Suffrage, Schooling, and Sorting in the Post-Bellum U.S. South.*

Suresh Naidu
snaidu@wcfia.harvard.edu
Harvard University
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Abstract

This paper estimates the political and economic effects of the 19th century disenfranchisement of black citizens in the U.S. South. Using adjacent county-pairs that straddle state boundaries, I first examine the effect of voting restrictions on political competition. I find that each disenfranchisement law lowered overall electoral turnout by 8-17% and increased the Democratic presidential party vote share by 5%. Second, employing newly collected data on schooling inputs, I show that disenfranchisement reduced the teacher-child and teacher-student ratio in black schools, by up to 5% per year. Finally, I develop a model of suffrage restriction and redistribution in a 2-factor economy to generate sufficient statistics for welfare analysis of the incidence of black disenfranchisement. Consistent with the model, while the reduction in public good provision spurred black out-migration, disenfranchisement increased land and farm values (by 7% per decade). The estimated factor market responses suggest that blacks bore a collective loss from disenfranchisement equivalent to a 600 million current-day dollar decrease in income, much of which was transferred to landowners.
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1 Introduction

A core question in political economy is the economic incidence of democracy. Authors from Barrington Moore (1966) to Acemoglu and Robinson (2006) have argued that economic interests are pivotal in the social decision to extend the electoral franchise. In particular, landowners are often argued to be the social group historically hostile to democratic transitions, owing to the economic effects of democracy on agricultural land and labor (Rueschmeyer, Stephens, and Stephens 1992). This paper uses time-varying spatial discontinuities in the extent of the franchise induced by late 19th century Southern U.S. state laws to estimate local factor market responses to changing political institutions and redistribution. I then use the reduced form estimates together with a simple model to quantitatively answer a fundamental question in social science: How much do formal voting rules alter the functional distribution of income?

Between 1870 and 1910, 11 Southern states passed legal restrictions on voting, such as poll taxes and literacy tests. These changes were aimed at lowering black electoral participation, but also affected landless whites. These suffrage restrictions in the U.S. South provide a unique opportunity to study the direct and indirect economic effects of franchise restrictions. This paper estimates the effects of within-country anti-democratic institutions on factor markets and the functional distribution of income. I use a spatial-discontinuity based identification strategy that, besides controlling for a variety of institutional features that may confound cross-country analyses, also controls for unobservable variables that could bias within-country cross-state analyses (Besley et al. 2008, Husted and Kenny 1998, Miller 2008) [1]. A historical dataset of counties that lie on state borders allow me to examine how changes in voting rights alter the mix of public goods available. The federalism and decentralized governance of the post-bellum U.S. South allow me to consider the effects of institutional changes that are "local" in the sense of taking some factor prices or quantities as given.

To motivate the estimation strategy, I provide a model integrating local political institutions and redistribution with occupational choice in a 2-factor economy with migration. The model predicts that following disenfranchisement, redistribution falls, inducing outmigration in the spirit of interjurisdictional competition (Tiebout 1956). The land price may rise or fall, depending on the labor market institutions, the extent of taxation, and the labor-intensity of agricultural production. I model both competitive labor markets as well as endogenously segregated labor markets. I provide assumptions and formulas that relate the land price and migration responses to disenfranchisement to sufficient statistics for the economic incidence of disenfran-

[1] A large cross-country literature is devoted to debating the effects of democratic institutions on economic growth, redistribution, and inequality (Barro 1996, Przeworski 2000, Persson and Tabellini 2006, Gradstein and Milanovic 2006)

chisement on landowners and white and black labor. I then estimate the impact of poll taxes and literacy tests on political competition, public good provision, and factor mobility using a panel of counties matched into adjacent county-pairs that straddle state boundaries (Dube et al. 2009). The county-pair strategy controls for a variety of unobservables that would confound the simple county-year panel regression. Unobservable characteristics that vary continuously across state boundaries(such as labor market conditions, climate changes, local attitudes towards race, fear of Klan or mob violence, underlying property tax base, or land productivity shocks) are all effectively ruled out as competing explanations for the effects I estimate. By considering treatment counties that are economically integrated with their controls, it is also possible to interpret the estimates as sufficient statistics for calculating the economic incidence of disenfranchisement.

Using the contiguous county-pair identification strategy, I find that poll taxes and literacy tests lower turnout, increase the Democratic party vote share, and lower the teacher-child ratio for blacks, with no effect on the ratio of white teachers to children. Since local land taxes were the primary basis of school funding, neighboring counties with similar levels of land productivity should have had virtually identical tax bases. My results on turnout and partisan voting are consistent with historical evidence that legal institutions independently lowered black political participation.[2] The consequent fall in black educational inputs is consistent with many theoretical political economy models, including the one in this paper, as well as existing quantitative and qualitative research. The importance of low-quality southern schooling in explaining historical and persistent racial human capital and income differences is well documented (Margo 1990), and the new data assembled here allows me to look at how variation in political institutions in the South determined the provision of education for black citizens.

The focus on integrated local economies also makes it possible to precisely estimate the effects of disenfranchisement on land and labor markets. Despite the outmigration of black labor, the value of land increased in disenfranchised counties relative to adjacent counties where black Americans could vote more easily. Since land values are an asset price that reflect actual and expected future profits, this result suggests that landowners were the primary beneficiaries of restricted voting in the U.S. South, since they became more capable over lowering wages for

[2]That the laws even mattered for political outcomes such as voter turnout is controversial. V.O. Key (Key 1949) held that the laws disenfranchising poor and black Southerners were largely rubber-stamping a *de facto* situation of low black and poor white turnout, coining the term that black political exclusion was a "fait-accompli" before 1890 Acemoglu and Robinson (2008) echo this perspective in their paper arguing that Southern elites used *de facto* power to maintain control despite the constraints of formal elections. Historians since Kousser (1974) have documented falls in turnout owing to voting laws with more comprehensive datasets (Heckelman 1995, Redding and James 2001), although no paper has attempted to construct valid county-level control groups. The focus of the empirical literature on disenfranchisement has been using ecological regressions to infer the extent to which blacks were disenfranchised relative to whites

their workers and lowering taxes on themselves. Blacks bore the brunt of the welfare losses from disenfranchisement; my results suggest that poor whites were indifferent. These combined results shed light on key debates in Southern political historiography about whether poor or rich whites benefited the most from changes in Southern political institutions (Key 1949, Kousser 1974, Perman 2001).

The paper proceeds by reviewing the relevant literature from economics and political science in the next section. Section 3 goes over background on the relevant Southern history, describing the mechanisms tested in the paper. In Section 4 I provide a simple model that generates predictions about the effect of disenfranchisement on redistribution, migration, and land prices under different assumptions about the labor market. The model also provides simple formulas relating the reduced form estimates to welfare. In Section 5 I explain the identification strategy, which is based on contiguous county pairs, as well as discuss potential biases. Section 6 describes the various data sources and the construction of the education data. Section 7 presents results. Section 8 conducts a preliminary calibration and Section 9 concludes.

2 Literature Review

The political economy of democratic and non-democratic institutions has been the focus of much recent economics literature. Recent theoretical work has modelled the motivations for landlord opposition to democracy (Llavador and Oxoby 2005, Acemoglu and Robinson 2006), and some macro empirical evidence has been provided (Easterly 2001). However, no scholars have estimated the economic incidence of within-country variation in electoral institutions. Other work modelling the extension of the franchise includes Lizzeri and Persico (2004), Ades and Verdier (1996), and Bourguignon and Verdier (2001). In examining the effects of political reforms on economic outcomes, this paper is perhaps closest to Baland and Robinson (2008, 2009), who look at the effect of introducing the secret ballot on employer vote buying, and find that land prices fell more in high-*inquilino* Chilean communas post-reform, as land no longer capitalized the ability to control *inquilino* votes. However, by looking separately at land and labor, this paper is the first to estimate within-country effects of franchise-restriction on the functional distribution of income.

A few recent papers in economics have looked at Southern history for insights into the political economy of development, although none use the same data or identification strategy as this paper. Besley, Persson and Sturm (2009) look at state-year variation in the abolition of suffrage restrictions to estimate the effect of political competition on state-level economic growth. However, their sample period is well after the one considered in this paper, and they do not

consider the margins of factor mobility and public good provision that are the focus of this paper. Similarly, Husted and Kenny (1997) examine the effect of voting restriction abolition on the size of government. Both of these papers are looking at the removal of voting restrictions using state-year variation, while this paper looks at their implementation and is able to control for a substantial amount of unobserved spatial variation by looking at counties just across state boundaries. Rajan and Ramcharan (2009) look at the relationship between land concentration and financial underdevelopment in a cross-section of U.S. counties in 1930. Caselli and Coleman (2001) examine sectoral convergence between the South and the rest of the U.S., and attribute it to the relative contraction of the agricultural sector. Bleakley (2007) looks at hookworm eradication in the U.S. South for evidence on the efficacy of disease eradication programs. Acemoglu and Robinson (2008) also discuss the U.S. South as an instance of elites exercising *de facto* political control despite *de jure* democratic institutions. This paper clearly falls in the tradition of using the U.S. South to test hypotheses concerning development in general, and political economy issues in particular.

The connection between disenfranchisement and public good provision has been documented in a number of papers, for example Kousser (1980), Margo (1982), and Pritchett (1989), but each only examines a single state, and none look at factor market responses. The unequal provision of schooling in the South, and its consequences, has a comprehensive treatment in Margo (1990), complementing a large literature studying segregated schooling (e.g. Welch (1973), Orazem (1987), Card and Krueger (1992), Fishback and Baskin (1991)). The economic history of the post-bellum U.S. South has had a vibrant debate on the extent of black labor market mobility (Ransom and Sutch (2001), Wright (1986), Higgs (1977), Naidu (2009)). The role of interjurisdictional competition in providing the efficient level of local public goods has been an influential idea in economics since Tiebout (1956). These themes were brought together in Margo (1991), who found that labor market mobility constrained local jurisdictions in the South into providing some level of education to disenfranchised blacks. However, while some attention has been paid to integrating politics (Epple and Romer 1991) via voting equilibria into these models, little work has examined the effect of sorting on local non-democratic politics. No paper, however, has looked at the effect of disenfranchisement on public good provision using inter-state variation and county-level data, perhaps because the county level schooling data has never before been compiled in the South.

Related to this paper is a literature that looks at variation in political representation by ethnicity or gender, finding that changes in the composition of the electorate or representatives induce substantial changes in public good provision, despite no changes in the underlying population (Duflo and Chattopadhyay (2004), Pande (2002), Gugerty and Miguel (2006), Besley et

al. 2004). A particular instance from U.S. history is the introduction of women's suffrage, which Miller (2008) finds improved public health and infant mortality outcomes. Rather than increases in the political representation of a group, this paper looks instead at electorate contraction, a potentially very different political reform. In fact, the restriction of the franchise but the persistence of multi-party elections is rare. Most often non-democratic transitions occur via restricting party entry or abolishing elections. Brazil's *Saraiva* law in 1881 and South Africa (particularly the Western Cape) in 1948 are other instances where some fraction of the population is denied the right to vote via legal statute, which inspires a political science literature on race and its interaction with political institutions (Marx 1998) and American political development (King and Smith 2005). This paper looks at the effects of changing political representation on both direct redistribution, like previous papers, and also looks at indirect effects via market responses.

3 History and Background

The Civil War and the subsequent military occupation and Reconstruction overturned Southern society, freeing and enfranchising a vast number of slaves. Many of these institutional changes were implemented at bayonet-point, and only lasted in practice so long as the Union army remained willing to enforce the new constitutional amendments. With the withdrawal of Union troops in in 1870s (also known as Southern Redemption), the rollback of black voting and civil rights began. However, while the Democratic party, controlled by elite whites, successfully dominated elections, it still had to contend with political competition from Republicans and pockets of politically organized blacks. The federal government continued to use the Enforcement acts to prosecute white electoral fraud and violence. Locally, black sheriffs and politicians, often Civil War veterans, still held a measure of political power. Legal disenfranchisement, running into the early 20th century, was designed to eliminate this kind of electoral competition, and further reduced government expenditure on black services such as schools.

3.1 Black Political Participation After the Civil War

Black Americans enjoyed a brief window of participation in democratic politics immediately following the Civil War. The extension of the franchise under military occupation did not, unsurprisingly, convince all Southern whites that ex-slaves should be allowed to participate in politics. Despite this hostility, the presence of Northern troops allowed the Republican party to incorporate blacks as a key political constituency, despite widespread white hostility towards black enfranchisement. Once states were admitted back into the union, elections were fiercely

contested affairs, with Republicans and Democrats contesting elections vigorously.

Black participation in elections during Reconstruction was extensive, and overwhelmingly partisan. The Republican Party was the vehicle for black claims on the state for civil and political rights, as well as whatever redistribution they could secure. As late as 1876, black male turnout rates in Louisiana and South Carolina (the two states which have voting data by race) were 75% and 78% of the eligible population (King 2002, 2001). In fact, turnout rates during Reconstruction were much higher than in the next 50 years.

Political participation also brought representation. Foner (1988) lists 18 African Americans that served in state executives during Reconstruction. But more importantly for everyday life was the presence of black officials in local government,with blacks servicing as justices of the peace, county commissioners, and sheriffs. Foner writes that "In virtually every county with a sizable black population, blacks served in at least some local office during Reconstruction ... assumed such powerful offices as county supervisor and tax collector, especially in states where these posts were elective". South Carolina, in 1868, had 74 black legislators out of 128, and it retained a majority black legislature until 1876.

With effective representation came redistribution, particularly in the form of public goods provision. Education was by far the most important of these, and the most sensitive to racial tensions. Schooling black Americans was a particularly sharp break from the pre-Civil War period, and one opposed by many Southern whites, both rich and poor. However, the Freedman's Bureau and Republican state education superintendents saw education as very important for giving ex-slaves access to human capital, as well as a substitute for politically infeasible land reform. An educated black population was also seen as an electoral block that would politically favor the Republican Party. Republican educational superintendents levied property taxes to pay for an expanded school system, sometimes having to build them completely from scratch. While constrained by hostility to taxes and racial integration, "Republicans had established, for the first time in Southern history, the principle of state responsibility for public education" (Foner 1988).

