, anyone willing to make the trip out West and work the land for an extended period of time could become a property owner.

Social scientists have spent a good deal of time analyzing the long-run impact of the Homestead Act. Some scholars have asked whether homesteading was an efficient way of allocating property rights (Anderson and Hill 1990; Leonard and Allen 2021), others have focused on the significance of frontier culture (Turner 1893; Bazzi et al. 2020), still others have examined the act's role in securing political sovereignty along the frontier (Allen 1991; Allen, 2019). What is curious about these assessments, though, is that they are divorced from many of the justifications offered in defense of the Homestead Act in the first place. Many defenses of the act did not concern economic efficiency, influence on culture, or securing property along the frontier. Instead, many of those who fought for passage of the act rested their case on a moral claim: that all persons have an equal right to the soil.

Our paper analyzes the Homestead Act in terms of the moral arguments put forth by many of the act's defenders. We begin by asking: did the Homestead Act result in greater equality of land ownership? One might think that it is obvious the Homestead Act would do this. If you give away small, equally sized parcels of land at zero price, then *of course* land ownership

will be more equal. Yet there are several factors that complicate the relationship between homesteading and land equality. First, even after the passage of the act, homesteading was not the only way persons could acquire land. Land could still be purchased in unlimited quantities. Beyond this, the act allowed homesteaders to supplement their zero-price land by buying even more. Finally, later iterations of the act allowed homesteaders to claim even more than the initial baseline of 160 acres. As the great land historian Paul Wallace Gates once quipped, "speculation and land engrossment were not retarded by the act" (Gates 1936: 670). Given these factors, it is an open question whether the Homestead Act actually achieved the equality that motivated many of its defenders.

After confirming that the Homestead Act did lead to greater equality in the initial ownership of land, we turn to our main question: did the equality achieved by the Homestead Act persist? Relevant here is an important debate in moral philosophy. Egalitarians think that for some resource *x*, there ought to be an equal distribution of *x* (Sen 1992). Many egalitarians – some call these persons left libertarians – believe that land is the relevant resource that there ought to be an equal distribution of (Vallentyne et al. 2005). As Daniel Layman describes this view, "each person is entitled to an equally valuable share of the earth's resources" (Layman 2020: 224-225).

Defenders of egalitarianism, though, do not want to achieve a more equal distribution of resources merely for a moment in time; they want to achieve a more equal distribution of resources in perpetuity. But it is an open question whether equality can be sustained over time. The libertarian philosopher Robert Nozick doubted that it could, and this was one of his central criticisms of egalitarian moral theories. According to Nozick, even if a morally desirable pattern of distribution is achieved (like equality of land ownership), it will dissipate once persons are

free to use their resources in whatever way they see fit (Nozick 1974: 160-164). Liberty, according to Nozick, upsets patterns of equality. Another critic of equal land ownership was G.A. Cohen, who argued that "no egalitarian rule regarding external resources will, together with self-ownership, deliver equality of outcome" (Cohen 1995: 105).

Examining the Homestead Act's long-run impact on equality of land ownership can help us investigate just how serious these criticisms are. If equality of land ownership persists, then the criticisms are overblown; perhaps liberty does not upset patterns as much as the critics let on. However, if the greater equality achieved by the Homestead Act is fleeting, then Nozick's and Cohen's concerns are empirically confirmed, presenting major challenges for proponents of distributive schemes meant to achieve a more equal distribution of resource ownership.

Here is the structure of the paper. In the next section we review the existing social science literature on the Homestead Act (§2). After this, we look at what the actual defenders of the Homestead Act had to say. As we show, many of them grounded their defense of the act in the moral claim that everyone has an equal right to own part of the soil (§3). Whether the Homestead Act was able to achieve this moral ideal has been neglected by contemporary scholars in their analyses of homesteading. From here, we outline our data and empirical strategy (§4). We then present the core of our analysis. First, we examine the extent to which the Homestead Act achieved a more egalitarian distribution of land in the short run (§5). We confirm that, despite the complicating factors outlined above, the act had a significant impact on equality of initial land endowments. Then, we examine the extent to which the Homestead Act achieved a more egalitarian distribution of land ownership over time (§6). We find that the initial equality achieved by the act proved fleeting, disappearing within 100 years of the act's passage. The upshot is that defenders of egalitarianism must think not only of how equality is to be initially

achieved through policy interventions, but must also think about whether and how we can ensure equality will persist through time.

2. The Homestead Act

Through both annexation and purchase, the United States federal government held over 1.2 billion acres of public land in 1850 (Allen 1991: 7). With a desire to continue Westward expansion, the U.S. sought to release much of this land into private ownership, though how they went about doing so changed over time. In general, there were three different methods the U.S. government used to transfer land from the public domain into private hands: "sale to the highest bidder, usually at a minimum price but without any requirement of residence on the land; preemption, which gave squatters first right to purchase the land at a minimum price; and homesteading, which provided free land to settlers provided they met certain improvement requirements" (Anderson and Hill 1990: 178).[1]

The first method of allocating land was sale to private parties by the federal government. As an example of this, the Land Ordinance Act of 1785, passed under the Articles of Confederation, sold land in large rectangular plots at a price of $1 per acre (Gates 1968: 65). With the Land Act of 1796, now passed under the authority of the United States Constitution, the price was raised to $2 per acre (Allen 1991: 7). This method of allocation was primarily used as a way of generating revenue. Indeed, Alexander Hamilton thought that sale of public land into private ownership was the best way of paying down the nation's war debt (Gates 1976: 217).

[1] These three methods only account for *de jure* rules governing property acquisition. But, in the face of legal uncertainty, early settlers also established *de facto* rules governing property rights, in the form of *claim clubs*. For detailed analysis, see Murtazashvili (2013).

The second method used was preemption. Here, private property was once again acquired through purchase, but not an open system where all persons could freely enter bids. Instead, squatters were given first priority to purchase the land they were currently residing on. This was done in large part because squatting on the frontier could not be stopped, so the federal government ended up accommodating squatters rather than criminalize a relatively common practice. As an example, the Preemption Act of 1841 held that heads of families, widows, or single men over the age of 21, who were also U.S. citizens or intended to become one, could purchase up to 160 acres of land that they resided on for $1.25 an acre (Gates 1968: 238).

The third and final method of allocation used in the early United States was homesteading. Initiated by the Homestead Act of 1862,[2] the basics of the law were as follows: contingent on paying a $10 entry fee, persons could gain property in 160 acres of land from the public domain by residing on it for five years and cultivating it (Allen 1991: 8).[3] In terms of the cultivation requirement, this consisted of "actual breaking of the soil, followed by planting, sowing of seed, and tillage for a crop other than native grasses" (Department of the Interior 1926: 10). The idea of homesteading would be refined over a series of acts spanning the next fifty or so years. The Timber Culture Act of 1873 allowed homesteaders to claim more land, so long as they used a portion of this land to plant trees. And the Desert Land Act of 1877 offered homesteaders even larger portions of land in arid western states, so long as they irrigated it (Allen 1991: 8).

[2] This is not exactly correct. There were earlier, though very limited, instances of homesteading. For instance, the Armed Occupations Act of 1842 gave away 160 acres of land to any man capable of bearing arms who made settlement south of Gainesville, Florida. The primary purpose of the act was to create a buffer of defense against Native Americans (Gates 1968: 388). The Homestead Act was the first instance of allocation via homesteading done at the national level.

[3] Another $4 was due when the commission was made, and with final proof a further $4 was required (Gates 1968: 394).

The Homestead Act has been the site of much scholarly inquiry. Initially, historians questioned the extent to which the act was carried out in a lawful and honest manner. Many feared that rich speculators financed homesteaders, only to buy up their land once the title had been acquired after the five-year residency and cultivation requirements were met. Others feared that homesteaders had impersonated veterans (who had special privileges within the homesteading system) or committed marriage fraud (couples pretending not to be married, or delaying their marriage, so each could make a claim). Fraud was thought to be so prevalent in the homesteading system that historian Louis Warren once quipped: "After 1862, the federal government deeded 285 million acres to homesteaders. Half their claims were fraudulent, backed by false identities, fake improvements, or worse" (Edwards et al. 2017: 15).