3.2 Redemption and Disenfranchisement

Southern Redemption in the mid-1870s began reversing many of the gains made by blacks during Reconstruction. Northern troops were gradually withdrawn, allowing the Ku Klux Klan and White Leagues, together with less organized white violence (often called electoral "bulldoz-

ing") to coerce black voters. The resulting tilt in the balance of power restored the Democrats to power beginning in the early 1870, a process completed with 1876 Hayes-Tilden electoral compromise. Gerrymandering, local electoral changes and continued electoral fraud and force kept the Democrats in power. This came along with increased political representation of agrarian landowners and their favored policies. Thus, politicians cut taxes, reduced expenditure, and passed a slew of labor and tenancy laws that clearly favored landowners at the expense of merchants and workers (Woodman 1995). Redemption was a large blow to the political and economic rights of Southern blacks in particular. "In illiteracy, malnutrition, inadequate housing, and a host of other burdens, blacks paid the highest price for the end of Reconstructions and the stagnation of the Southern economy." (Foner 1988).

Despite this reassertion of white political power, Redemption did not create the "Solid South"; effective one-party rule had to wait until after the franchise restrictions studied in this paper. Kousser (1974) writes that "The methods that the Democrats had employed to end Reconstruction had not caused either turnout or opposition to cease by 1880". Black representation, even at the federal level, persisted after Redemption. George Henry White, a black congressman from North Carolina, served from 1897 to 1901. As Republicans 10 other black congressmen, from North and South Carolina, Virginia, and Mississippi served in Congress between 1877 and 1900 (Middleton 2002). In North Carolina's Second Congressional District "hundreds of other blacks held lesser positions" (Anderson 1980). While the Republican party was severely diminished and blacks were largely denied direct representation, political competition still existed. Even when black votes were controlled or manipulated, it often involved having to make transfers to black political brokers or having to engage in a panoply of electoral manipulation tactics. Goldman (2001) provides data showing that federal prosecutions of 15th amendment violations continued with equal vigor post-1877, and this was a perpetual concern to Democrats during the 1880s. To secure votes of blacks, patronage and public goods still had to be distributed, if perhaps in diminished quantities, and black legislators still "introduced resolutions that expressed black desires and demands for education" (Moneyhon 1985) into the 1890s.

The 1890s, sometimes referred to as the "Restoration", marks the beginning of Democratic rule and white supremacy enshrined in law. Of interest for this paper is the legislative statutes and constitutional amendments that legally deprived Southerners of the right to vote. Historians and political scientists have discussed a number of motivations for legal disfranchisement. The first is a response to the Populist party, and particular fusion tickets between Republicans and Populists in Louisiana and South Carolina, as well as factional conflicts within the Democratic party. The potential reserve of votes to be tapped by "opportunistic" whites was a threat to the

existing political elite. This became clear with the large gains made by rivals to the traditional Democratic leadership during the 1880s. The Republican and Populist parties, along with potentially rival factions of Democrats, could pose serious challenges to existing Democratic rule by bringing the black vote into play. This was clear from gubernatorial elections in the 1880s, where Independent and Republican parties won between a third and half of the vote. This is a far cry from the overwhelming dominance Democrats would exercise post-1910, where turnout and non-Democratic votes were abysmally low until after the Civil Rights movement.

The second is a response to the retreat of the national Republican party from its commitment to ensure black voting rights in the South. The adult male right to vote, enshrined in the 15th amendment, came with a set of Enforcement Acts, designed to allow federal agents to police elections and repress Klan political violence. Recent scholarship has shown that effective and widespread federal enforcement of the 15th Amendment did not end after Redemption. Instead Cresswell (1987), Wang (1997), and Goldman (2001) have all shown that illegal electoral practices were prosecuted by the federal government into the 1890s. The Lodge "Force" Bill of 1890, would have increased the federal supervision of elections.

However, national Democrats successfully blocked passage of the Lodge bill, and proceeded to repeal the 1870 Enforcement acts in 1894. Republicans, preoccupied with Northern economic issues and foreign policy, acquiesced. With the abandonment of Republican support for black suffrage, Southern states were free to legally restrict the franchise without worrying about federal intervention. Importantly for my identification strategy, this was national legislation, and therefore exogenous to the county and state-level variation I consider in this paper.

A third postulated determinant of black disenfranchisement is that they were just one of a set of legal and social institutions implemented in the late 19th century as the South experienced a nadir of race relations. In this story, a cultural tide of anti-black sentiment swept the South, generating a wave of lynchings, even more formal segregation laws, and formal political exclusion. Conjectured causes of the racial tension wave include demographics (Rabinowitz 1978), lowered transportation and communication costs (Redding 2003), and changing Northern ideas about black economic and political rights (Richardson 2004). Again, much of this variation is at the national or regional level, and, to the extent that it varies within the South, it is unlikely to vary within the contiguous county pairs I use in this paper.

3.2.1 Disenfranchisement Laws

The operation of the poll tax varied from state to state. Generally, it required one to show a receipt for payment of the poll tax prior to voting.[3] At first glance, it was universally a nominal amount, no more than 2 dollars. However, other features of the poll tax administration and the context made it much more binding than just the sum of money involved, although that was clearly costly for cash-strapped sharecroppers often paid in kind. Firstly, they often had to be paid between 9 and 6 months before the election. Secondly, in some states the tax was cumulative, so that taxes on all preceding elections had to be paid before being eligible to vote.

Literacy tests generally consisted of a requirement to read a section of the national or state constitution prior to casting a ballot. Again, in the low-education environment of the rural U.S. South, particularly for poor blacks and whites, the literacy test was likely to bind for a large segment of the population. Georgia's literacy test, for example entailed correctly reading any paragraph of the state or U.S. constitution and be able to write it. Virginia's test involved applying to the registrar "in his own handwriting" (Key 1949). While there were a variety of other pieces of disenfranchisement legislation passed simultaneously, the poll tax and literacy tests were the most important for restricting voting, and were the object of the 1965 Voting Rights Act. In addition, in some states disenfranchisement was enacted via statute, while in others it was enacted by constitutional amendment.

3.3 Economic Effects of Disenfranchisement

> *There is no surer way to drive the best of them [Black Americans] from the state than by keeping up this continual agitation about withdrawing from them the meager educational opportunities that they now have. Their emigration in large numbers would result in a complication of the labor problem.* -J.W. Joyner North Carolina School Superintendent 1910

Attributing the dismal state of Southern black education to the restricted franchise has a long pedigree. Charles Dabney (1936), Horace Mann Bond (1934), and Louis Harlan (1968) all attributed discrimination in public education provision to political exclusion of African Americans. Statistically, the fall in the quality and quantity of black education following disenfranchisement has been shown in a number of papers. Margo (1982) uses Louisiana data and finds that disenfranchisement increased racial gaps in school expenditure. Kousser (1980a) finds similar results

[3] Ogden (1958) summarizes the poll taxes as they existed in the early 1950s.

in North Carolina, where racial gaps in education expenditures jump sharply after disenfranchisement. As a counterfactual, Kentucky, the only state without voting restrictions, in fact passed an 1881 referendum proposal to equalize black-white schooling expenditures (Kousser 1980b), although it is unclear how binding it was.

That black citizens migrated in response to school quality is well documented by Margo (1991), who writes that "Although black parents could not vote at the ballot box, they could, and did, vote with their feet in search of schools for their children". In Lowndes county, Alabama, Foner and Lewis (1980) find "there [were] perhaps a hundred Negro farmers . . . Not one of these men has been attracted away ... they remain on account of the good schools for their children" (Foner and Lewis, 1980, p. 241).

Political forces and redistribution were motivations for migration more generally. Faced with the loss of political representation and civil rights after Redemption, the first of the notable migration waves out of the South began. While small in actual numbers, the famous Kansas exodusters were the first large scale migration of blacks out of the South, in 1879-1880. Contemporaneous newspapers were stunned at the large movement of blacks out of the historically slave states. "Kansas Fever" was used to describe the understandable migration response to the *de facto* loss of civil and political rights that accompanied Redemption. While the magnitudes involved in the Kansas migration wave turned out to be fairly small (Cohen 1991), it had an effect on national politics, even instigating the formation of a Senate Committee on the Colored Exodus. Just as interesting is the slightly later Indiana Exodus, which was portrayed in the Northern press as being explicitly for the purposes of winning political representation and redistribution (Richardson 2004). Hahn (2003) writes that black migration between Southern states leapt during the 1880s and 1890s, consistent with my argument in this paper, and that they were hoping for "better schools, better economic prospects, and better social circumstances."

Vulnerability to arbitrary white violence against person and property was another potential consequence of disenfranchisement, as local law enforcement was not accountable to blacks. Beck and Tolnay (1992) find that black migration responded to lynchings and racial violence, and some Southern communities improved the safety of blacks in order to increase the incentives to stay. While there would be no large scale outmigration of blacks until World War I, the mobility patterns documented in this paper are consistent with the existing evidence that black workers moved not just in search of higher wages, but also political representation and public goods. The Great Migration, triggered by both the push factors of disenfranchisement and political repression, as well as Northern labor demand shifts induced by World War I, resulted in a substantial improvement in school quality as counties realized that they were permanently

losing labor (Margo 1992).

Landlords benefited from the restricted franchise in a variety of ways. Besides reaping any tax savings allowed by reducing government expenditures on black public goods, the elimination of political competition allowed a slew of policies that favored rural landowners. Labor mobility restrictions, for example anti-vagrancy, emigrant agent licensing requirements, and anti-enticement laws (Naidu 2009, Cohen 1991, Bernstein 2001), as well as an extensive convict leasing system, kept agricultural labor costs low. In addition, the weak political institutions and one-party system of the post-disenfranchisement South allowed the easy translation of landowner wealth into political influence, ensuring extensive representation of landowners at all levels of government. At the federal level, disenfranchisement guaranteed an elite white lock on Senate and House representation, and landowners were effectively able to stymie federal intervention into the Southern political economy. As an example, Alston and Ferrie (1999), suggest that these Southern Democratic representatives were able to dilute the impact of many New Deal welfare programs, which they did to protect the private labor-market paternalism that guaranteed a steady workforce to agricultural employers.

The economic effects of disenfranchisement on poor whites is a contested area in Southern history. While it is clear that some poor whites were disenfranchised by the laws, some states were selective enough in enforcing them or had "grandfather clauses" that enabled whites of all classes to vote. However, while existing evidence suggests that whites as a whole benefited from a superior public-goods and taxation package following disenfranchisement, scholars differ substantially over the distribution of these benefits between rich and poor whites. A contribution of this paper is to estimate the white public good provision and migration response to disenfranchisement, and interpret the latter as a measure of the revealed preference of poor whites for living under the post-disenfranchisement institutions.

4 A Simple Model of Suffrage Restriction

I consider a 1-period model of occupational choice in a small local jurisdiction, such as a county. Assume a mass 1 of agents, indexed by α, which measures both the return from engaging in production as well as migration. α indexes wealth, although it could also measure human capital. Agents have linear preferences in total consumption, including both private income and local public transfers. Agents can work locally for an exogenous wage w, migrate, or engage in local production.

Blacks have α distributed with a cumulative distribution function $F^B(\alpha)$, and the distribu-

tion of α whites is given by $F^W(\alpha)$. I assume that θ^B is the fraction of the population that is black and that $F(\alpha) = (1-\theta^B)F^W(\alpha) + \theta^B F^B(\alpha)$, and F^B is first order stochastically dominated by F^W, so $F^B(\alpha) \geq F^W(\alpha)$. I also restrict α to be positive, so that $F^W(0) = F^B(0) = 0$, and assume that F is strictly increasing. Thus blacks have lower α than whites, reflecting either lower education, discrimination in labor and product markets, or lower security of person and property. Agents have 1 unit of labor, and engaging in own production requires 1 unit of land and k units of labor in addition to own labor, which is paid a wage w. Migration, another choice available to workers, earns a return αm, consistent with the well-documented fact that higher human capital agents tend to migrate (Margo 1990) or that migration costs were substantial and required wealth (Carrington et al. 1996). There is a fixed supply of land $L < 1$.

Pre-disenfranchisement, I assume all agents can vote, and I will show that preferences are single-peaked below, so taxes τ are set by the median voter, with $\alpha_{med} = F^{-1}(\frac{1}{2})$. Disenfranchisement truncates this distribution at $\underline{\alpha} > 0$, so that the population of voters has α described by the truncated distribution $G(\alpha) = \frac{F(\alpha)-F(\underline{\alpha})}{1-F(\underline{\alpha})}$. Thus the post disenfranchisement median voter is given by $\alpha_{p'} = G^{-1}(\frac{1}{2}) = F^{-1}(\frac{1+F(\underline{\alpha})}{2}) > \alpha_{med}$. Therefore I can consider disenfranchisement as shifting the pivotal or decisive voter from the median to another percentile $p' = \frac{1+F(\underline{\alpha})}{2} > \frac{1}{2}$.

Write taxable (property) income as:

$$R \equiv \int_{F^{-1}(1-L)}^{\infty} \alpha dF(\alpha)$$

This expression captures the fact that only the top mass L of the distribution engages in production, since land is in fixed supply, and they each produce α. Therefore government revenue is a fraction τ of total taxable income.

Transfers occur as follows. Paying for schooling requires expenditure c per capita. Government revenue pays for schooling. However, the government revenue pays for schooling beginning with the agents with the highest α and adding schooling for each agent until the government revenue is exhausted. Thus only the agents with $\alpha > \alpha^{**}$ given by:

$$\tau R = c(1 - F(\alpha^{**}))$$

will receive government expenditures. This induces a natural bias in education provision, as the richest agents get the first claim on government revenue. Thus, even non-producers have heterogeneous interests in taxing production. This lets us restrict attention to a 1-dimensional

policy space for the basic results, which is necessary to invoke the median voter theorem without more assumptions on preferences. In order to obtain single-peaked preferences, I assume a small administrative cost of taxation $\epsilon\tau$ that reduces per-capita expenditures.