Many of the fraud charges come from historians writing around the mid-twentieth century, and rely on coarse data (sometimes just anecdotes) that offer an incomplete picture of how homesteading worked in practice. Scholars now have access to much better data (see §4 below, for instance), which offer a clearer picture of the homesteading system. These new data suggest that fraud was exceptionally rare. For instance, Richard Edwards et al. (2017) conduct a near-comprehensive audit of homesteads in two Nebraskan counties (Custer and Dawes) using recently digitized records. They check for fraud by first looking at how quickly land was sold after the homesteader acquired title (quick sales are more suspicious). Then, they look at who the land was sold to, along with the stated reasons for selling. They also look for cases of impersonating soldiers and marriage fraud. Of all these possible sources of fraud, the authors determine that, at most, 3.2 percent of homesteads in these two counties may have been fraudulent (Edwards et al. 2017: 87). This seriously challenges the received wisdom that half the claims were fraudulent.

More recently, social scientists have examined the long-run effects of the Homestead Act and of Westward expansion more broadly. The Homestead Act is frequently viewed through the lens of economic efficiency. The general consensus is that the Homestead Act may have been successful at promoting settlement, but at a potentially high cost. First, the act encouraged persons to settle land too early (i.e., before net positive value could be extracted from it), leading to rent dissipation (Anderson and Hill 1990: 189). Beyond this, the Homestead Act also encouraged unnecessary investments in the land, further dissipating rents (Anderson and Hill 1990: 189-190). Finally, the act encouraged persons to acquire farms that were too small in size, which made it difficult to internalize certain externalities. This may have been a major cause behind the Dust Bowl (Zeynep and Libecap 2004). Recent empirical work bears these claims out. Douglass W. Allen and Bryan Leonard (2021) show that land plots that were homesteaded are less developed today when compared to similar plots that were acquired through purchase. Ross Mattheis and Itzchak Tzachi Raz find that "areas with greater historical exposure to homesteading are poorer and more rural today" (Mattheis and Raz 2021).

A different lens through which to view Westward expansion focuses less on property rights and more on culture. According to Frederick Jackson Turner (1893), life on the frontier encouraged a culture of rugged individualism. Recent empirical work confirms this claim. Samuel Bazzi et al. (2020) find that places that spent more time on the frontier of settlement (defined in terms of population density) still to this day display a more individualistic culture, in that they adopt more individualistic names, prefer less government redistribution, have lower public spending, and pay lower property taxes.

Finally, some view the Homestead Act by looking to the impact it had on securing property rights and political sovereignty for the United States. According to Douglass W. Allen

(1991; 2019), the Homestead Act (along with grants to railroad companies) was a way of securing property rights along the frontier absent formal enforcement by the United States government. Along the frontier, U.S. sovereignty was threatened by Native Americans as well as European nations. This threat was mitigated by giving away free land along the frontier to those willing to settle (and thus defend) it.

3. Moral Foundations of the Homestead Act

As we noted in the last section, up to this point scholars have examined the Homestead Act primarily in terms of economic efficiency, its relationship to Westward expansion and frontier culture, and its role in securing property rights along the frontier. These considerations, though, were often foreign to those individuals who actually fought for passage of the act. Appearing frequently in the debate leading up to the Homestead Act was the moral claim that all persons have an equal right to own part of the soil.[4] Allocating property on the basis of homesteading, so the act's defenders argued, would facilitate persons securing their equal right.[5]

Consider some examples. In 1852 the Free Soil Democrats, who were defenders of the Homestead Act, put into their party plank "that all men have a natural right to a portion of the soil; and that, as the use of the soil is indispensable to life, the right of all men to the soil is as

[4] Of course, this was not the only defense of the Homestead Act. For a detailed overview of the debate leading up to the act's passage, see Hibbard (1939: 368). Eric Foner (1995: 27-29) emphasizes that homesteading was intended to aid the poor, as Westward migration would decrease labor market competition in the East. Frymer (2017: 132) argues that one consideration in defense of homesteading was that it "promoted the whitening of the American frontier." More specifically, "homesteading provided a very conscious means of getting more and more white settlers onto lands populated with people perceived not to be white, enabling the government to manufacture demographics while expanding and incorporating these lands more easily and quickly" (Frymer 2017: 132-133).
[5] It's worth noting that many opponents of the Homestead Act also couched their arguments in moral terms. For instance, when President Buchanan vetoed an early version of the bill in 1860, he argued that it would create several inequalities: between early settlers who had to pay for their land and those who would now get it for zero price, between veterans who received land as payment for their service and ordinary persons who would now get it for no service, etc.

sacred as their right to life itself" (Hibbard 1939: 357). Galusha A. Grow, Republican Speaker of the House when the act was passed, argued that "if a man has a right on earth, he has a right to land enough to rear a habitation on. If he has a right to live, he has a right to the free use of whatever nature has provided for his sustenance – air to breathe, water to drink, and land enough to cultivate for his subsistence" (Hibbard 1939: 369). Congressman George Washington Julian, an abolitionist and member of the Free Soil Party, insisted that "Congress shall give its sanction to the natural right of the landless citizen of the country to a home upon its soil. The earth was designed by its Maker for the nourishment and support of men. The free and unbought occupancy of it belonged originally, to the people, and cultivation of it was the legitimate price of its fruits" (Mark 1963: 268).

The editorial page of a Wisconsin newspaper asserted that "the soil of the country belongs to the people," and that the Homestead Act would "break away the barriers which prevent the landless and the homeless from making for themselves an estate and a home" (Hibbard 1939: 371). The *New York Tribune* asserted "*the right of man to cultivate the earth and enjoy the fruits of his labor*, provided he does not thereby encroach upon the natural or acquired rights of others" (Hibbard 1939: 372). Congressman William A. Phillips of Kansas, writing after the passage of the act, asserts that "the right or power of the state over land should be to see that it is used for the equal benefit of all. To give monopoly of land to a few is to give the bread and meat of the people to a few" (Mark 1963: 271). As Gates summarizes it, defenders of the Homestead Act "maintained that every man had a right to a share of the soil" (Gates 1968: 390).

In sum, many of the Homestead Act's defenders were not concerned with the sorts of things contemporary social scientists focus on—economic efficiency, culture, and political sovereignty. Rather, they were concerned with equality. Given the actual arguments offered in

defense of the Homestead Act, a natural question to ask is the extent to which the act actually lived up to these moral ideals. More specifically: did the Homestead Act lead to greater equality in the ownership of land? There are some who believe it did not. As an example, Gates held that "speculation and land engrossment were not retarded by the act" (Gates 1936: 670). Historian Patricia Nelson Limerick (1987: 61-62) is in large agreement with Gates on this point. And Richard White asserts that "the Homestead Act never came remotely close to achieving the grandiose expectations of its advocates" (White 1991: 143).

There are many reasons to doubt that the Homestead Act achieved greater equality in land ownership. Persons could still purchase land, and sales were not restricted to 160 acres. And, those that homesteaded could supplement their zero-price land by purchasing more, leading to what Gates (1936) called an "incongruous" land system. Allen and Leonard (2021) find that 24% of homesteaders supplemented their claims with purchased land. Moreover, later acts would increase how much land could be homesteaded to as much as 640 acres under certain circumstances (e.g., the Kinkaid Homestead Act (1904), Forest Homestead Act (1906), Enlarged Homestead Act (1909), and the Stock-Raising Homestead Act (1916)). Finally, other forms of land patents led to major concentrations of initial land endowments. For example, the railroad land grants led to some cases where a single railroad company initially owned as much as half of the land in a county (Allen 2019). For these reasons, it remains an open question the extent to which the Homestead Act actually realized the moral ideals that inspired it. That is, it is an open question the extent to which the act helped secure persons' equal right to the soil.

Finally, any discussion of the Homestead Act and its relation to moral ideals must discuss its impact on marginalized communities. The Homestead Act allowed and even encouraged

persons to claim land that was once inhabited by Native Americans, a significant moral blight.[6] However, the act did allow women and people of color to take advantage of homesteading. Although many women did take advantage of the Homestead Act (Hensley 2008; Edwards et al. 2017: ch. 6), much less is known about the extent to which Black Americans or other minority groups participated in homesteading.[7] So, though the act was meant to secure persons' equal right to the soil, this equal right was mainly claimed by white men on land that had been acquired, and in many cases expropriated, from Native Americans.