The government transfer received by an agent of type α is:

$$t(\alpha) = \begin{cases} c - \epsilon\tau & \text{if } \tau R \geq c(1 - F(\alpha)) \\ 0 & \text{if } \tau R < c(1 - F(\alpha)) \end{cases}$$

Suppose ϵ is small, then the preferred tax rate of an agent with endowment α is just enough to cover them.

$$\tau(\alpha) = \frac{c(1 - F(\alpha))}{R} \tag{1}$$

Clearly, τ is decreasing in α, so richer agents favor lower taxes. If the decisive percentile is p, then the taxes are:

$$\tau(F^{-1}(p)) = \frac{c(1-p)}{R} \tag{2}$$

From this it is immediate that $\frac{d\tau}{dp} = -\frac{c}{R}$.

If producers receive government transfers, the returns from local production, including taxes and transfers are given by:

$$(1 - \tau)\alpha - v - kw + c \tag{3}$$

Agents can also migrate, say to a city or the North, and this gives returns αm, and agents do not receive local transfers. If agents stay and work locally, they earn the exogenous wage w plus transfers c if they are eligible.

4.1 Solving the Model

The cutoff $\alpha^*(\tau, v, w)$ for entering production satisfies:

$$(1 - \tau)\alpha^* - v - kw + c = max(\alpha^* m, w + c) \tag{4}$$

I assume a competitive market for land, so that land demand is given by $(1 - F(\alpha^*(\tau, v, w))$ and land supply is fixed at $L < 1$, so the price of land is given implicitly by:

$$F(\alpha^*) = 1 - L \tag{5}$$

I make the following assumption, which states that the median voter is a local worker, and that the next best alternative for the marginal producer is migration, to focus on the relevant case:

$$\frac{1}{2} < F(\frac{w+c}{m}) \leq F(1-L) \tag{6}$$

6 together with 4 results in the following expression for α^*

$$\alpha^* = \frac{v + kw - c}{1 - \tau - m} \tag{7}$$

Plugging this into formula for the land price given by 5 and solving yields:

$$v = (1 - \tau - m)F^{-1}(1 - L) - kw + c \tag{8}$$

Note that the land price effectively rations land so that $\alpha^*(v, \tau) = F^{-1}(1 - L)$. Thus, with exogenous wages, the land market ensures that the fraction of agents engaging in production is fixed at L, by making the marginal producer indifferent between production and migration or wage labor.

Turning now to migration, we have that agents migrate if $w + c < \alpha m$ if they are receiving expenditures c. Otherwise they migrate if $w < \alpha m$. Thus the cutoff $\alpha_*(c, w)$ for agents receiving transfers to migrate satisfies:

$$\alpha_* m = w + c \tag{9}$$

or

$$\alpha_* = \frac{w + c}{m} \tag{10}$$

Since agents only receive transfers c if they are in or above the decisive percentile p (i.e. $\alpha \geq \alpha_p$, where α_p denotes the value of percentile p), we can define white and black per-capita government expenditure as

$$e^B(p) = c(1 - F^B(\alpha_p)) \tag{11}$$

$$e^W(p) = c(1 - F^W(\alpha_p)) \tag{12}$$

The fraction of each subpopulation i migrating is given by:

$$M^B = F^B(\alpha^*) - F^B(\alpha_*) + min(F^B(\alpha_p), F^B(\alpha_*)) - F^B(\frac{w}{m}) \tag{13}$$

$$M^W = F^W(\alpha^*) - F^W(\alpha_*) + min(F^W(\alpha_p), F^W(\alpha_*)) - F^W(\frac{w}{m}) \tag{14}$$

The migration expressions can be understood as the sum of the population who would always

migrate, plus the sum of the population who would migrate if they did not receive expenditure c. If no agents were only kept from migrating by the local transfers, then $min(F^i(\alpha_p), F^i(\alpha_*)) = F^i(\alpha_*)$, and there is migration response to disenfranchisement. The fraction of agents that respond to disenfranchisement by migrating are those who have α high enough to benefit from migration were it not for the transfers.

Suppose disenfranchisement moves the decisive voter from $p = \frac{1}{2}$, the median voter, to p', where $\frac{1}{2} < p' < F(\alpha^*)$, as p' is the median of a lower-truncated F. Inspection of 8, 2, 11, and 13 immediately yields the following proposition, which are the key comparative statics of the model:

Proposition 1: Suppose that $\frac{1}{2} < p' < F(\alpha^*)$, then we have:

- $\Delta\tau = \tau(p') - \tau(\frac{1}{2}) = -\frac{c}{R}(p' - \frac{1}{2}) < 0$
- $\Delta e^i = e^{i'} - e^i = c(F^i(\alpha_{med}) - F^i(\alpha_{p'}) < 0$
- $\Delta v = v' - v = -\Delta\tau\alpha^* = \frac{c\alpha^*}{R}(p' - \frac{1}{2}) > 0$
- $\Delta M^i = M^{i'} - M^i = min(F^i(\alpha_{p'}), F^i(\alpha_*)) - min(F^i(\alpha_{med}), F^i(\alpha_*)) \geq 0$ with strict inequality if $p' > F(\frac{w}{m})$

We need the $F(\frac{w}{m}) < p'$ assumption to ensure that there are some agents who leave following the shift of the median voter from $p = \frac{1}{2}$ to p'. The predictions of Proposition 1 are illustrated in Figure 1. Disenfranchisement moves the median voter from $\frac{1}{2}$ to p', which lowers the tax rate τ. Since the land supply is fixed, the land price v adjusts to keep the marginal producer, α^* indifferent. Since the mass of agents greater than the decisive percentile falls, government expenditures fall. If there are any agents with α below the new decisive percentile p' who were not migrating because of the local transfer (i.e. $\alpha > \frac{w}{m}$), then they now migrate.

Note that the first-order dominance of F^W over F^B implies that there exists p such that $F^W(\alpha_*) < p < F^B(\alpha_*)$, therefore $M^{W'} > M^W$ implies $M^{B'} > M^B$, but not the converse. Poor whites only leave if blacks are leaving. We also have that a slightly stronger assumption than first-order stochastic dominance yields:

Proposition 2: $f^W < f^B$ for all $\alpha < \alpha^*$, then we have that the effects of disenfranchisement are larger in magnitude for blacks than whites. i.e.

$$\begin{aligned} \frac{de^B}{dp} &< \frac{de^W}{dp} \\ \frac{dM^B}{dp} &\geq \frac{dM^W}{dp} \end{aligned}$$

This proposition can be seen by differentiating 11 and 13 with respect to p, and says that if

whites are more concentrated in landholding than blacks, then the loss of government expenditure and migration of blacks will be larger for contractions in the franchise.

4.2 Local Labor Markets: Competitive and Repressive

While the model so far has assumed, consistent with Wright (1986), that agricultural labor markets were well-integrated within the South, this has been contested by other historians (Mandle 1978). Thus, in this section I allow for endogenous wages, set at the local county level. I first consider competitive markets, where the wage adjusts to compensate workers for the loss of government transfers that accompany disenfranchisement. If the compensating wage effect is sufficiently high, then the comparative static on land prices may not hold. I then consider a historically more plausible case, where disenfranchisement is followed by voting over black labor market policy. If disenfranchisement changes the median voter from a black agent to a poor white agent, then black wage repression increases. If black labor-supply elasticity to a county is low, for example owing to lack of outside options for blacks, although an aversion to migration could also generate this, then the overall wage bill falls, and the original result on the price of land increasing post-disenfranchisement continues to hold.

Consider first the competitive case, where the wage adjusts to keep labor demand equal to labor supply. Labor demand is fixed at Lk. Labor supply is given by $F(\frac{w+c}{m}) - min(p - F(\frac{w}{m}), 0)$. Market clearing then imposes

$$Lk = F(\frac{w+c}{m}) - min(p - F(\frac{w}{m}), 0) \tag{15}$$

So when p increases, the right hand side decreases, so w adjusts upwards to keep the market at equilibrium. From 8 we can see that this will lower the price of land, as production becomes costlier. Thus we have the following:

Proposition 3: If $\frac{1}{2} < F(\frac{w}{m}) < p'$ and wages are set in competitive local labor markets, then a) wages rise after disenfranchisement and b) the effect of disenfranchisement on the price of land is ambiguous.

Proof: See Appendix.

If $k\Delta w > 0$ is sufficiently large, then Δv could be negative, which implies that the land price falls following disenfranchisement. Intuitively, this is more likely to happen when the induced outmigration is large relative to the change in the decisive percentile, when the tax-burden (c) is low, or when production is labor intensive, in the sense of high k. [4]

[4] If we are willing to make parametric assumptions about F, we can obtain precise conditions under which the land

However, disenfranchisement in the U.S. South occurred in the context of labor market segmentation and wage repression for black workers, both due to racial discrimination in outside labor and credit markets as well as legal institutions (Naidu 2009, Roback 1984, Cohen 1991). Thus, the assumption that wages could freely adjust to compensate for the lower public goods available in a county may be invalidate by the labor market policies adopted. The restrictions on employer competition and job transitions that depress wages also allow landowners to profit from disenfranchisement despite losing some workers with good exit options.

I model this extremely simply by assuming that the policy space consists not just of the tax rate τ but also a black wage deduction $e \in [0, \overline{e}]$. This deduction is meant to capture, in a reduced-form way, the panoply of laws and norms sustained by those laws that came along with black disenfranchisement and lowered black wages. This could include occupational segregation, wage discrimination by employers, or institutions such as convict labor and anti-enticement laws that depress black wages below competitive levels. By selective application to blacks, it induces more black outmigration, and thus raises white wages. However, poor whites would favor setting net black wages as low as possible, while producing whites would want to trade off the lower wages for blacks with the black labor supply effect and the higher wages paid to whites.

Thus post-disenfranchisement wages for whites are given implicitly by the increasing function $w'(e)$ that solves:

$$Lk = (1-\theta^B)F^W(\frac{w'+c}{m})+\theta^B F(\frac{w'+c-e}{m})-min(p'-(1-\theta^B)F^W(\frac{w'}{m})-\theta^B F^B(\frac{w-e}{m})) \quad (16)$$

This gives us the following proposition:

Proposition 4: If $\inf F^{B-1}(1) < \sup F^{W-1}(0)$ and $p' > \theta^B > \frac{1}{2}$ then

- a) a political equilibrium in the policy space τ, e exists.
- b) τ falls and e increases from 0 to $\overline{e}$ post-disenfranchisement.
- c) White wages $w(\overline{e})$ rise, while black wages $w - \overline{e}$ fall relative to $w(0)$.
- d) If the supply elasticity of black labor to a county is sufficiently low, land prices increase post-disenfranchisement.

Proof: See Appendix.

price rises or falls. For example if α is uniform on $[0, A]$, so $F(\alpha) = \frac{\alpha}{A}$, then $w = \frac{m(ALk+\frac{A}{2})-c}{2}$ and $w' = mALk - c$, so $\Delta w = w' - w = \frac{mALk-c}{2} - \frac{mA}{4}$ so $\Delta v = \frac{c}{R}F^{-1}(1-L)(p'-\frac{1}{2}) - k(\frac{mALk-c}{2} - \frac{mA}{4})$. This implies that if $Lk < \frac{2c}{mA} + \frac{1}{2}$ then aggregate labor demand is inadequate so that wages still fall post-disenfranchisement, and land prices increase.

The proof follows by first establishing that preferences over τ and e satisfy single crossing in α, therefore a median voter exists. Disenfranchisement shifts the median voter from a black agent to a non-producing white one, inducing an increase in e from 0 to $\overline{e}$, and finally, if black outmigration is not too high, then the wage bill to producers falls and land prices increase. Part c) is relevant for the empirical work, as it suggests that, with the restricted mobility for blacks in the U.S. South, wage repression could occur without losing too much of the black workforce, thereby allowing another channel for producers to benefit from disenfranchisement.

This proposition likely captures some of the stylized features of Southern black disenfranchisement. By increasing the political power of poor whites, in a time and place where blacks had difficulty relocating (owing to both formal constraints, such as emigrant agent laws, and informal constraints such as discrimination in transportation, credit and housing markets), landowners could benefit from the labor market discrimination imposed on blacks by poor whites. This suggests a key condition that fostered a coalition between landowners and poor whites in favor of black disenfranchisement; restricted mobility of blacks. Otherwise landowners, fearing the loss of black labor, would have opposed the harsh labor market policies chosen by poor whites, and thus would not have favored institutional changes that increase the latter group's power.

4.3 Welfare and Distribution

In this section, I look at the economic incidence of a change in the decisive percentile p across groups.