While the relationship between homesteading and the dispossession of Native American lands is tragic, we do not believe it detracts from our central questions. Our questions are: did the Homestead Act achieve its goal of increasing equality in the ownership of land? And, more importantly, did the equality (if initially achieved) persist? That Native Americans were largely excluded from the aims of this policy is not in question. The implication for our study is that our data focus primarily on lands allocated to white settlers. That is the group on which we must focus because that is the group for whom the act was written.

Perhaps a more historically sensitive way of framing our questions is as follows: of those who were permitted to homestead, did the Homestead Act increase equality in the ownership of land among this restricted set of individuals? And, did the equality (if initially achieved) among this restricted set of individuals persist? The fact that homesteading, at times, occurred on

---

[6] For detailed analysis of the relationship between the Homestead Act and Native American land, see Edwards et al. (2017: ch. 5). Obert (2021) examines the role of policing power and coercion against Native American populations in Oklahoma in particular. Carpenter (2021) looks at one tool (petitioning) Native Americans used to fight back against dispossession.

[7] There is some research done on the extent to which Black Americans benefitted from homesteading policies in the Cherokee Nation. The Cherokee Nation joined the Confederacy in 1861. When the Confederacy lost, the Cherokee Nation was forced to declare its former slaves as citizens, with full rights. This included the right to claim free land. Melinda Miller (2011) finds that, because of this policy, racial inequality in the Cherokee Nation in 1880 and 1900 was much smaller than racial inequality in the South. For historical examination of land ownership among Black Americans in Oklahoma, see Chang (2010).

dispossessed Native American lands is a moral scar that will always remain, but we still believe we can learn much about the relationship between homesteading and equality from our analysis.

4. Data and Empirical Strategy

Our data for initial land endowments come from individual land patent records from the General Land Office (GLO) that have been recently digitized and made available by the Bureau of Land Management (BLM) Eastern States Office. There is a land patent recorded each time a plot of land leaves the "public domain" and is transferred to any party other than the United States government. Each individual record contains the name of the patentee, the type of patent (e.g., homestead entry, cash sale, Indian allotment, etc.), the year the patent was issued, and, importantly for our purposes, the location and total acreage of the land transferred by the patent. These data have recently been used to study the effect of 19th century land policy on modern land use and income at a variety of spatial scales (e.g., Allen and Leonard 2021; Mattheis and Raz 2021; Dippel, Frye, and Leonard 2021). To our knowledge, this paper represents the first attempt to study the distributional implications of land titling using the GLO data.

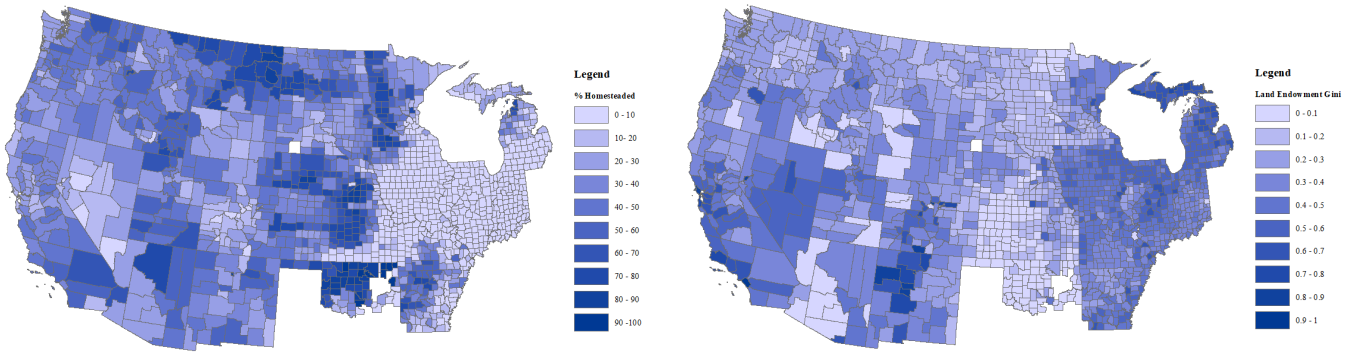
We estimate inequality in initial land endowments in two steps. First, we determine the initial land endowment for each person in each county by adding up the total acres for each patent transferred to a given person – this step is important because many individuals received multiple patents (Allen and Leonard 2021). Next, we use these individual land endowments to estimate a series of Gini coefficients for each county. For every decade from 1860 to 1940, we estimate the Gini coefficient for all land endowments that had been issued through that decade. This allows us to track how the concentration of land endowments changes as new settlers arrive.

The Gini coefficients give a measure of how unequal the initial land endowments in a county were. A Gini of 0 would imply a perfectly equal distribution of land. On the other hand, a Gini of 1 would imply that a single individual was deeded all the private land in a county.

The land patent data also allow us to characterize when a given county was fully settled, and to what degree land was titled under the Homestead Act versus some other fashion. For each county, we define the "settlement date" as the year in which 90% of land patents had been issued. To quantify the extent of homesteading we focus on what percentage of land patents were homestead entries under the original Homestead Act of 1862. Figure 1 depicts the spatial distribution of homesteading and land endowment inequality across our sample.

Figure 1: The Geography of Homesteading and Land Inequality

(a) Homesteading by County (b) Land Endowment Inequality by County



Notes: This figure depicts the percentage of land titles issued as homestead claims (Panel a) and the concentration of initial land ownership (Panel b) in our sample counties. A Gini index of 0 indicates a perfectly equal land endowment, whereas a Gini index of 1 indicates extreme concentration of land ownership.

To track whether land inequality persists *after* land endowments have been issued, we rely on the U.S. Census of Agriculture (Ag Census). The data in the Ag Census do not allow us

to calculate a Gini directly because individual farm sizes are not reported. Instead, the Ag Census reports the number of farms by size category (e.g., 0 to 9 acres, 10 to 49 acres, etc.) in each year. Galor et al. (2009) develop an approach to estimate farm size Gini coefficients from these binned data. This method requires consistent reporting of farm size bins to be comparable over time. We extend this approach to track land inequality throughout the 20th century. Ultimately, we are able to estimate comparable farm size Gini's for the following years: 1900, 1910, 1920, 1925, 1930, 1935, 1940, 1950, 1978, 1982, 1987, 1992, 1997, 2002, 2007, 2012, and 2017. Unfortunately, the Ag Census used different farm size bins prior to 1900, and so we cannot compare them to the later data. Nevertheless, we are able to track the evolution of land ownership inequality for over a century. To our knowledge, this is the first paper to do so.

We also collect data on various characteristics of the counties in our sample to help us control for potential differences between areas where land was more heavily homesteaded versus sold for cash using various approaches described below. First, we estimate the geographic characteristics of each county, including average elevation, topographic ruggedness, soil productivity, summer temperatures, summer rainfall, and stream density. Second, we measure several important political-economic variables including density of railroads, presence of Native American reservations, settlement dates, and population density. Details of the data construction are provided in the online appendix, and summary statistics are reported in Online Appendix Table A1.

Our task is to examine the extent to which the Homestead Act realized the moral ideals that undergird it. In particular, we want to know whether the act led to greater equality in the ownership of land. In examining the relationship between homesteading and inequality, we wish to estimate the following equation:

$$ln(Gini_c) = \theta\%Homesteads_c + \beta X_c + \varepsilon_c \quad (1)$$

Where $ln(Gini_c)$ is the natural log of the Gini coefficient for land inequality in 1935 – the year in which the frontier was closed to further settlement – in county c, X_c is a set of county-level controls, and ε_c is an error term. The coefficient of interest is θ, which gives the percentage change in a county's Gini coefficient associated with a one percentage point increase in the percentage of patents issued as homesteads in that county.

There are several challenges associated with estimating the effect of homesteading on land inequality because the extent of homesteading in different counties was not randomly assigned. First, it is possible that geographic and economic characteristics that have a direct impact on land inequality also systematically attracted homesteaders. Second, homesteaders themselves may have differed from other settlers in important and systematic ways that had a direct effect on land inequality. Third, there are a variety of omitted factors (such as other land policies) that may be correlated with homesteading and with land inequality.