If the consumption of an agent of type α is $c(\alpha)$. We can now write aggregate welfare W as a function of the decisive percentile p as:

$$\begin{aligned} W(p) &= \int c(\alpha)dF(\alpha) \\ &= \int_{\alpha^*}^{\infty}(1-\tau(p)\alpha - v - kw + cdF(\alpha) + \int_{\alpha_p}^{\alpha^*}\max(w+c,\alpha m)dF(\alpha) + \int_{0}^{\alpha_p}\max(w,\alpha m)dF(\alpha) \end{aligned}$$

Unpacking the last two terms by race, we get:

$$\begin{aligned} W(p) &= \int_{\alpha^*}^{\infty}(1-\tau(p))\alpha - v - kw + cdF(\alpha) \\ &+ (1-\theta^B)\int_{F^{W-1}(p)}^{\alpha^*}\max(w+c,\alpha m)dF^W(\alpha) + (1-\theta^B)\int_{0}^{F^{W-1}(p)}\max(w,\alpha m)dF^W(\alpha) \\ &+ \theta^B\int_{0}^{F^{B-1}(p)}\max(w+c,\alpha m)dF^B(\alpha) + \theta^B\int_{0}^{F^{B-1}(p)}\max(w,\alpha m)dF^B(\alpha) \end{aligned}$$

We can write aggregate welfare as the weighted sum of welfare across landowners (L), poor whites (PW), and blacks (B):

$$W(p) \quad = \quad (1-\theta^B)1 - F(\alpha^*)W^L(p) + (1-\theta^B)F^W(\alpha^*)W^{PW}(p) + \theta^B W^B(p)$$

Where

$$\begin{aligned} W^L(p) &= \int_{\alpha^*}^{\infty} (1-\tau(p))\alpha - v - kw + cdF^W(\alpha) \\ W^{PW}(p) &= \int_{\alpha_p}^{\alpha^*} \max(w+c, \alpha m) dF^W(\alpha) + \int_0^{\alpha_p} \max(w, \alpha m) dF^W(\alpha) \\ W^B(p) &= \int_{\alpha_p}^{\alpha^*} \max(w+c, \alpha m) dF^B(\alpha) + \int_0^{\alpha_p} \max(w, \alpha m) dF^B(\alpha) \end{aligned}$$

By making a parametric assumption about the tail of F, we can relate the observed estimates of the land price to the welfare of landowners. The land price rations the entry into production, so that it makes the marginal producer indifferent between production and migration. Therefore the change in the land price measures the change in welfare of the marginal producer. If we assume a specific shape for F, we can relate the marginal producer's welfare to the average producer's, and thereby obtain an estimate of the aggregate incidence of disenfranchisement on landlords from the estimate of the effect of disenfranchisement on the price of land.

Proposition 5: If wages are exogenous, and $F(\alpha)$ is a Pareto distribution with shape parameter $b > 1$ and scale parameter $a < \alpha^*$, then $\frac{1}{b-1} \times \frac{dv}{dp}$ is a sufficient statistic for the change in average landowner welfare, $\frac{dW^L}{dp}$.

Proof: See Appendix.

Migration in this model does for labor what the land price does for land. While with land the quantity is fixed but the price varies, with migration the price (wage) is fixed and the quantity varies. In both cases, however, the effect of disenfranchisement on the marginal decision maker is informative about the welfare effect on the entire group. For migration, we obtain the following proposition:

Proposition 6: Suppose $\frac{1}{2} < p' < F(\frac{w+m}{c})$, wages are exogenous, and c is the per-capita expenditure per capita. Then we have that $-c\frac{dM^B}{dp}$ is a lower bound on the welfare loss of black workers $\frac{dW^B(p)}{dp}$, and $-c\frac{dM^W}{dp}$ is a lower bound on the welfare losses of poor whites, $\Delta W^{PW}(p)$.

Proof: See Appendix.

5 Identification Strategy: Contiguous County Pairs

My identification strategy relies on matched adjacent county-pairs that lie on state boundaries. I modify and extend the spatial discontinuity methodology of Holmes (1998), Dube et al. (2009), and Duranton et al. (2007) to estimate the effect of disenfranchisement on political and economic outcomes. I restrict attention to counties that lie on state borders in 1870, as shown in Map 1. I then match counties into adjacent pairs p. Note that the same county can be in multiple pairs. I therefore include the same county multiple times, as well as use a spatial difference estimator, described below. I use multidimensional clustering to adjust the standard errors for both within-state over time correlations of county residuals, as well as within border-segment (the set of counties on both sides of a given border) over time correlations. This is necessary as cross-pair correlations in the error term can propagate, via the multiple county pairs a county can be part of, over the entire border segment.

On the border county sample I estimate the following model:

$$y_{p(c)cst} = \beta(D^P_{st} + D^L_{st}) + \sum_{t=1870}^{1920} \alpha_t X_{c,1860} + \delta_c + \delta_{p(c)t} + \epsilon_{p(c)cst} \tag{17}$$

Where c indexes county, $p(c)$ denotes a county adjacent to c from another state, s denotes state, and t denotes year. D^P_{st} and D^L_{st} are dummies denoting the presence of a poll-tax and literacy test, respectively. $X_{c,1860}$ denotes a vector of county characteristics in 1860, and includes urbanization, fraction slave, and total population in 1860. δ_c denotes a county fixed effect, and $\delta_{p(c)t}$ denotes a county-pair cross year fixed effect.

For all of these regressions I will report the estimate of β, which is the effect of an additional poll tax or literacy test.

5.1 Threats to Identification

While the county fixed effects control for any time-invariant county characteristics, it is the pair-year fixed effects that provide the primary identification in this strategy. Spontaneous racial violence, time-varying geographic or climatic conditions, land productivity, labor market shocks or cultural values are all unlikely to respect state borders, and thus the within-pair identification effectively deals with these sources of potential bias. My identification strategy is particularly important for the economic outcomes, as agricultural land, climate and usage patterns are likely highly variable across counties. In addition, labor market conditions are also highly heterogeneous across space. In the U.S. Southern context, a key confounding variable is racist cultural values or discriminatory beliefs, which are also unlikely to vary discontinuously

at the state boundaries.

However, there are potential confounds to the identification strategy. Other state-year legislation that is contemporaneous with disenfranchisement is the most obvious source of bias. While legislation passed after disenfranchisement are likely the results of a shrunken electorate, and therefore part of the changed political equilibrium induced by disenfranchisement, I cannot rule out all sources of unobserved state-year variation that also induces changes at the state border. Another potential confound is unobserved county-year variables, for example local politics, that could induce bias.

A further problem with interpreting the estimates arises from potential general equilibrium effects, as I am comparing treated counties to their spatially contiguous neighbors, which are those that are the most vulnerable to spillover or substitution effects from treatment. Particularly with respect to migration, my results may be overstating the true effect. I address this by looking at various sources of heterogeneity in migration costs.

6 Data

I use data on poll-tax and literacy test laws from Kousser (1974), Grofman and Davidson (1993), and Ogden (1958). Figure 2 shows the increase in voting restrictions between 1870 and 1910, my key source of independent variation. I obtain county-decade-level data for Southern states (census regions 31, 32, and 33) from 1870 to 1920. The sample period is chosen to be post-Civil War and pre-Depression, two events that radically altered Southern society.

I form county pairs using the 1870 census boundary file map, downloaded from the National Historical Geographic Information System at `www.nhgis.org`. I then use ArcGIS to first intersect the set of counties with the state boundaries. Then for each county in the resulting sample, I find the set of counties that intersect it. Each border county is therefore matched into $n \geq 1$ adjacent counties. I then restrict attention to the county-pairs where each county belongs to a different state. The resulting set of counties is shown in Map 1. I construct homogeneous 1870 counties by intersecting all the census maps from 1860 to 1870, matching the resulting polygons to my data for the relevant year, and then averaging the polygons in the 1870 county boundaries.

I match the county data to historical electoral congressional and presidential returns from ICPSR. I use gubernatorial returns provided by Jim Snyder, and used previously in Hirano and Snyder (2008). County-level agricultural and population census data is obtained from ICPSR and Michael Haines. I also make extensive use of the IPUMS census microdata. I also use

lynchings data from the Historical American Lynchings project, collapsed to the county-year level. Unfortunately, the 1890 census microdata was destroyed. As 1890 is a census year where there exists a lot of variation across Southern states in the extent of franchise restriction, I use the individual 10% IPUMS sample to construct analogues to the 1890 variables for the other census years.

6.1 Constructing the Education Data

To construct my education variables, I first extract the relevant variables (teachers, pupils, and number aged 5-20 by race and gender) from the 1890 census, which was the first census to collect education data at the county level. I then use the IPUMS census microdata to construct the same variables for the other census years in my sample, using the occupation variable to count teachers. Note that these are not directly comparable, as the 1890 numbers are not constructed by aggregating the individual schedules, but instead are compiled from state-level education reports. The other years are likely to be unrepresentative due to undersampling, as I am only using the 10% census draw, as well as self-reported occupation rather than administrative reports. While this should not effect the point estimates, the mismeasurement in the census is likely to increase the standard errors.

I collect state-education reports for as close to census years as possible, digitize them, and then include data from additional education reports collected by Morgan Kousser. The reports are highly fragmented and often report very different information for each state, particularly in the early years. While there is exists a great deal of data, for example teachers wages or value of school property as a result of digitizing all the state education reports, there is very little that exists for all Southern states over all census years in my sample. Thus, I restrict attention to the variables that can be compared with the data constructed from the census.

I create my education variables by combining the data from the state education reports with the census variables. From the reports I extract white and black teachers, pupils, and eligible students. Often the eligible students are from the most recent census. Then for each decade I average all the state education variables, and then average that with the census values. This increases the weight of the census variables, and this increases the comparability with other census variables. However, the school attendance variable in the census is a) inconsistently coded across census years, and b) can mean having attended for as little as 1 day. Since black school participation was likely influenced by transitory labor demand shocks, and the state education reports are often also unreliable, I take the median (rather than the mean) value of the pupils

variable over the decade, and average that with the census. To ensure comparability I take the median of the other variables as well, and will report results using both. The final set of education variables I use average of the census year variables a) mean state education report teachers and eligible students variable over the next decade, and b) the decade median of the pupils.

7 Results

Some basic patterns can already be seen in the summary statistics, presented in Table 1. Turnout in all elections decreases as the number of disenfranchisement laws increases, as does the vote share of Democrats. Teacher child ratios for blacks fall, while those for whites rise. Farm and land values increase as the number of disenfranchisement laws increases, even as the black population decreases relative to the white population.

Table 2 shows the effect of disenfranchisement on turnout and fraction Democratic vote share using specification 1. The election data is averaged over the decade following the census year for consistency across specifications. For turnout, poll taxes and literacy tests combined reduce presidential turnout by 15% and gubernatorial turnout by 30%. This is consistent with other numbers in the literature (as discussed by Kousser 1974). There is a 15% negative effect on congressional turnout, but it is not precisely estimated. The next 3 columns of Table 2 show the effect of disenfranchisement on fraction Democratic vote share. There is a 7% increase in presidential vote share significant at the 1% level, and while the effects on congressional and gubernatorial Democratic votes are similar in magnitude, they are not significant at 10%. In sum, this Table shows that legal disenfranchisement lowered turnout to the advantage of the Democratic party.

The differences across elections are instructive, although they could be due to changing samples, as some election data is missing from the ICPSR and Hirano-Snyder samples. The largest effect on turnout is in gubernatorial elections, which falls by around 18% in both the balanced and unbalanced samples after the passage of a disenfranchisement law. This is reassuring for the mechanisms I claim in this paper, as it is state level redistribution that is the focus of this paper. Nonetheless turnout in presidential and congressional elections does fall about 8% per disenfranchisement law. Given that average county turnout in this period was roughly 1000 votes, this suggests a reduction in turnout of 80 votes per county.

The effect on the Democratic party vote share is consistently positive, although it is only

significant in the presidential election. Again, while this could be due to the smaller sample sizes for the other two elections, it could also be due to the fact that there were often a multitude of parties for state and congressional elections (Hirano and Snyder 2008), blunting the returns to the Democrats from disenfranchising a Republican constituency. Nonetheless, the magnitude of the effect of disenfranchisement on Democratic vote share is largest, although imprecise, in the gubernatorial elections. Presidential elections, given that they were always between 2 parties, would naturally favor the Democrats when partisan Republicans were disenfranchised, which could explain the significant coefficient on the Democratic vote share in presidential elections. The magnitude implies that an additional disenfranchisement law increased the Democratic presidential vote share by 5%.

Figures 4a and 4b show the results of a dynamic specification on presidential turnout and the fraction voting Democratic in presidential elections. While gubernatorial elections are highly heterogeneous in timing and congressional elections are contaminated by pervasive gerrymandering, presidential elections are both high-frequency and regularly timed. The high frequency allows inclusion of leads and lags, and the fixed timing eliminates concerns of endogenous election timing. Formally, the points on the graph at time t relative to the passage of a disenfranchisement law is the cumulated sum of the coefficients $\sum_{k=-3}^{k=t} \beta_k$, where the β_k are the coefficients from a regression of the form:

$$\log(y_{p(c)cst}) = \sum_{k=-3}^{3} \beta_k (D^p_{it+k} + D^L_{it+k}) + \sum \beta_t X_{1860} + \delta_c + \delta_{p(c)t} + \epsilon_{cp(c)st}$$

The cumulative effect of disenfranchisement laws on presidential turnout shows no pre-existing trend, but does register a large drop in turnout immediately following the passage of the laws. The effects on Democratic vote share are more mixed, with some evidence of pre-exisiting falls and rises in Democratic vote share. However, it is reassuring that the cumulative effect is not significant until the passage of the law at $t = 0$.

In sum, the results on turnout and voting supports the view of more recent Southern historians (e.g. Kousser) rather the older political history (exemplified by Key); the legal institutions of the South were important for reducing turnout, benefiting the Democrats, and potentially altering the political equilibrium of the South. I also estimated lynchings, measured both as a count and a binary variable, as an outcome variable, and obtained an imprecise (i.e. not significant) negative coefficient. The 0 effect is consistent with the idea that violence was not an effective substitute for legal disenfranchisement; else lynchings may have fallen substantially. I do not report this because of difficulties of interpretation; a fall in lynchings post-disenfranchisement could suggest that, since lynchings could be politically motivated, the *de jure* disenfranchise-

ment of blacks made the *de facto* use of violence unnecessary. However there could also be an increase in racist violence following disenfranchisement, as local law enforcement would no longer be under as much political pressure to enforce the rule of law vis-a-bis black citizens. Owing to these contradictory interpretations, I do not pursue the analysis of lynchings in this paper, and leave it to future work. Nonetheless, identifying the effect of disenfranchisement from contiguous counties does provide more confidence that voter intimidation and coercion, which are not likely to respect state boundaries, are not confounding the estimates of the impact of the legal changes.

7.1 Education

Table 3 shows results on education, which, given my data, I measure as black and white teachers. As schools were effectively segregated, the number of black teachers is a proxy for black schooling inputs. Column 1 of Table 3 reports the effect of disenfranchisement on the black teacher to eligible student ratio, calculated by taking the average over the state education reports and then averaging that with the calculated census value. The estimated coefficient is -.0039, which is a large effect, over 50% of the pre-disenfranchisement mean over a decade. The effect is very similar when calculated using the median of the state education reports for teachers and eligible pupils, as reported in column 2. Column 3 reports the effect on median teacher-pupil ratios from the state education reports only, which is reflected in the much smaller sample size. Nonetheless, the effect of disenfranchisement is -.0016, which is relatively small given the very high pre-disenfranchisement sample mean of .05. When I combine this with the pupils calculated from the census, the results are no longer significant at 10%, although they are still negative. Repeating the same estimation for whites finds no significant effects, and the point estimates on the teacher-eligible child ratio are very small in magnitude, especially relative to the pre-disenfranchisement sample mean of .11. When looking at teacher pupil ratios, however, the results are larger in magnitude, and comparable to the estimates for blacks, although not significant with either the state report data alone or the state-report data coupled with the census.

Table 3 thus suggests that disenfranchisement was associated with lower black educational inputs. While not reported for space reasons, these results obtain both in the specification without the county-pair X year fixed effects estimated on the border sample, as well as the sample of all counties for which there is data. This is additional evidence that it is indeed state level policy and politics, and not local spillovers or competing labor markets for teachers, that were responsible for lower public investment in black education. While it is difficult to rule out, for example, differential state trends in black schooling, owing to the few states in the sample, the

evidence is consistent with the model predictions: The altered political equilibrium induced by black disenfranchisement lowered public spending on black schools.

7.2 Agricultural Production

Table 4 presents the effects of disenfranchisement on a variety of variables from the agricultural census. Columns 1 and 2 look at the effect on farm values and land values (farm values per acre), I find that an additional instance of a poll tax or literacy test is associated with a 7% increase in farm and land values. While this may appear large, it should be noted that this is over a decade, so it is a modest .7% per year appreciate in farm and land values. This is virtually identical in the balanced and unbalanced samples. Column 3 estimates the effect on equipment per farm, and while the coefficient is positive, it is insignificant. While there may be some additional incentive to invest in farm capital as a result of lower taxes, it is not strong enough to be statistically distinguishable from 0. Column 4 looks at the effect on the number of farms, and finds a 6% increase in the number of farms. This is consistent with an extended version of the model in which the supply of land is endogenous, so that a fall in the tax rate (or cost of labor) induces additional entry into production.

While the model makes no particular prediction about the distribution of land among the landed, one could imagine scale effects of the fall in taxes or labor costs inducing a reallocation of land among producers. However, it appears that there is no effect on the land gini (note that this does not account for landless workers), and the coefficient in column 6 is a small negative. Column 7 estimates the effect on the fraction of farmland that is improved acreage and finds, consistent with investment induced by lower taxation, a positive coefficient, although not statistically significant. Finally, column 8 looks at overall agricultural output, and reports a coefficient on legal disenfranchisement of .06, suggesting an increase of 6% per decade in agricultural output, again perhaps due to the additional investment. Taken together, the results from Table 4 suggest a positive effect of disenfranchisement on agricultural outcomes, at least within the contiguous county-pairs.

7.3 Migration

Table 5 looks at the effects of disenfranchisement on population changes, and finds that black population falls relative to the white population. I include a specification with a control for a lagged value of total population to account for possible trends in population growth. Columns 1 and 2 examine the effect on the log of the fraction of the population that is black, and con-

sistently reports a point estimate of around .04, significant at the 10% level. Columns 3-6 show that this is not the result of differential falls in black and white populations, but rather a fall in the level of the black population, and a weaker increase in the level of the white population. The fall in the black population becomes large in column 4 in the balanced sample, suggesting that the within-pair I also find no significant effect on total population, with or without a lag.

7.4 Robustness

Table 6 shows a number of robustness tests. I look at the 6 core variables that are the focus of the paper: Presidential turnout, Democratic vote share, black and white teachers/child, land values, and fraction black. Panel A interacts the disenfranchisement variable with the lagged log of the black population. The interaction is demeaned to keep the main coefficient comparable with previous specifications. The only significant heterogeneity is on the turnout and fraction Democrat variables, where a larger black population is associated with a larger loss of votes and a larger increase in Democratic vote share following disenfranchisement. Panel B creates homogeneous counties by the 1920 borders instead of the 1870 maps. The effects are slightly larger and more significant, likely owing to the increased number of matches, as there are more 1920 counties, and they have more neighbors than the 1870 counties.

Panel C reports a placebo specification, where I match each county that lies on a state border with its neighboring counties that lie *in the same state*, which I counterfactually assume are not affected by the disenfranchisement laws. I then re-estimate the main specification. If my identifying assumption is correct, then the effect of poll taxes and literacy tests in this regression should be insignificant. As panel C shows, this is largely true across the dependent variables, with the exception of the effect on land values. Thus border counties are experiencing a larger increase in land value following disenfranchisement than other counties in the same state.

Panel D accounts for this by omitting the counties that sit on the Mississippi. The Mississippi, besides constituing 3 state borders, also is the most fertile land, historically marked by large plantations and a large black population. Thus it is not surprising that the land near the Mississippi experiences a larger response to disenfranchisement relative to the other counties inside the state. While the effect of disenfranchisement remains insignificant across the other dependent variables, it is now also insignificant on land values, although the coefficient stays of roughly the same magnitude.

7.5 Other Specifications and Samples

While I do not report them due to space reasons, I estimate the following specification in Tables 2-6 on the border sample and the full sample of counties, omitting the county-pair X year fixed effect.

$$y_{p(c)cst} = \beta(D^P_{st} + D^L_{st}) + \sum_{t=1870}^{1920} \alpha_t X_{c,1860} + \delta_c + \epsilon_{p(c)cst}$$

Repeating the political and education coefficient estimates on alternate samples yields estimates very similar to the results in Tables 2 and 3, in both the border county sample and the full set of counties. However, when looking at the economic variables some interesting differences appear. The increase in the land price is constant on the border sample, regardless of the inclusion of fixed effects, but is not present in the full sample of counties. This suggests that there is a high degree of within-state heterogeneity in land responses to disenfranchisement.

However, with the migration response, omitting the county-pair X year fixed effects changes the results dramatically. While the effect on the relative fraction of the population that is black remains negative, there is now a positive effect on both black and white population levels. Again this is consistent with the model, where the county pair-year fixed effects adjust for common labor market shocks or geographically-specific population trends.

When focusing just on the border counties, we are comparing the borders of a disenfranchising state to the borders of the controls. Insofar as these are likelier to be more similar in terms of underlying land quality, coupled with the fact that land values are asset prices set by forward looking agents, then it is unsurprising that the county-pair X year fixed effects do not control for much additional variation. However, because local labor markets are likely to be influenced by transitory shocks, precisely because labor is mobile and adjustable, the inclusion of the county-pair X year fixed effects does control for a substantial amount of additional variation.

7.6 Border Heterogeneity

To further examine how the local economy responds to disenfranchisement, I interact the disenfranchisement independent variable with a variety of fixed county-pair characteristics. In particular, I am interested in proxies for market integration or transport costs. I use the distance between the centroids of the two counties in each pair, an indicator for whether or not both counties have a railroad or not in 1880, and the standard deviation of elevation in the county-pair. I estimate the following regression:

$$y_{p(c)cst} = \beta_1(D^P_{st} + D^L_{st}) + \beta_2(D^P_{st} + D^L_{st}) \times (X_{p(c)} - \overline{X_{p(c)}}) + \sum_{t=1870}^{1920} \alpha_t X_{c,1860} + \delta_c + \delta_{p(c)t} + \epsilon_{p(c)cst} \tag{18}$$

where $X_{p(c)}$ denotes the county-pair characteristic being interacted and $\overline{X_{p(c)}}$ denotes its sample average, which I subtract to ensure that β_1 is comparable to the earlier results. For the same reason, I estimate 18 again on the full sample and the balanced sample.

Table 7, panel A shows the results for farm values and fraction black. While the main effect remains unchanged from the analogues in Tables 4 and 5, there is no evidence that any of the pair-level interactions is significant in explaining the effect of disenfranchisement. While there is no evidence of linear heterogeneity, I can look at subsamples of county pairs to look more nonparametrically at heterogeneous effects by pair-distance. Figures 5 and 6 shows the effect of disenfranchisement as the maximum distance between counties in the sample goes from 30 to 110 (the largest distance in the sample). Interestingly, Figure 5 shows that the migration response is larger (although imprecisely estimated) in those county pairs where the centroids are closer. Corresponding to this, as predicted by the model, is that the effect on farm values is *lowest* in the county-pairs where the centroids are closer, perhaps reflecting the additional loss of labor endured by landowners nearer to a state boundary. Thus this suggests that in the subsample of close county-pairs, there is perhaps some spillover migration effect, which accentuates the black outmigration effect and attenuates the farm value effect. As a caveat, however, this could be also driven by other county or county-pair level variables are are correlated with close centroids, such as county size (as two small counties will naturally have close centroids).

Panel B of Table 7 shows county-level interactions. The first set of columns reports interactions with the Mississippi dummy variable, and finds no heterogeneity in the response of Mississippi counties, perhaps because the identification strategy just compares them to other counties that also border the Mississippi. Again, there is no significant interaction of the disenfranchisement laws with county-level presence of a railroad or the county's standard deviation of elevation.

Table 7 shows that there is little evidence of linear heterogeneity by various proxies for market integration. However, looking non-parametrically at the distance between counties suggests that these some evidence of spillovers in the counties that are very close to the state boundaries, as we would expect.

8 Calibration

In order to apply Propositions 5 and 6 to calculate incidence, I need two auxillary parameters. First I need to benchmark the migration response to income differences between counties, allowing a crude estimate of the income-equivalence of disenfranchisement. To convert the migration elasticities to welfare effects, I need an estimate of the income-migration elasticity for Southern black male migration, which I obtain from regressions using the linked census schedules from 1870-1880. Second, I need an estimate of the scale parameter for the tail of the α distribution, which I obtain from the individual schedule extracted from the 1880 agricultural census by Ransom and Sutch (2001).

8.1 Estimating Black Income-Migration Elasticities

I use the linked 1870-1880 IPUMS sample for two reasons. First, it is the only 10-year linked census, as the linkage is done to the 1880 individual schedules and the 1890 individual schedules are destroyed (which is why I cannot use these for reliable estimates of the impact of disenfranchisement on migration), and thus lets me look at the shortest migration window. Second 1870-1880 is the beginning of my sample period, and therefore unlikely to be contaminated by omitted variables endogenous to the disenfranchisement laws. I restrict attention to men aged 16-60, and match them to the agricultural census data for their county of residence in 1870 and 1880. Sample statistics are in Table 8. Of note is that the mean levels of migration are very high, with approximately 40% of men changing counties between 1870 and 1880. I estimate the following specification on the sample living in all Southern counties and on just the 1870 border county samples.

Agricultural wages, unfortunately, are not available at the county level in 1880. Therefore I look at black migration as a function of county growth in agricultural income. I estimate the following model at the individual level:

$$migrate_{ia} = \beta_0 + \beta_y g_{ya} + \beta_v g_{va} + X_a\beta_a + X_i\beta_i + \epsilon_{ia} \tag{19}$$

Where i denotes individual and a denotes county. $migrate$ is a dummy indicating that the individual changed counties between 1870 and 1880. g_{ya} is the growth rate in agricultural output in county a, and g_{va} is the growth rate in the land value. By controlling for g_{va} I am adjusting for the share of the agricultural income growth that is going into land values, and thus better making g_{ya} a better estimate of the returns to labor. X_a is a vector of county-level covariates (growth of black teachers, and total population), and X_i is a vector of individual covariates (age, age-squared, urban, and literacy). For comparison I estimate the same regressions for whites

and blacks separately. Standard errors are clustered at the county level.

Results are in Table 9. On the full set of Southern blacks, I estimate a β_y of -.12 without controls, decreasing in magnitude to -.11 when individual controls are added. Thus a 1% increase in the growth rate of agricultural income is associated with a 10% higher probability of staying in the county. The coefficient on the growth rate of black teachers is also positive and significant at 10% confidence without the individual controls, falling slightly (and becoming marginally insignificant) when controls are added.

When estimated on the sample of border county residents, the migration response to income growth increases by almost a factor of 2. Thus a 1% increase in the growth rate of agricultural income in a border county is associated with a -18 to -22 fall in the probability of outmigration. This perhaps reflects the increased options in terms of state-level opportunities that residents of border counties face. The coefficient on black teacher growth falls substantially in magnitude and becomes insignificant.

The results for whites are included to illustrate that a) whites did not respond nearly as much as blacks to county-level income growth, and b) the summary statistics indicate that while the migration rates for both whites and blacks are high, blacks are on average more likely to migrate than whites. While this could be due to the poor quality of the linkage, owing to black illiteracy and general difficulties with the 1870 census, it could also be evidence that black mobility during the decade following Reconstruction was high in both levels and in its responsiveness to agricultural income.[5]

For my calibration, I need to calculate an elasticity of migration with respect to *black* income, so further assumptions need to be made. I assume that black income grows at the same rate as overall agricultural income, and use the following formula:

$$\frac{\Delta Y^B}{\Delta p} = \frac{\frac{\Delta M^B}{\Delta p}}{\frac{\Delta M^B}{\Delta Y^B}} = \frac{\frac{\Delta M^B}{\Delta p}}{\frac{\Delta M^B}{\frac{\Delta Y}{Y}} \frac{\frac{\Delta Y^B}{Y^B}}{\Delta Y^B}} = \frac{\frac{\frac{\Delta M^B}{M^B} \times M^B}{\Delta p}}{\frac{\Delta M^B}{\frac{\Delta Y^B}{Y^B}} \frac{1}{Y^B}} \tag{20}$$

I then use Higgs' estimate of black income in 1867-68 of $Y^B = \$50$, the coefficient β_y from the black border sample estimated above in this section, the coefficient of a disenfranchisement law on log black population (-.0289), and finally total black population (4.5 million), to plug

[5]While not a focus of this paper, estimating post-bellum black mobility in both levels and responsiveness to income differences using the IPUMS linked censuses(from 1860 to 1930) seems a like promising area for future research.

these numbers into 20 to get a conservative estimate of:

$$\frac{.0289 \times 4500000}{-.22 \times \frac{1}{50}} = -30,000,000$$

If we instead take the fraction black population estimates (which effectively assumes that whites are the control group), and assume that the coefficient on agricultural income on all (border and non-border) black migration is the correct one:

$$\frac{.045 \times 4500000}{-.11 \times \frac{1}{50}} = -92,045,455$$

The historical price conversion calculator at eh.net offers a conversion rate of 20 in purchasing power terms from 1880 to 2000. Therefore, a lower bound on estimated loss of black income from disenfranchisement is between 600 million and 2 billion current-day dollars.