We pursue a threefold approach to address these concerns and deliver plausible estimates of the relationship between homesteading and land inequality. First, we control directly for differences between counties along a variety of dimensions. All our estimates include state fixed effects, so that we only ever compare counties within the same state. Many of our estimates also include arrival decade fixed effects, so that we only compare counties within the same state that were settled at the same time. Then, we introduce linear controls for elevation, ruggedness, soil quality, stream density, climate, railroads, and proximity to Native American reservations. Because it is possible that these factors have non-linear effects on homesteading and land inequality, we also utilize a flexible binned approach where we construct separate fixed effects for each decile of each covariate. This approach is akin to a matching estimator that matches

counties on observable covariates because the estimates are derived from comparisons of counties within the same decile of *each* of the measured covariates. These estimates could still be misleading if we fail to measure an important determinant of both homesteading and land inequality, however.

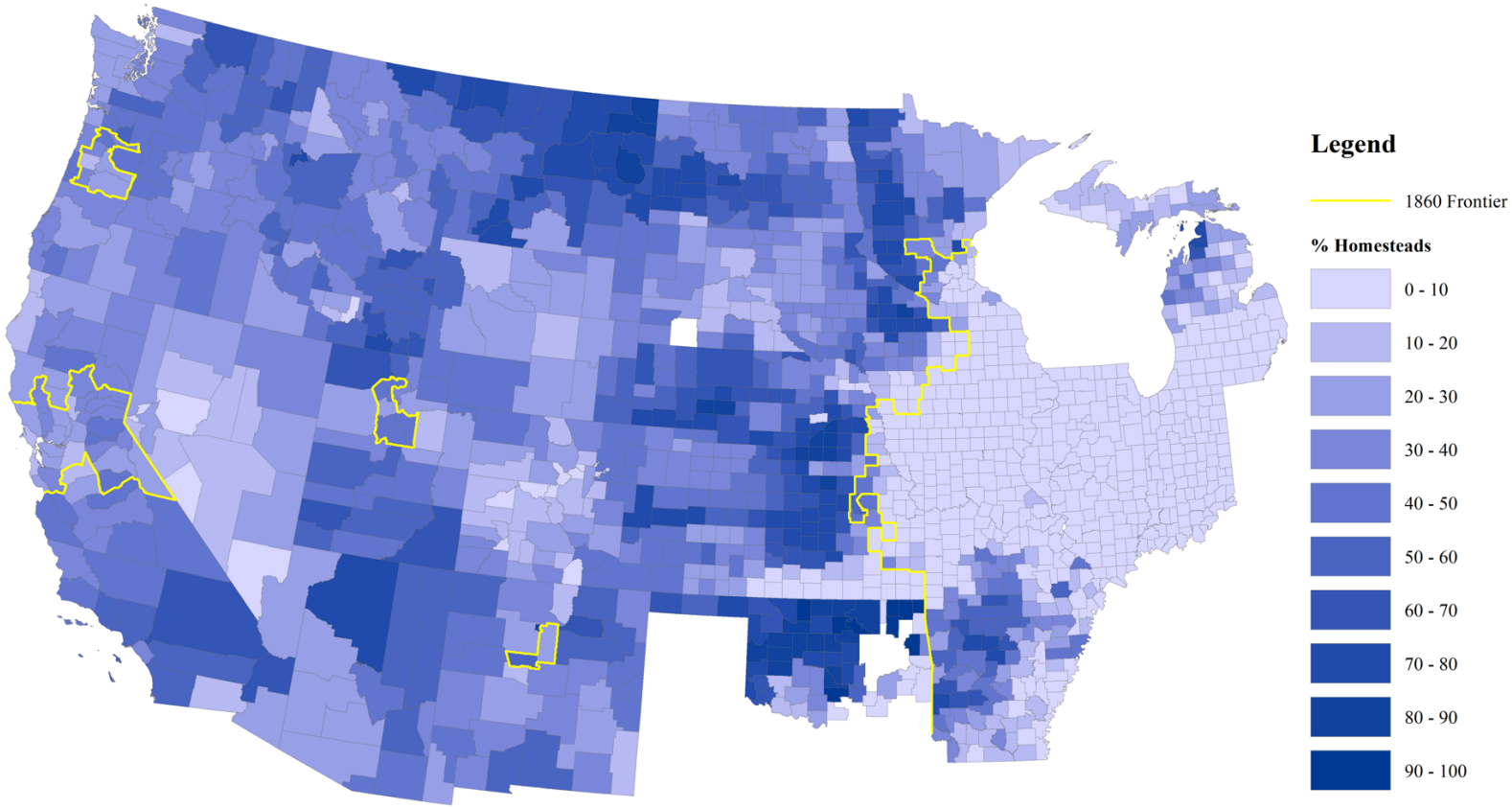
Our second approach leverages panel variation to explore the effect of homesteading on land inequality *within* counties over time. We use a first-difference estimator that regresses the *change* in land inequality from one decade to the next on the *change* in homesteading over the same period, purging our estimates of time-constant differences between counties (e.g., fixed geographic characteristics, and how much land was made available for settlement). We also include state-by-year fixed effects (a unique year fixed effect for each state) to control flexibly for unobserved state-specific changes over time that could affect homesteading and land inequality (e.g., the arrival of railroad, or weather shocks such as the Dust Bowl). Summary statistics for the panel data set are provided in Online Appendix Table A2. Although these models address bias associated with fixed differences between counties and factors that vary by state over time, it is still possible that time-varying factors may be correlated with homesteading within states.

To limit the confounding role of time-varying factors correlated with homesteading, we utilize recent advances on the evolution of the frontier developed by Bazzi et al. (2020). Specifically, we identify the frontier of settlement in 1860 – defined by Bazzi et al. (2020) and Turner (1893) as places where population density falls below two people per square mile – and estimate the effect of the Homestead Act on land inequality in increasingly small samples along this frontier. The intuition for this approach is that counties settled just before 1862 form a valid comparison for nearby counties settled just after 1862 that nonetheless experienced much greater

rates of homesteading thanks to the passage of the new law. Whereas nationwide variation in homesteading could be correlated with a variety of time-varying factors over 1862 to 1935, sharp increases in homesteading along the 1860 frontier can be treated as more of a "natural experiment" for understanding the impact of homesteading, because these counties were already undergoing early settlement when the Homestead Act passed.

Figure 2 the 1860 frontier from Bazzi et al. (2020) along with the extent of homesteading in each county. Figures A1 to A6 depict our various samples of frontier counties. These figures provide visual evidence that there is a sharp increase in homesteading just beyond this frontier, a fact we confirm statistically in the next section. The 1860 boundary is, in some sense, an artificial one, and we caution that a true spatial regression discontinuity could not be validly applied in this setting because individuals could homestead on either side of the boundary after 1862, even if the relative abundance of land just beyond the frontier made one side more appealing than the other. Still, we think that isolating variation in homesteading along this frontier – combined with the use of state fixed effects and binned covariate controls – significantly reduces the scope for confounding variables that impacted the broader distribution of settlement to bias our estimates.

Figure 2: Homesteading Along the 1860 Frontier



Notes: This figure depicts Bazzi et al.'s (2020) estimate of the frontier of settlement in 1860 in yellow. Beyond this line, population density fell below two people per square mile. All counties are shaded according to the percentage of patents issues as homesteads, as in panel (a) of Figure 1 (darker shading indicates a higher percentage of homesteading).

Federal land policy itself may confound the interpretation of our results if it is correlated with homesteading in important ways. One concern is that, in conjunction with homesteading, the federal government issued massive grants to seven transcontinental railroads in an alternating checkerboard of square-mile plots spanning millions of acres along their routes. Allen (2019) finds that homesteaders tended to follow the railroad, often arriving before cash buyers to claim valuable plots nearest the railroad. If anything, this relationship should work *against* our finding that homesteading reduced land inequality, because the railroad land grants would have directly increased land inequality by granting consolidating ownership of land to railroads (as documented by White (2011)), while fragmenting the remaining land available for settlement.

As discussed above, several early scholars of frontier settlement bemoaned widespread fraud that allowed land barons to scoop up large tracts of land. We think this is unlikely to affect our results for two reasons. First, as discussed above, recent scholarship with higher quality data lays doubt as to the actual extent of this type of fraud. And second, we think that if widespread fraud that led to consolidation did exist, it would once again work *against* finding that homesteading reduced land inequality (particularly as measured by farm sizes in the Ag Census).

5. Inequality in the Short Run

This section examines the relationship between the Homestead Act and land inequality in the immediate aftermath of the act's passage. Thus, we are concerned with whether the Homestead Act led to greater equality of land ownership in the short run. The next section examines our main interest, which is the long-run effects of the act. Unless otherwise noted, we

estimate the standard errors for our models using the method of Hsiang (2010), which allows for arbitrary spatial correlation between counties in the error term.

The results of estimating Equation (1) are shown in Table 1. Columns 1-3 show the relationship between homesteading and the land patent Gini, whereas Columns 4-6 show the relationship between homesteading and the farm size Gini. Columns 1 and 4 have only state and decade fixed effects with no controls. Columns 2 and 5 add linear controls for elevation, ruggedness of terrain, soil quality, average temperature, average precipitation, stream density, and historic railroad density (coefficient estimates for controls are reported in Online Appendix Table A3). Columns 3 and 6 add binned fixed effects for each decile of each of the control variables listed above**.** In these columns, the estimates come from averaging across comparisons of counties that are extremely similar to one another along each of those dimensions.

In the baseline estimate in Column 1, a one percentage point increase in the percentage of patents issued as homesteads leads to a roughly 0.5 percent decrease in the Gini coefficient. Adding increasingly flexible controls attenuates the estimated effect of homesteading on both the endowment Gini and the farm size Gini, as expected. Our preferred estimates with flexible controls remain statistically significant and of a meaningful magnitude. The Column 3 coefficient implies that a one standard-deviation increase in homesteading of 28 percentage points (see Table A1) is associated with a 28x.34 = 12.92% decrease in land endowment inequality in a county. Column 6 implies that a one standard-deviation increase in homesteading is associated with a 1.68% decrease in farm size inequality in a county. Hence, the results suggest that homesteading has a larger effect on initial land endowments than on farm sizes. When interpreting this result, it is important to note that homesteading began in 1862, so that by

1935 many counties had been settled for decades. Despite this, it is clear that counties that saw more homesteading also tended to have more equal ownership of land.

Table 1: The Relationship Between Homesteading and Land Inequality

	(1)	(2)	(3)	(4)	(5)	(6)
	Y= ln(1935 Land Endowment Gini)			Y= ln(1935 Farm Size Gini)		
% Homesteads	-0.00548***	-0.00415***	-0.00347***	-0.00147***	-0.000888***	-0.000607***
	(0.000746)	(0.000742)	(0.000750)	(0.000245)	(0.000241)	(0.000233)
Observations	1,416	1,416	1,416	1,481	1,481	1,481
Adjusted R-squared	0.938	0.943	0.949	0.970	0.974	0.976
Mean Gini	0.349	0.349	0.349	0.344	0.344	0.344
State FE	✓	✓	✓	✓	✓	✓
Arrival Decade FE	✓	✓	✓	✓	✓	✓
Linear Controls		✓			✓	
Binned Controls (by decile)			✓			✓

Notes: This table presents estimates of the relationship between the percentage of land patents in a county that were issued as homesteads and historic land endowment inequality. Columns 1 through 3 use patented acres to estimate Gini coefficients for each county as of 1935. Columns 4-6 construct Gini coefficients for average farm size based on the 1935 U.S. Agricultural Census. The binned specifications in Columns 3 and 6 include fixed effects for each decile of elevation, ruggedness, precipitation, temperature, soil quality, stream density, and rail density, effectively comparing counties with very similar resource endowments and initial conditions. Spatial HAC standard errors following Conley (2008) and Hsiang (2010) are reported in parentheses. We use a uniform kernel density and a 150 km cutoff when estimating the spatially correlated standard errors. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Though the results in Table 1 control for possible confounding factors – elevation, ruggedness of terrain, soil quality, average temperature, average precipitation, stream density, and railroad density – one might worry that there are other differences we do not account for between areas of the country that received large amounts of homesteading and those areas that did not. To further address this concern, we construct a panel of homesteading and farm size inequality over 1900 to 1940 (the years during which homesteading occurred and farm size data are available). We use this panel to estimate the effect of homesteading on land inequality *within* counties over time using a first-difference model that regresses the percentage change in homesteading on the change in land inequality directly.

Table 2: Panel Estimates of the Relationship between Homesteading and Land Inequality

	(1)	(2)	(3)	(4)	(5)	(6)
			Y = △ln(Gini)			
% △ Homesteads	-0.00703***	-0.00439***	-0.00547***	-0.00123*	-0.00159**	-0.00122*
	(0.000775)	(0.000865)	(0.000853)	(0.000720)	(0.000718)	(0.000740)
% △ All Land Claims		-0.00401***	-0.00287**		0.000610	0.00127
		(0.00117)	(0.00114)		(0.000922)	(0.000995)
Lagged Farm Size Gini			-0.573***			-0.574***
			(0.0680)			(0.0730)
Lagged % Homesteads			-3.91e-08*			-9.28e-08***
			(2.21e-08)			(2.29e-08)
Lagged Land Claims			2.76e-08**			4.35e-09
			(1.31e-08)			(1.32e-08)
Observations	4,673	4,673	4,673	4,673	4,673	4,673
Adjusted R-squared	0.026	0.028	0.050	0.315	0.315	0.369
State FE	✓	✓	✓			
State-by-Year FE				✓	✓	✓

Notes: This table presents panel estimates of the relationship between the percentage of land patents in a county that were issued as homesteads and Gini coefficients for average farm size based on the U.S. Agricultural Census over 1900 to 1940 using a first-difference estimator. The dependent variable is the change logged Gini coefficients from one census to the next (so that the coefficients can be interpreted in terms of percentage changes). Columns 4-6 also include state-by-year fixed effects. Summary statistics provided in Table A2. Standard errors are clustered by county (allowing for arbitrary correlation over time) and reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Our first-difference estimates are reported in Table 2. Columns 1 through 3 report baseline estimates with state fixed effects, and Columns 4 through 6 include additional state-by-year fixed effects that control for any time-specific shocks to specific states over 1900 to 1940 (e.g., the arrival of railroads, possible droughts, and the Dust Bowl). Columns 1 and 4 do not include additional controls, Columns 2 and 5 control for overall changes in land claims specific to a county (another measure of changes in settlement pressure), and Columns 5 and 6 control for land inequality, homesteading, and other land claims in the previous year.

The coefficient estimates attenuate with the inclusion of additional controls but remain statistically significant across all specifications (marginally so in Column 6). Our preferred estimates are in Column 5, which controls for state-by-year fixed effects and overall changes in settlement by county, but omits lagged variables that reduce the precision of our estimates while

having a modest effect on the actual coefficient. The estimate in Column 5 implies that a one percent change in the prevalence of homesteading from one census to the next is associated with a 0.15% decrease in farm size inequality in a county over the same period, based solely on variation *within* counties over time. Hence, these estimates suggest that the effect of homesteading on land inequality is not being driven by underlying differences between counties where homesteading was more or less prevalent.

The first-difference estimates address any fixed differences between different counties that could confound the effect of homesteading, as well as time-varying factors that differ across states. Still, it is possible that omitted variables that are correlated with the timing of homesteading also have a direct effect on land inequality. One way of responding to this concern is by restricting the sample to counties that are settled at very similar times but exposed to differential amounts of homesteading for plausibly exogenous reasons. To do this, we focus on large shifts in homesteading that occurred along the frontier of settlement just after the Homestead Act was passed in 1862.

We use Bazzi et al's estimate of the 1860 frontier—just two years before the Homestead Act was passed—to examine the effect of homesteading on equality of land ownership by comparing counties along the frontier. The intuition here is that unlike counties in North Dakota (which saw a good deal of homesteading) and Kentucky (which saw none), there should not be remarkable differences between counties on either side of the 1860 frontier, nor should there be remarkable differences between the settlers who settled these counties. Hence, by restricting our sample to those counties that fall along the frontier line, we can ease worries about possible confounding factors, and get a better sense of just how much homesteading impacted equality of land ownership.