8.2 Tail Parameter for α

Second, to obtain an estimate for the welfare gain of landowners, I need to obtain an estimate of the shape parameter of the distribution of α to use Proposition 5. I use the Ransom and Sutch farm sample from the 1880 agricultural census to calibrate the shape parameter of the distribution of α, under the assumption that the distribution of α will be close to the distribution of capital stocks across farms.

Figure 7 plots the log of the rank of a farm's equipment stock against the log of the equipment stock. The linearity of the resulting graph corroborates the Proposition 6 assumption that the distribution has a Pareto tail. Using the Gabaix and Ibragimov(2009) estimator, which regresses the log of the capital stock rank of a farm minus $\frac{1}{2}$ on the log of the capital, gives a Pareto shape coefficient of $b = 2.33$. Aggregate land value in the U.S. South in 1880 is 1.5 billion, which implies an aggregate increase in landowner wealth of $\frac{1}{2.33-1} \times .07 \times 1500 = 78.9$ million. To convert this stock into a flow requires an assumption about the discount rate, which at 5% per year becomes 62% per decade, which implies a flow increase of $(1 - .62) \times 78.9 = 29.9$ million dollars in landlord income. Transforming this into current day dollars would yield an equivalent transfer of roughly 600 million dollars.

Taking the calculations in this section seriously, it implies that the benefits to poor whites could not have been substantial, as landowners pocketed the bulk of the implied black loss, leaving effectively no surplus for the millions of poor whites in the region. This, together with no evidence of improved white schooling or large and significant white in-migration to a disenfranchised county, suggests that poor whites were not the primary beneficiaries of disen-

franchisement.

9 Conclusion

This paper has estimated the impacts of Southern disenfranchisement on political competition, public good provision, production, and migration using contiguous cross-state county pairs. I find that poll taxes and literacy tests lowered turnout, increased Democratic vote shares, and lowered black school quality within a matched county-pair. I also find that factor markets respond to the fall in redistribution, increasing agricultural investment and output, land prices, and black out-migration relative to the adjacent county. The resulting estimates are informative about core questions in political economy, particularly those around the incidence of disenfranchisement on factor owners. By looking at land prices and migration decisions in these small open economies, I am able to infer welfare implications of franchise restriction across groups, and find that the bulk of black losses were transferred to landowners.

While this paper has not directly estimated long-run impacts of Southern disenfranchisement, it is likely that the effects of black political exclusion and educational under-provision persist through the intergenerational transmission of human capital and wealth (Sacerdote 2005). Besides the obvious effects on national racial inequality and skewed public-goods provision in the region, the "Solid South" engendered by formal disenfranchisement shaped the political and economic landscape of the United States for much of the 20th century, impeding welfare state expansion during the New Deal and later being a haven for low-wage manufacturing (Alston and Ferrie 1999, Cobb 1982, Holmes 1998).

The results in this paper suggest that, consistent with a large body of formal theory and historical evidence, that restricting the franchise lowers redistribution and public good provision. When occurring at the decentralized level, as in the U.S. South, these effects are capitalized into land values and migration decisions. This paper suggests that the landowners of the U.S. South benefited from franchise restriction, so much so that it outweighed the loss of black labor they endured. Large landowners are often the social group most opposed to democratization historically and around the world; the U.S. was no exception. Like other putatively democratic developing countries today, the U.S. contained a sizeable non-democratic enclave until the 1960s. Understanding how economic institutions adapt to and constrain such subnational nondemocracies seems like a promising area for future research.

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Appendix A: Proofs

Proof of Proposition 3:

Establishing a) follows straightforwardly from noting that the pre-disenfranchisement wage is given by:

$$Lk = F(\frac{w+c}{m}) - \frac{1}{2} + F(\frac{w}{m}) \tag{21}$$

and the post-disenfranchisement wage is given by:

$$Lk = F(\frac{w'+c}{m}) \tag{22}$$

So clearly 21 and 22 imply that:

$$F(\frac{w'+c}{m}) = Lk > Lk + \frac{1}{2} - F(\frac{w}{m}) = F(\frac{w+c}{m}) \tag{23}$$

Since F is monotonic, we clearly have $w' > w$.

To see b), write:

$$\Delta v = (-\Delta\tau)F^{-1}(1-L) - k\Delta w = \frac{c}{R}\alpha^*(p' - \frac{1}{2}) - k(w' - w)$$

If $k\Delta w > 0$ is sufficiently large, then Δv could be negative, which implies that the land price falls following disenfranchisement.

Proof of Proposition 4:

First I establish that blacks, whites with $\alpha < \alpha^*$ and whites with $\alpha > \alpha^*$ each have ideal e being 0, $\overline{e}$, and e^*, respectively. For whites with $\alpha < \alpha^*$, consumption is weakly increasing in w, so the preferred policy for poor whites is $e = \overline{e}$.

For whites with $\alpha \geq \alpha^*$, the ideal e solves:

$$\min_e w(e)(1-\theta^B)(F^W(\frac{w(e)+c}{m}) - (p' - F^W(\frac{w(e)}{m}))) + (w(e)-e)\theta^B(F^B(\frac{w(e)-e+c}{m}) - (p' - F^W(\frac{w(e)}{m}))) \tag{24}$$

Which is just $e^* < \overline{e}$. For blacks with $\alpha < \alpha^*$, which is all of them by assumption, the ideal e is 0. Thus, since blacks all have lower α than the lowest whites, we have that preferences over e can be ordered by α.

If $e = \overline{e}$ then land prices go up only if the retained income minus the wage bill is greater after disenfranchisement, rather than before. Since the total labor supply equals labor demand, which is fixed at Lk, it is sufficient to show that:

$$w \geq w'(\overline{e}) - \overline{e}\theta^B(F^B(\frac{w'(\overline{e}) - \overline{e} + c}{m}) + F^B(\frac{w'(\overline{e}) - \overline{e}}{m}) - p') \tag{25}$$

If we take a first-order Taylor approximation to $w'(\overline{e})$ around 0, we can write:

$$-\frac{dw'(0)}{de}\overline{e} > -\overline{e}\theta^B(F^B(\frac{w'(\overline{e})-\overline{e}+c}{m}) + F^B(\frac{w'(\overline{e})-\overline{e}}{m}) - p') \tag{26}$$

or

$$\frac{dw'(0)}{de} < \theta^B(F^B(\frac{w'(\overline{e})-\overline{e}+c}{m}) + F^B(\frac{w'(\overline{e})-\overline{e}}{m}) - p') \tag{27}$$

Now note that:

$$\frac{dw'(0)}{de} = \theta^B \frac{f^B(\frac{w+c}{m}) + f^B(\frac{w}{m})}{\theta^B(f^B(\frac{w+c}{m}) + f^B(\frac{w}{m})) + (1-\theta^B)(f^W(\frac{w+c}{m}) + f^W(\frac{w}{m}))} \tag{28}$$

Thus, condition 27 is equivalent to:

$$w'(0)\frac{\theta^B(f^B(\frac{w+c}{m}) + f^B(\frac{w}{m}))}{\theta^B(F^B(\frac{w'(\overline{e})-\overline{e}+c}{m}) + F^B(\frac{w'(\overline{e})-\overline{e}}{m}) - p')} < w'(0)(\theta^B(f^B(\frac{w+c}{m}) + f^B(\frac{w}{m})) + (1-\theta^B)(f^W(\frac{w+c}{m}) + f^W(\frac{w}{m})))$$

And the left-hand side of this equation is the labor-supply elasticity of black labor, so if it is sufficiently low, wages will fall, and land values will rise if e goes from 0 to $\overline{e}$. Thus, agents with $\alpha > \alpha^*$ will prefer e^* to $\overline{e}$, and $\overline{e}$ to $e = 0$, and so we can order agents political preferences by α, thus ensuring that a median voter exists.

Since $\theta^B > \frac{1}{2}$ the median voter pre-disenfranchisement is black, and therefore $e = 0$ is the chosen policy. Since $p' > \theta^B$ and $\inf F^{B-1}(1) < \sup F^{W-1}(0)$, all blacks are disenfranchised. Thus the new median voter is a non-producing white, so that the post-disenfranchisement equilibrium now features $e = \overline{e}$.

Proof of Proposition 5:

Differentiating 4 we have that a small change in p, the decisive percentile, yields:

$$-\frac{d\tau(p)}{dp}\alpha^* - k\frac{dw}{dp} = \frac{dv}{dp} \tag{29}$$

By decreasing the tax rate (and possibly the wage), disenfranchisement increases the price of land, just enough to make the marginal producer indifferent. Thus the land price change captures the welfare change for the marginal producer. To convert this into the effect on the average welfare of all producers, I integrate over the conditional distribution of α

$$\frac{dW^L}{dp} = \int_{\alpha^*}^{\infty} -\frac{d\tau(p)}{dp}\alpha - \frac{dv}{dp}dF(\alpha) = (1-F(\alpha^*))(-\frac{d\tau(p)}{dp}E[\alpha|\alpha > \alpha^*] - k\frac{dw}{dp} - \frac{dv}{dp})$$

Suppose F is a Pareto distribution with shape parameter $b > 1$ and scale parameter $a < \alpha^*$,

then the conditional mean $E[\alpha|\alpha > \alpha^*] = \frac{b\alpha^*}{b-1}$ [6]

Therefore, using 29 the average change in producer welfare is given by:

$$(-\frac{d\tau(p)}{dp}E[\alpha|\alpha > \alpha^*] - k\frac{dw}{dp} - \frac{dv}{dp}) = (\frac{dv}{dp} + k\frac{dw}{dp})\frac{E[\alpha|\alpha > \alpha^*]}{\alpha^*} - k\frac{dw}{dp} - \frac{dv}{dp} = (\frac{dv}{dp} + k\frac{dw}{dp})\frac{1}{b-1}$$

If wages are fixed exogenously, so $\frac{dw}{dp} = 0$, then we can write the change in producer welfare as:

$$\frac{1}{b-1}\frac{dv}{dp}$$

which establishes the result.

Proof of Proposition 6:

First write:

$$\begin{aligned} \Delta W^B &= \int_{F^{-1}(p')}^{\alpha^*} \max(w+c, \alpha m) dF^B(\alpha) + \int_0^{F^{-1}(p')} \max(w, \alpha m) dF^B(\alpha) \quad (30) \\ &- \int_{F^{-1}(\frac{1}{2})}^{\alpha^*} \max(w+c, \alpha m) dF^B(\alpha) - \int_0^{F^{-1}(\frac{1}{2})} \max(w, \alpha m) dF^B(\alpha) \quad (31) \end{aligned}$$

Which immediately implies:

$$\Delta W^B = \int_{F^{-1}(\frac{1}{2})}^{F^{-1}(p')} max(w, \alpha m) - \max(w+c, \alpha m) dF^B(\alpha) \quad (32)$$

Invoking the mean value theorem for integrals gives us that an $\alpha'' \in [\frac{w+c}{m}, \frac{w}{m}]$ exists such that:

$$\Delta W^B = (m\alpha'' - w - c)(F^B(F^{-1}(p')) - F^B(\frac{w}{m})) - c(F^B(\frac{w}{m}) - F^B(F^{-1}(\frac{1}{2})))$$

So we easily have that:

$$\Delta W^B < -c(F^B(F^{-1}(p')) - F^B(\frac{w}{m})) = -c\Delta M^B$$

Which establishes the result for B. A similar derivation obtains the result for PW.