Some might think that a frontier line would simply cut the country down in a single line, from North to South. This isn't quite right, because there were small pockets with relatively high population density, such as Salt Lake City, UT and San Francisco, CA. Hence, there are several frontier lines. One cutting the country in half North to South, right around the Oklahoma border, and a few frontier line "islands" in places like Salt Lake City and San Francisco (see Figure 2). Our results below (Tables 3 and 4) include all such frontier lines. However, we run the same models in Online Appendix Tables A4 and A5, excluding the Western states.[8]

Table 3 regresses percent of homesteads in a county on an indicator variable that is equal to one if a county is beyond the frontier in 1860, and zero otherwise. Each column uses a smaller sample of counties closer to the frontier itself, beginning with a 200-kilometer cutoff in Column 1 down to directly adjacent counties in Column 6. Maps of each sample can be found in Online Appendix Figures A1 to A6. All models include state fixed effects and binned fixed effects for each of the controls in Table 1.

The results indicate that counties beyond the 1860 frontier experienced 7-10 percentage points more homesteading than nearby counties that had already been settled when the Homestead Act passed in 1862. This is a large, 23-35% increase in homesteading relative to the mean in these counties. Online Appendix Table A4 shows that this effect is actually larger when we omit Western states and focus on the Midwest frontier only, though they are less precisely estimated due to the small sample size and the large number of fixed effects. Hence, there is significant variation in the percentage of patents issued as homesteads in our restricted sample along the 1860 frontier. We can exploit this fact to corroborate our estimates of the effect of homesteading on land inequality in the broader sample. Table A6 shows that the results are

[8] Our results are also robust to omitting counties in Oklahoma, which was initially withheld from settlement and then rapidly settled in a series of land rushes beginning in the late 1880s.

similar when omitting Oklahoma, which was settled much later than 1860 in a series of "land rushes" after tribal lands had been expropriated. Table A8 shows that the results are also similar when omitting all counties that overlap Native American reservations, where special policies for settling "surplus" lands opened to white settlement under the 1887 General Allotment Act could confound the effect of homesteading.

Table 3: Homesteading along the 1860 Frontier

	(1)	(2)	(3)	(4)	(5)	(6)
			Y= % Homesteads			
1(Beyond 1860 Frontier)	10.05***	10.14***	9.917***	10.44***	10.25***	7.172**
	(2.152)	(2.204)	(2.315)	(2.395)	(2.380)	(2.919)
Observations	682	546	436	368	311	162
Adjusted R-squared	0.821	0.812	0.811	0.806	0.805	0.833
Mean Dep. Var.	32.48	31.46	30.41	29.61	28.66	30.94
Distance to Frontier	*200km*	*150km*	*100km*	*75km*	*50km*	*0 km*
State FE	✓	✓	✓	✓	✓	✓
Binned Controls (by decile)	✓	✓	✓	✓	✓	✓

Notes: This table presents estimates of the difference in the percentage of land patents in a county that were issued as homesteads for counties that were just beyond the frontier of settlement in 1860 depicted in Figures A1 to A6 (based on Bazzi et al. 2020). All columns include state fixed effects for each decile of the controls used in Table 1. Moving from left to right, each column includes progressively smaller samples of counties that are closer to the 1860 frontier, beginning with a 200-kilometer cutoff in Column 1 and ending with directly adjacent counties in Column 6. We omit decade fixed effects from these models because—by construction—the samples consist of counties that were settled just before vs. just after 1860 only. Spatial HAC standard errors following Conley (2008) and Hsiang (2010) are reported in parentheses. We use a uniform kernel density and a 150 km cutoff when estimating the spatially correlated standard errors. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4 looks at homesteading's effect on equality of land ownership in those counties along the 1860 frontier. It has the same basic structure as Table 3, moving from the 200-km sample in Column 1 to the just-adjacent sample in Column 6. Panel A looks at homesteading's effect on the land patent Gini, whereas Panel B looks at homesteading's effect on the farm size Gini. Here, we focus on Gini's from 1900 (rather than 1935, as in Table 1), to get an estimate of early land inequality as close as possible to the actual settlement dates of these counties along the

1860 frontier. Online Appendix Table A5 confirms that the results in Table 4 are robust to excluding Western states from the sample, while Tables A7 and A9 confirm that dropping counties in Oklahoma and counties that overlap Native American Reservations also leaves the results largely unchanged.

Table 4: Homesteading and Historical Land Inequality along the 1860 Frontier

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A:						
	Y= ln(1900 Land Endowment Gini)					
% Homesteads	-0.00388***	-0.00594***	-0.00551***	-0.00429***	-0.00556***	-0.00377**
	(0.00139)	(0.00134)	(0.00134)	(0.00132)	(0.00122)	(0.00161)
Observations	581	452	352	292	245	119
Adjusted R-squared	0.932	0.935	0.938	0.938	0.949	0.955
Mean Gini	0.307	0.319	0.322	0.324	0.324	0.316
Panel B:						
	Y= ln(1900 Farm Size Gini)					
% Homesteads	-0.000638**	-0.000959***	-0.000967***	-0.000837**	-0.00109**	-0.00109
	(0.000311)	(0.000316)	(0.000371)	(0.000405)	(0.000429)	(0.000660)
Observations	576	472	381	323	278	143
Adjusted R-squared	0.989	0.990	0.990	0.989	0.989	0.987
Mean Gini	0.368	0.367	0.370	0.371	0.372	0.396
Distance to Frontier	*200km*	*150km*	*100km*	*75km*	*50km*	*0 km*
State FE	✓	✓	✓	✓	✓	✓
Binned Controls (by decile)	✓	✓	✓	✓	✓	✓

Notes: This table presents estimates of the relationship between the percentage of land patents in a county that were issued as homesteads and historic land endowment inequality in progressively smaller subsets of counties near the frontier of settlement in 1860 depicted in Figures A1 to A6 (based on Bazzi et al. 2020). All columns include state fixed effects for each decile of the controls used in Tables 1 and 3. Moving from left to right, each column includes progressively smaller samples of counties that are closer to the 1860 frontier, beginning with a 200-kilometer cutoff in Column 1 and ending with directly adjacent counties in Column 6. We omit decade fixed effects from these models because—by construction—the samples consist of counties that were settled just before vs. just after 1860 only. Panel A uses the natural log of the 1900 land endowment Gini as the dependent variable and panel B uses the natural log of the 1900 farm size Gini as the dependent variable. Spatial HAC standard errors following Conley (2008) and Hsiang (2010) are reported in parentheses. We use a uniform kernel density and a 150 km cutoff when estimating the spatially correlated standard errors. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The upshot of Table 4 is that the main findings from Table 1 hold up fairly well when using these highly restricted samples right along the frontier of settlement on the eve of the Homestead Act, where a large increase in Homesteading (documented in Table 3) is more

plausibly interpreted as exogenous. Indeed, compared to the Column 3 coefficients in Table 1, we're actually finding a larger effect on land endowment Gini's in the frontier-only sample. This should ease concerns about possible confounding factors in our initial results that could be driven by endogenous sorting of homesteaders to different locations across the West from 1862 to 1935. If anything, it suggests that possible selection and omitted variables in the larger sample may be biasing our results toward zero, perhaps because these factors actually increase land inequality, as discussed in §4.

The totality of the results allows us to conclude that the Homestead Act appears to have had a significant impact on equality of land ownership. The Homestead Act does not constitute a natural experiment because settlers could adopt whether to use it, and where. Still, it is clear from the data that when homesteading was permitted, more persons could exercise their equal right to the soil. Counties that saw more homesteading also tended to be more equal. Thus, the Homestead Act did serve, to some extent, the ends articulated by many of the act's defenders. One shortcoming of our analysis, however, is that thus far we have focused on land inequality in the immediate aftermath of the Homestead Act's passage and implementation. However, it is an open and important question the extent to which homesteading influences equality of land ownership in the long run, especially given the negative impact of the Homestead Act on land use and incomes recently documented in the literature (Allen and Leonard 2021; Matthies and Raz 2021). This is what we turn our attention to in the next section.

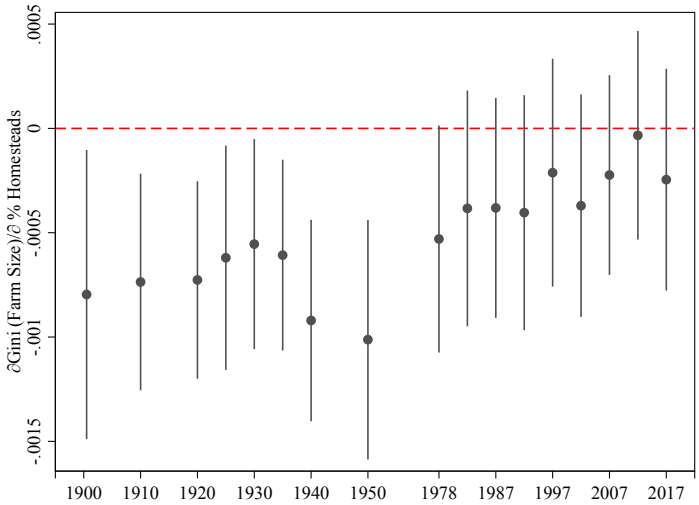
6. Inequality in the Long Run

The last section confirmed that the Homestead Act had a significant impact on equality of land ownership among its targeted demographic, as the act's defenders had hoped. Counties that

saw more homesteading were also more equal. This shows that the policy did, to some degree, contribute to the goals championed by the act's defenders. However, defenders of the Homestead Act and egalitarians more generally are unlikely to be satisfied with achieving greater equality in land ownership at one snapshot in time. Instead, the ideal of equal land ownership is one that should be enduring. As we noted in the introduction, many (such as Nozick and Cohen) criticize egalitarianism precisely on the grounds that any equality achieved by policy interventions will prove fleeting once persons are granted the freedom to do with their resources as they please; hence, egalitarianism cannot be maintained without repeated redistribution and severe constraints on liberty. Given these concerns we now ask whether the greater equality in land ownership achieved by the Homestead Act persisted.

The relationship between the Homestead Act and the equality of land ownership over time is displayed in Figure 3. The Figure presents estimates of the effect of homesteading on the farm size Gini in each year for which digitized farm size statistics are available from the Ag Census from 1900 to 2017 using the specification in Column 6 of Table 1. The figure shows that, at least initially, the equality of land ownership achieved by the Homestead Act persisted (and to some extent increased in the 1930's and 40's) up until about 1950. After 1950, though, the equality achieved began to dissipate, to the point that there is essentially no longer any relationship between homesteading and equality of land ownership as of today.

Figure 3: The Effect of Homesteading on Equality of Land Ownership over Time



Notes: This figure presents estimates of the relationship between the percentage of land patents in a county that were issued as homesteads and farm size Gini coefficients in years where data from the U.S. Census of Agriculture are available. We utilize the specification associated with Column 6 of Table 1 that includes state and arrival decade fixed effects, as well as fixed effects for each decile of elevation, ruggedness, precipitation, temperature, soil quality, stream density, and rail density, effectively comparing counties with very similar resource endowments and initial conditions. 95% confidence intervals were constructed using spatial HAC standard errors following Conley (2008) and Hsiang (2010). We use a uniform kernel density and a 150 km cutoff when estimating the spatially correlated standard errors.

In addition to being statistically indistinguishable from zero, these point estimates also become much closer in magnitude to zero over time. From a statistical perspective, these results are not conclusive (due to the nature of the null hypothesis here), but we can say that we find insufficient evidence to reject the hypothesis that homesteading had no lasting impact. Online Appendix Figure A7 provides additional support for this interpretation by demonstrating that the same pattern holds when using the restricted frontier samples from Table 4. Though land equality did persist for some time, it had completely disappeared after about 100 years.

Why did this happen? We are not in position to make strong causal claims and lack the space to do so in a single paper, but we can speculate. One possible explanation is that there is consolidation toward the economically optimal farm size in a given area over time. Bleakley and Ferrie (2014) show that this occurred in the context of parcels randomly allocated in the Georgia

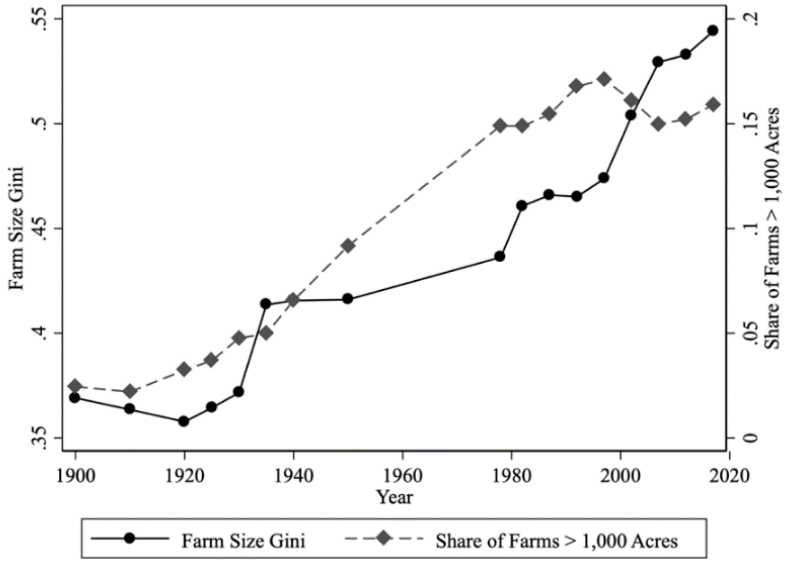
lottery, and Edwards, Fiszbein, and Libecap (2020) provide evidence that farm size in the Southern great plains adapted to climatic variation. Moreover, Hansen and Libecap (2004) provide evidence that 160 acres was far smaller than efficient farm sizes in many regions, suggesting that homesteaded areas may have been especially likely to see consolidation to larger farms. If this consolidation happens unevenly (e.g., because of land assembly costs or sunk investments), then it could lead to increases in land inequality. So, it could be that the optimal farm size increased somewhere around the 1950's due to exogenous technological shocks including center pivots for irrigating with groundwater, as well as more advanced combines (Gardner 2009). Market pressures then forced homesteads to consolidate, leading to larger farms.

Figure 4 provides some suggestive evidence that long-term trends in land inequality might be related to changes in the distribution of farm size. It shows the average of the county farm size Gini's over time (left axis) and the average share of farms over 1,000 acres (right axis) over the same period. Both land inequality and the share of large farms have increased fairly steadily over the 20th century, and largely kept pace with one another (with the past twenty years as a noted exception). This provides some (very limited) evidence consistent with our speculation that increasing inequality may have been driven by a change in the optimal farm size associated with broader changes in agriculture somewhere in the 1950's.

It is also possible that some of the factors discussed in §4 could contribute to the impermanence of the homestead act's effect on land inequality. Although it seems that omitted factors like fraud, other land policy, and characteristics of homesteaders themselves would have increased land inequality early on, it could be that the 160-acre restriction of the Homestead Act had a direct and mechanical influence on land inequality initially, but that correlates of homesteading led to an undoing of these effects in the longer run. To the extent that this is the

case, we believe our findings still shed important light on the overall effect of homesteading on land inequality, which is inclusive of how the act was actually used (or abused).

Figure 4: Land Inequality and the Rise of Large Farms



Notes: This figure presents the average farm size Gini (left axis, black line) and the average share of farms that exceed 1,000 acres (right axis, dashed line) in sample counties in years where data from the U.S. Census of Agriculture are available.

For those who found the initial moral defenses of the Homestead Act compelling, what can be done to combat these trends? Some defenders of the Homestead Act proposed (unsuccessfully) that there be restrictions on homesteader's capacity to sell their land, along with restrictions on who may inherit land. As Gates summarizes this position: "To make sure that land accumulation and 'monopoly' would not be established, the reformers advocated inalienable homesteads with restrictions on inheritance and provisions for revision of the land to the government" (Gates 1968: 392). Intuitively, restricting the capacity for homesteaders to sell and who they may inherit land would preserve the equality achieved by the act.