[6] The cdf of the Pareto distribution is $G(\alpha) = 1 - (\frac{a}{\alpha})^b$, so the pdf of the truncated Pareto distribution is $g(\alpha|\alpha > \alpha^*) = \frac{b\frac{a^b}{\alpha^{b+1}}}{(\frac{a}{\alpha^*})^b} = \frac{b(\alpha^*)^b}{\alpha^{b+1}}$. Integrating $\int_{\alpha^*}^{\infty} \frac{b(\alpha^*)^b}{\alpha^b} d\alpha$ gives $\frac{ba^b\alpha^{*1-b}}{b-1}$. Dividing this by $1 - G(\alpha^*) = \frac{a}{\alpha^*}^b$ yields the conditional expectation $E[\alpha|\alpha > \alpha^*] = \frac{b\alpha^*}{b-1}$

Table 1: Summary Statistics

Variable	Neither Poll Tax nor Literacy Test			Either Poll Tax or Literacy Test			Both Poll Tax and Literacy Test		
	Obs	Mean	Std. Dev	Obs	Mean	Std. Dev	Obs	Mean	Std. Dev
Log (Presidential Votes Cast)	1916	7.53	0.68	983	7.35	0.79	927	7.02	0.70
Log (Congressional Votes Cast)	1880	7.30	0.72	875	7.13	0.79	845	6.60	0.81
Log (Gubernatorial Votes Cast)	1911	6.52	0.63	977	6.32	0.71	843	5.68	0.78
Log(Percent Presidential Vote Democrat)	1916	3.99	0.41	983	4.02	0.40	927	4.34	0.24
Log(Percent Congressional Vote Democrat)	1880	4.09	0.37	875	4.12	0.56	845	4.48	0.25
Log(Percent Gubernatorial Vote Democrat)	1908	4.01	0.41	977	4.07	0.40	843	4.48	0.21
Black Teachers / Black Children (Census and State Report Average)	1895	0.006	0.012	975	0.011	0.034	916	0.009	0.016
Black Teachers / Black Children (Census and State Report Median)	1895	0.006	0.012	975	0.011	0.034	916	0.008	0.015
Black Teachers / Black Pupil (State Report Median)	763	0.052	0.758	438	0.020	0.010	766	0.021	0.012
Black Teachers / Black Pupil (Census and State Report Median)	1548	0.025	0.127	952	0.021	0.062	922	0.015	0.018
White Teachers / White Children (Census and State Report Average)	1915	0.011	0.014	983	0.015	0.016	927	0.019	0.018
White Teachers / White Children (Census and State Report Median)	1915	0.011	0.014	983	0.015	0.016	927	0.019	0.018
White Teachers / White Pupil (State Report Median)	783	0.030	0.013	445	0.029	0.011	723	0.038	0.059
White Teachers / White Pupil (Census and State Report Median)	1820	0.035	0.098	983	0.026	0.036	923	0.028	0.024
Log(Farm Value)	1918	14.00	0.96	983	14.32	1.17	927	14.93	0.93
Log(Farm Value/ Acre)	1900	1.86	0.73	980	2.46	1.07	927	2.99	0.76
Log (Equipment Value/ Farm)	1915	3.74	0.69	983	4.22	0.78	927	4.53	0.61
Log(Number of Farms)	1918	7.18	0.77	983	7.26	0.76	927	7.69	0.74
Land Gini	1918	0.55	0.08	983	0.49	0.07	927	0.48	0.08
Fraction Improved Land	1918	0.36	0.15	983	0.43	0.16	927	0.45	0.14
Log(Agricultural Output)	1918	13.33	0.89	983	13.68	1.11	927	14.38	0.93
Log(Fraction Black)	1918	-1.51	1.08	983	-1.66	1.25	925	-1.24	1.04
Log(Black Pop)	1918	8.00	1.42	983	7.92	1.52	925	8.65	1.29
Log(White Pop)	1918	8.98	0.70	983	9.11	0.69	927	9.22	0.72
Log(Pop)	1918	9.51	0.63	983	9.58	0.64	927	9.89	0.54

Table 2:Effect of Disenfranchisement on Turnout and Political Competition

	Log(Total Votes Cast)			Log(Fraction Democrat)		
Panel A: Full Sample	(1)	(2)	(3)	(4)	(5)	(6)
	Presidential	Congress	Governor	Presidential	Congress	Governor
Poll Tax + Literacy Test	-0.108**	-0.113*	-0.185**	0.0579**	0.0400	0.0615
	(0.0486)	(0.0583)	(0.0777)	(0.0246)	(0.0291)	(0.0407)
Sample Counties	Border	Border	Border	Border	Border	Border
Years	Census	Census	Census	Census	Census	Census
1860 Controls	Y	Y	Y	Y	Y	Y
Pair-Year FE	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
N	3826	3600	3731	3826	3600	3728
Panel B: Balanced Sample	(1)	(2)	(3)	(4)	(5)	(6)
	Presidential	Congress	Governor	Presidential	Congress	Governor
Poll Tax + Literacy Test	-0.0884*	-0.0830	-0.176**	0.0536**	0.0302	0.0557
	(0.0451)	(0.0522)	(0.0790)	(0.0245)	(0.0286)	(0.0418)
Sample Counties	Border	Border	Border	Border	Border	Border
Years	Census	Census	Census	Census	Census	Census
1860 Controls	Y	Y	Y	Y	Y	Y
Pair-Year FE	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
N	3638	3411	3551	3638	3411	3548

Notes: Standard errors multi-dimensionally clustered on border-segment X year and state. 1860 controls are year specific effects of log 1860 fraction slave, log 1860 population, and log 1860 urban population. Balanced sample is the set of counties that have the core variables nonmissing for both themselves and their matched county.

Table 3: Effect of Disenfranchisement on Black and White Teachers

	Black				White			
Panel A: Full Sample	(1) Teacher/Child (SR and Census)	(2) Teacher/Child (MSR and Census)	(3) Teacher/Pupil (MSR)	(4) Teacher/Pupil (MSR and Census)	(5) Teacher/Child (SR and Census)	(6) Teacher/Child (MSR and Census)	(7) Teacher/Pupil (MSR)	(8) Teacher/Pupil (MSR and Census)
Poll Tax + Literacy Test	-0.00394*	-0.00394*	-0.00161*	-0.00922	-0.000752	-0.000808	-0.00148	-0.00650
	(0.00228)	(0.00220)	(0.000903)	(0.00571)	(0.00135)	(0.00137)	(0.00172)	(0.00439)
Sample Counties	Border	Border	Border	Border	Border	Border	Border	Border
Years	Census	Census	Census	Census	Census	Census	Census	Census
1860 Controls	Y	Y	Y	Y	Y	Y	Y	Y
Pair-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y	Y
N	3786	3786	1967	3422	3825	3825	1951	3726

	Black				White			
Panel B: Balanced Sample	(1) Teacher/Child (SR and Census)	(2) Teacher/Child (MSR and Census)	(3) Teacher/Pupil (MSR)	(4) Teacher/Pupil (MSR and Census)	(5) Teacher/Child (SR and Census)	(6) Teacher/Child (MSR and Census)	(7) Teacher/Pupil (MSR)	(8) Teacher/Pupil (MSR and Census)
Poll Tax + Literacy Test	-0.00394*	-0.00395*	-0.00166*	-0.00928	-0.000734	-0.000790	-0.00120	-0.00661
	(0.00228)	(0.00220)	(0.000904)	(0.00574)	(0.00135)	(0.00137)	(0.00180)	(0.00441)
Sample Counties	Border	Border	Border	Border	Border	Border	Border	Border
Years	Census	Census	Census	Census	Census	Census	Census	Census
1860 Controls	Y	Y	Y	Y	Y	Y	Y	Y
Pair-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y	Y
N	3740	3740	1941	3381	3740	3740	1908	3646

Notes: Standard errors multi-dimensionally clustered on border-segment X year and state. 1860 controls are year specific effects of log 1860 fraction slave, log 1860 population, and log 1860 urban population. SR refers to the average of the state education reports available for that decade; MSR refers to the median of the state education reports in that decade. SR and Census averages the mean state education report values with the values calculated from the IPUMS. MSR and census averages the median state education report value with the values calculated from the IPUMS. Balanced sample is the set of counties that have the core variables nonmissing for both themselves and their matched county.

Table 4: Effect of Disenfranchisement on Agricultural Production

Panel A: Full Sample	(1) Log(Farm Value)	(2) Log(Value/Acre)	(3) Log(Equip Value)	(4) Log(Farms)	(5) Land Gini	(6) Fraction Imp	(7) Log(Farm Output)
Poll Tax + Literacy Test	0.0707**	0.0727**	0.0134	0.0640**	-0.00370	0.00790	0.0676**
	(0.0327)	(0.0308)	(0.0401)	(0.0322)	(0.00384)	(0.00531)	(0.0291)
Sample Counties	Border	Border	Border	Border	Border	Border	Border
Years	Census	Census	Census	Census	Census	Census	Census
1860 Controls	Y	Y	Y	Y	Y	Y	Y
Pair-Year FE	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y
N	3828	3807	3825	3828	3828	3828	3828

Panel B: Balanced Sample	(1) Log(farm value)	(2) Log(value/acre)	(3) Log(equip value)	(4) Log(farms)	(5) land gini	(6) fraction imp	(7) Log(farm output)
Poll Tax + Literacy Test	0.0684**	0.0697**	0.00812	0.0664**	-0.00452	0.00835	0.0634**
	(0.0336)	(0.0311)	(0.0415)	(0.0324)	(0.00357)	(0.00513)	(0.0293)
Sample Counties	Border	Border	Border	Border	Border	Border	Border
Years	Census	Census	Census	Census	Census	Census	Census
1860 Controls	Y	Y	Y	Y	Y	Y	Y
Pair-Year FE	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y
N	3638	3638	3635	3638	3638	3638	3638

Notes: Standard errors multi-dimensionally clustered on border-segment X year and state. 1860 controls are year specific effects of log 1860 fraction slave, log 1860 population, and log 1860 urban population. Balanced sample is the set of counties that have the core variables nonmissing for both themselves and their matched county.

Table 5: Effect of Disenfranchisement on Black and White Population

Panel A: Full Sample	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Log(Fraction Black)		Log(Black Pop)		Log(White Pop)		Log(Pop)	
Poll Tax + Literacy Test	-0.0436*	-0.0448*	-0.0244	-0.0289	0.0261	0.0235	0.0149	0.0121
	(0.0256)	(0.0233)	(0.0377)	(0.0278)	(0.0199)	(0.0180)	(0.0212)	(0.0183)
Log Pop(t-10)		0.246***		0.994***		0.681***		0.748***
		(0.0740)		(0.100)		(0.0548)		(0.0517)
Sample Counties	Border	Border	Border	Border	Border	Border	Border	Border
Years	Census	Census	Census	Census	Census	Census	Census	Census
1860 Controls	Y	Y	Y	Y	Y	Y	Y	Y
Pair-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y	Y
N	3826	3826	3826	3826	3828	3828	3828	3828

Panel B: Balanced Sample	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Log(Fraction Black)		Log(Black Pop)		Log(White Pop)		Log(Pop)	
Poll Tax + Literacy Test	-0.0395*	-0.0374*	-0.0189	-0.0753**	0.0273	-0.0296	0.0178	-0.0418
	(0.0219)	(0.0219)	(0.0355)	(0.0362)	(0.0187)	(0.0268)	(0.0196)	(0.0275)
Log Pop(t-10)		0.120**		0.486***		0.313***		0.367***
		(0.0503)		(0.0905)		(0.0517)		(0.0549)
Sample Counties	Border	Border	Border	Border	Border	Border	Border	Border
Years	Census	Census	Census	Census	Census	Census	Census	Census
1860 Controls	Y	Y	Y	Y	Y	Y	Y	Y
Pair-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y	Y
N	3638	3638	3638	3638	3638	3638	3638	3638

Notes: Standard errors multi-dimensionally clustered on border-segment X year and state. 1860 controls are year specific effects of log 1860 fraction slave, log 1860 population, and log 1860 urban population. Balanced sample is the set of counties that have the core variables nonmissing for both themselves and their matched county.

Table 6: Robustness

	Political Variables		Education Variables		Factor Markets	
Panel A: Lagged Black Population Interactions						
	(1) Log(Presidential Turnout)	(2) Log(Fraction Democrat)	(3) Black Teacher Child Ratio	(4) White Teacher Child Ratio	(5) Log(Value/Acre)	(6) Log(Fraction Black)
Poll Tax + Literacy Test	-0.0954**	0.0454**	-0.00635*	-0.000780	0.0582*	-0.0516**
	(0.0416)	(0.0190)	(0.00350)	(0.00130)	(0.0307)	(0.0204)
(Poll Tax + Literacy Test) X Log Black Population(t-10)	-0.0388**	0.0331***	0.00279	0.000229	0.0107	0.0172
	(0.0192)	(0.00973)	(0.00171)	(0.000560)	(0.0201)	(0.0120)
Log Black Population(t-10)	0.378***	-0.0114	-0.00303	0.00218*	0.179***	0.203***
	(0.0452)	(0.0231)	(0.00258)	(0.00117)	(0.0397)	(0.0465)
N	3704	3704	3704	3704	3687	3704
Panel B: 1920 County Definitions						
	(1) Log(Presidential Turnout)	(2) Log(Fraction Democrat)	(3) Black Teacher Child Ratio	(4) White Teacher Child Ratio	(5) Log(Value/Acre)	(6) Log(Fraction Black)
Poll Tax + Literacy Test	-0.108**	0.0594**	-0.00535*	-0.000614	0.0639**	-0.0427*
	(0.0472)	(0.0233)	(0.00322)	(0.00134)	(0.0314)	(0.0221)
N	3740	3740	3740	3740	3723	3740
Panel C: Interior County Placebo						
	(1) Log(Presidential Turnout)	(2) Log(Fraction Democrat)	(3) Black Teacher Child Ratio	(4) White Teacher Child Ratio	(5) Log(Value/Acre)	(6) Log(Fraction Black)
Poll Tax + Literacy Test	0.0314	-0.0143	-0.000539	0.00183	0.0848**	0.0280
	(0.0501)	(0.0369)	(0.00137)	(0.00291)	(0.0361)	(0.0376)
N	5846	5846	5846	5846	5846	5846
Panel D: Interior County Placebo (Without Mississippi Borders)						
	(1) Log(Presidential Turnout)	(2) Log(Fraction Democrat)	(3) Black Teacher Child Ratio	(4) White Teacher Child Ratio	(5) Log(Value/Acre)	(6) Log(Fraction Black)
Poll Tax + Literacy Test	-0.0144	-0.0202	-0.00119	0.00251	0.0842	0.0336
	(0.0776)	(0.0405)	(0.00139)	(0.00344)	(0.0506)	(0.0432)
N	5391	5391	5391	5391	5391	5391

Notes: Standard errors multi-dimensionally clustered on border-segment X year and state. 1860 controls are year specific effects of log 1860 fraction slave, log 1860 population, and log 1860 urban population. Panel A interacts the disenfranchisement variable with the lagged log of the black population. Panel B uses the 1920 county borders to match county-pairs instead of 1870. Panel C is an interior county placebo, which matches border counties to the adjacent counties in the same state and estimates the main specification. Panel D is the same as Panel C, but omits the counties bordering the Mississippi.