Something like this proposal has actually been tried before. Land titles issued to Native Americans under the 1887 Dawes Act and 1906 Burke Act entailed restrictions on transfer, albeit for different reasons. Land rights issued on reservations during the "allotment period" of 1887 to 1935 were held in trust with the federal government for a period of 25 years before being issued in full fee simple title. Trusteeship was justified as a means to prevent white settlers from taking advantage of tribal members who were unfamiliar with formal land titles. Though perhaps well-intentioned, these transfer restrictions have been shown to carry heavy costs for reservations, including lack of access to credit (non-transferrable land cannot be put up as collateral for loans), fractionated ownership claims (because non-transferability complicates inheritance), and—apropos of our arguments above—lack of assembly to optimal farm sizes (Anderson and Lueck 1992; Dippel, Frye, and Leonard 2021).

7. Conclusion

The Homestead Act was a revolutionary piece of legislation that allowed persons to claim free land so long as they were willing to brave the journey out West, settle, cultivate, and occupy it. Thus far, social scientists have analyzed the effects of the act in terms of criteria largely foreign to those who agitated for the act's passage. Many defenders of homesteading rested their argument on the moral claim that all persons have an equal right to the soil. We have examined the Homestead Act in terms of this moral theory. Our results are mixed. At least initially, the act did have a significant impact on equality of land ownership. This equality does not persist, though, and today there is no remnant of the egalitarian pattern initially achieved through homesteading. Those who embrace a moral theory that grants all persons an equal right to the soil must do more to think of how we might achieve a lasting egalitarian distribution of natural resources.

Works Cited

Allen, Douglas W. 1991. "Homesteading and Property Rights; Or, 'How the West Was Really Won.'" *Journal of Law & Economics* 34: 1-23.

Allen, Douglass W. 2019. "Establishing Economic Property Rights by Giving Away an Empire." *Journal of Law & Economics* 62: 251-280.

Allen, Douglass W. and Bryan Leonard. 2021. "Property Right Acquisition and Path Dependance: Nineteenth Century Land Policy and Modern Economic Outcomes." *The Economic Journal.* Link: https://drive.google.com/file/d/1hpZz6hPES6F0RmkQ3Q5KNYZvLnZvqYGc/view.

Anderson, Terry L. and Peter J. Hill. 1990. "The Race for Property Rights." *Journal of Law & Economics* 33: 177-197.

Anderson, Terry L. and Dean Lueck. 1992. "Land tenure and agricultural productivity on Indian reservations." *Journal of Law & Economics* 35: 427-454.

Bazzi, Samuel, Martin Fiszbein, and Mesay Gebresilasse. 2020. "Frontier Culture: The Roots and Persistence of "Rugged Individualism" in the United States." *Econometrica* 88: 2329-2368.

Bleakley, Hoyt and Joseph Ferrie. 2014. "Land Openings on the Georgia Frontier and the Coase Theorem in the Short- and Long-Run." Unpublished manuscript, available at: http://www-personal.umich.edu/~hoytb/Bleakley_Ferrie_Farmsize.pdf.

Buchanan, James. 1860. "THE HOMESTEAD BILL; Veto Message of President Buchanan." Made available by the New York Times: https://www.nytimes.com/1860/06/30/archives/the-homestead-bill-veto-message-of-president-bachanan.html.

Carpenter, Daniel. 2021. *Democracy by Petition: Popular Politics in Transformation, 1790-1870.* Cambridge: Harvard University Press.

Chang, David A. *The Color of Land*. Chapel Hill: University of North Carolina Press.

Cohen, G.A. 1995. *Self-Ownership, Freedom, and Equality*. Cambridge University Press.

Conley, Timothy G. 2008. "Spatial Econometrics" *The New Palgrave Dictionary of Economics,* edited by Steven N Durlauf and Lawrence E Blume.

Department of the Interior. 1926. "Suggestions to Homesteaders and Persons Desiring to Make Homestead Entries." Digitized by HathiTrust Digital Library. Available at: https://babel.hathitrust.org/cgi/pt?id=mdp.39015036692385&view=1up&seq=1.

Dippel, Christian, Dustin Frye, and Bryan Leonard. 2021. "Property Rights without Transfer Rights: A Study of Indian Law Allotment." NBER working paper #27479. Link: https://www.nber.org/system/files/working_papers/w27479/w27479.pdf.

Edwards, Eric, Martin Fiszbein, and Gary Libecap. 2020. "Colonial Origins of Property Rights to Land and Productivity Implications." NBER working paper. Link: https://www.nber.org/system/files/working_papers/w27750/w27750.pdf

Edwards, Richard, Jakob K. Friefeld, and Rebecca S. Wingo. 2017. *Homesteading the Plains: Towards a New History*. Lincoln: University of Nebraska Press.

Foner, Eric. 1995. *Free Soil, Free Labor, Free Men: The Ideology of the Republican Party Before the Civil War*. Oxford: Oxford University Press.

Frymer, Paul. 2017. *Building an American Empire: The Era of Territorial and Political Expansion*. Princeton: Princeton University Press.

Galor, Oded, Omer Moav, Dietrich Vollrath. 2009. "Inequality in Land Ownership, the Emergence of Human-Capital Promoting Institutions, and the Great Divergence." *Review of Economic Studies* 76: 143-179.

Gardner, Bruce L. 2009. *American Agriculture in the Twentieth Century: How it Flourished and What it Cost*. Harvard University Press.

Gates, Paul W. 1936. "The Homestead Law in an Incongruous Land System." *American Historical Review* 41: 652-681.

Gates, Paul W. 1968. *History of Public Land Law Development*. Washington, DC: Public Land Law Review Commission.

Gates, Paul W. 1976. "An Overview of American Land Policy." *Agricultural History* 50: 213-229.

Hansen, Zeynep K. and Gary D. Libecap. 2004. "Small Farms, Externalities, and the Dust Bowl of the 1930s." *Journal of Political Economy* 112: 665-694.

Hensley, Marcia Meredith. 2008. *Staking Her Claim*. Glendo: High Plains Press.

Hibbard, Benjamin Horace. 1939. *A History of the Public Land Policies*. New York: Peter Smith.

Hsiang, Solomon M. 2010. "Temperatures and Cycolones Strongly Associated with Economic Production in the Caribbean and Central America." *Proceedings of the National Academy of Sciences* 107(35).

Layman, Daniel. 2020. *Locke Among the Radicals*. Oxford: Oxford University Press.

Limerick, Patricia Nelson. 1987. *The Legacy of Conquest: The Unbroken Past of the American West*. New York: W.W. Norton & Company.

Mark, Irving. 1963. "The Homestead Ideal and Conservation of the Public Domain." *The American Journal of Economics and Sociology* 22: 263-278.

Mattheis, Ross and Itzchak Tzachi Raz. 2021. "There's No Such Thing As Free Land: The Homestead Act and Economic Development." Working paper, available at: https://scholar.harvard.edu/files/iraz/files/Raz_JMP_2019.pdf.

Miller, Melinda. 2011. "Land and Racial Wealth Inequality." *American Economic Review* 101: 371-376.

Murtazashvili, Ilia. 2013. *The Political Economy of the American Frontier*. Cambridge: Cambridge University Press.

Nozick, Robert. 1974. *Anarchy, State, and Utopia*. New York: Basic Books.

Obert, Jonathan. 2021. "Inlaws, Outlaws, and State Formation in Nineteenth-Century Oklahoma." *Social Science History* 45: 439-467.

Sen, Amartya. 1992. *Inequality Reexamined*. Cambridge: Harvard University Press.

Turner, Frederick J. 1893. "The Significance of the Frontier in American History." Made available by the American Historical Association: https://www.historians.org/about-aha-and-membership/aha-history-and-archives/historical-archives/the-significance-of-the-frontier-in-american-history.

Vallentyne, Peter, Hillel Steiner, and Michael Otsuka. 2005. "Why Left Libertarianism is Not Incoherent, Indeterminate, or Irrelevant: A Reply to Fried." *Philosophy & Public Affairs* 33: 201-215.

White, Richard. 1991. *"It's Your Misfortune and None of My Own": A History of the American West*. Norman: University of Oklahoma Press.

White, Richard. 2011. *Railroaded: The Transcontinentals and the Making of Modern America*. WW Norton & Company.

Zeynep, Hansen K. and Gary D. Libecap. 2004. "Small Farms, Externalities, and the Dust Bowl of the 1930s." *Journal of Political Economy* 112: 665-694.