Table 7: Heterogeneity

6A: Heterogeneity by Pair Characteristics

	Full (1)	Balance (2)	Full (3)	Balance (4)
	Log(Value/Acre)		Log(Fraction Black)	
Poll Tax + Literacy Test	0.0701**	0.0647**	-0.0447*	-0.0430*
	(0.0301)	(0.0306)	(0.0259)	(0.0224)
Poll Tax + Literacy Test X Pair Centroid Distance	-0.000831	-0.000750	0.000416	0.000297
	(0.00153)	(0.00155)	(0.00112)	(0.00101)
N	3807	3723	3826	3740

	Full (1)	Balance (2)	Full (3)	Balance (4)
	Log(Value/Acre)		Log(Fraction Black)	
Poll Tax + Literacy Test	0.0703**	0.0645**	-0.0438*	-0.0425**
	(0.0302)	(0.0304)	(0.0245)	(0.0215)
Poll Tax + Literacy Test X Pair Railroad	0.0636	0.0679	0.0315	0.0267
	(0.0462)	(0.0467)	(0.0382)	(0.0327)
N	3807	3723	3826	3740

	Full (1)	Balance (2)	Full (3)	Balance (4)
	Log(Value/Acre)		Log(Fraction Black)	
Poll Tax + Literacy Test	0.0705**	0.0653**	-0.0365*	-0.0390**
	(0.0318)	(0.0321)	(0.0194)	(0.0179)
Poll Tax + Literacy Test X Pair Ruggedness	0.000115	0.0000890	-0.000362	-0.000406
	(0.000257)	(0.000263)	(0.000366)	(0.000363)
N	3686	3606	3694	3616

6B: Heterogeneity by County Characteristics

	Full (1)	Balance (2)	Full (3)	Balance (4)
	Log(Value/Acre)		Log(Fraction Black)	
Poll Tax + Literacy Test	0.0731**	0.0684**	-0.0400*	-0.0388*
	(0.0293)	(0.0298)	(0.0230)	(0.0201)
Poll Tax + Literacy Test X Mississippi	0.0428	0.0511	0.0481	0.0443
	(0.0635)	(0.0642)	(0.0448)	(0.0427)
N	3807	3723	3826	3740

	Full (1)	Balance (2)	Full (3)	Balance (4)
	Log(Value/Acre)		Log(Fraction Black)	
Poll Tax + Literacy Test	0.0700**	0.0644**	-0.0434*	-0.0423**
	(0.0312)	(0.0315)	(0.0243)	(0.0213)
Poll Tax + Literacy Test X County Railroad	0.0122	0.00929	0.0162	0.00701
	(0.0318)	(0.0311)	(0.0235)	(0.0219)
N	3807	3723	3826	3740

	Full (1)	Balance (2)	Full (3)	Balance (4)
	Log(Value/Acre)		Log(Fraction Black)	
Poll Tax + Literacy Test	0.0704**	0.0656**	-0.0381*	-0.0405**
	(0.0309)	(0.0314)	(0.0212)	(0.0194)
Poll Tax + Literacy Test X County Ruggedness	0.000449	0.000419	-0.000234	-0.000388
	(0.000348)	(0.000351)	(0.000451)	(0.000430)
N	3741	3661	3760	3678

Notes: Standard errors multi-dimensionally clustered on border-segment X year and state. All specifications include county fixed effects, countypair X year fixed effects, and 1860 controls, which are year specific effects of log 1860 fraction slave, log 1860 population, and log 1860 urban population. All interactions are demeaned. Balanced sample is the set of counties that have the core variables nonmissing for both themselves and their matched county.

Table 8:Linked 1870-1880 Individual Summary Statistics

Panel A: Full Sample

	White			Black		
Variable	Obs	Mean	Std.	Obs	Mean	Std.
Migrate Between 1870-1800 Dummy	21396	0.37	0.48	18095	0.43	0.49
% Change County Agricultural Output	21396	-0.17	0.46	18095	-0.21	0.41
% Change County Black Teachers	21396	0.74	1.47	18095	1.00	1.64
% Change County Land Values	21396	0.28	0.58	18095	0.16	0.52
% Change County Population	21396	0.27	0.22	18095	0.22	0.18
Age	21396	16.53	14.17	18095	15.80	14.18
Age-squared	21396	474.12	631.50	18095	450.64	626.37
Urban	21396	0.10	0.30	18095	0.07	0.26
Literate	21396	0.53	0.50	18095	0.12	0.33

Panel B: Border County Sample

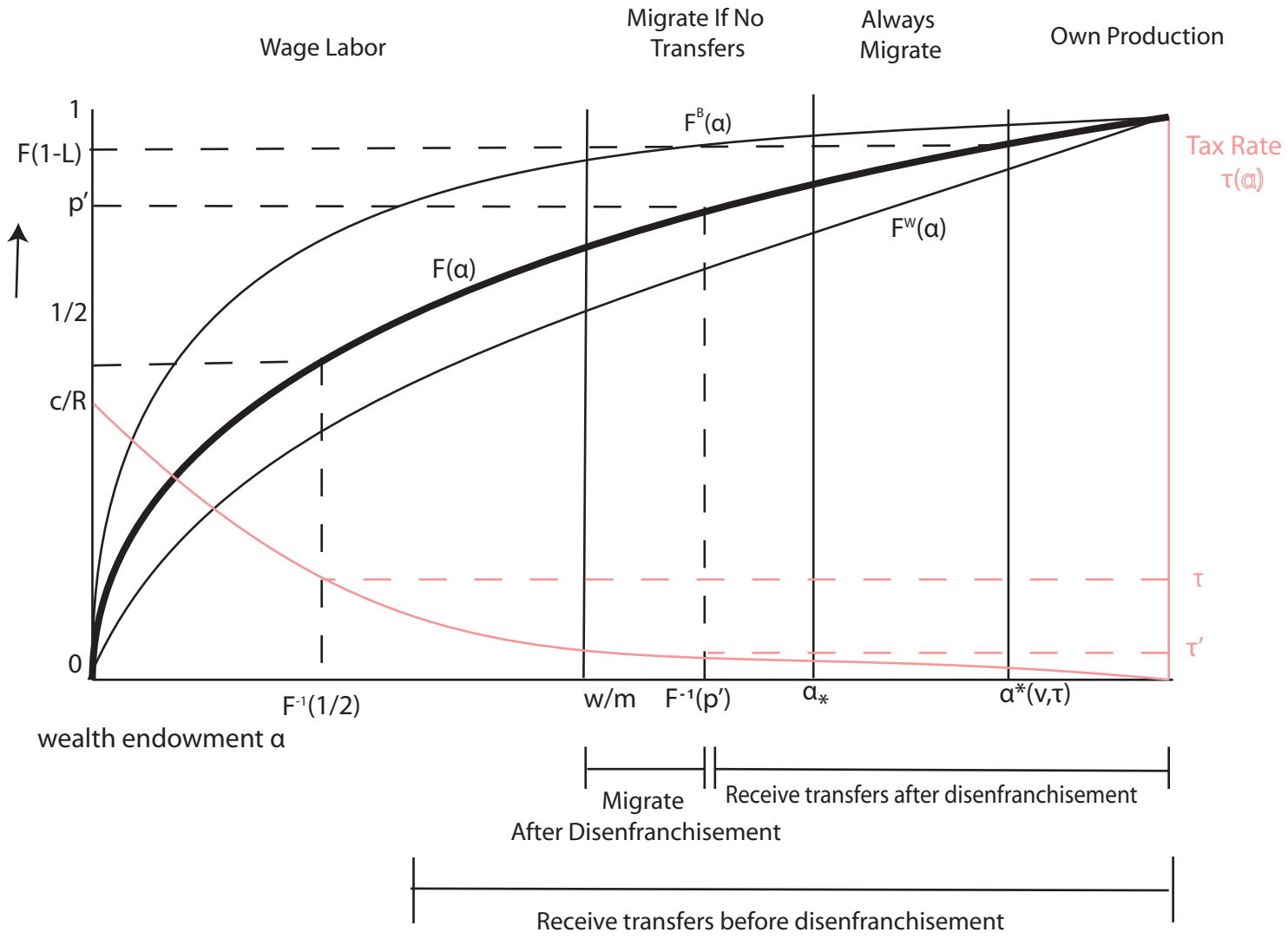
	White			Black		
Variable	Obs	Mean	Std.	Obs	Mean	Std.
Migrate Between 1870-1800 Dummy	2415	0.38	0.49	1895	0.44	0.50
% Change County Agricultural Output	2415	-0.15	0.41	1895	-0.16	0.42
% Change County Black Teachers	2415	0.89	1.40	1895	1.12	1.50
% Change County Land Values	2415	0.37	0.54	1895	0.24	0.56
% Change County Population	2415	0.28	0.16	1895	0.26	0.16
Age	2415	16.38	14.00	1895	15.76	14.17
Age-squared	2415	464.00	620.00	1895	449.07	622.70
Urban	2415	0.05	0.22	1895	0.06	0.24
Literate	2415	0.50	0.50	1895	0.11	0.31

Table 9: 1870-1880 Migration-Income Results

	Dependent Variable is County 1870-1880 Out-Migration Dummy							
	Blacks				Whites			
	All South		Border Counties		All South		Border Counties	
% Change County Agricultural Output	-0.124*	-0.111*	-0.184**	-0.224**	0.0369	0.0337	0.0857	0.0732
	(0.0693)	(0.0571)	(0.0817)	(0.0889)	(0.0460)	(0.0406)	(0.0916)	(0.0854)
% Change County Black Teachers	-0.0142*	-0.0129	0.00577	0.00864	0.00406	0.00418	-0.0127	-0.00694
	(0.00858)	(0.00802)	(0.0200)	(0.0202)	(0.0104)	(0.00948)	(0.0283)	(0.0251)
% Change County Land Values	-0.0119	-0.00987	-0.114*	-0.0904	-0.0323	-0.0294	-0.0381	-0.0289
	(0.0315)	(0.0307)	(0.0659)	(0.0724)	(0.0419)	(0.0362)	(0.0695)	(0.0703)
% Change County Population	0.0355	0.0159	0.162	0.226	0.0292	-0.00543	-0.439**	-0.436**
	(0.113)	(0.106)	(0.243)	(0.248)	(0.181)	(0.151)	(0.210)	(0.207)
Age		-0.0133***		-0.0137***		-0.0147***		-0.0160**
		(0.00329)		(0.00512)		(0.00373)		(0.00719)
Age-squared		0.000238***		0.000269***		0.000248***		0.000290**
		(0.0000574)		(0.0000956)		(0.0000646)		(0.000122)
Urban		-0.0313		0.222**		-0.0398		-0.0143
		(0.0483)		(0.100)		(0.0589)		(0.109)
Literate		0.0226		-0.0422		0.00372		-0.0524
		(0.0228)		(0.0547)		(0.0180)		(0.0463)
Sample								
N	18095	18095	1895	1895	21396	21396	2415	2415

Standard errors are clustered at the county level. Data is individual level data from the linked IPUMS census schedules from 1870-1880.

Figure 1: Effects of Disenfranchisement



Disenfranchisement raises the decisive percentile of α from 1/2 to p′.
The preferred tax rate of the decisive percentile falls from τ to τ′
$F(\alpha^*(v',\tau'))=1-L=F(\alpha^*(v,\tau))$ implies that $v'>v$
Transfers to agents below p′ and greater than 1/2 are eliminated.
Any agents who lose transfers and have $\alpha>w/m$ migrate.

Figure 2

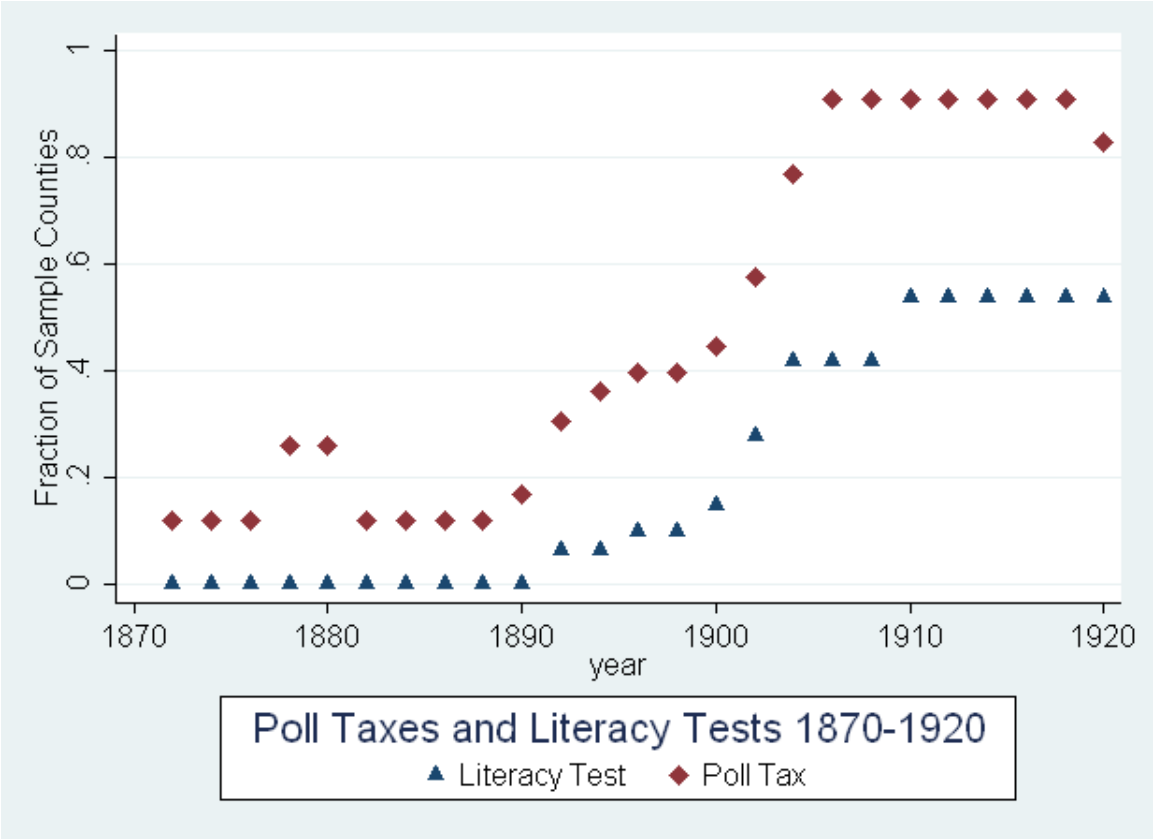


Figure 3

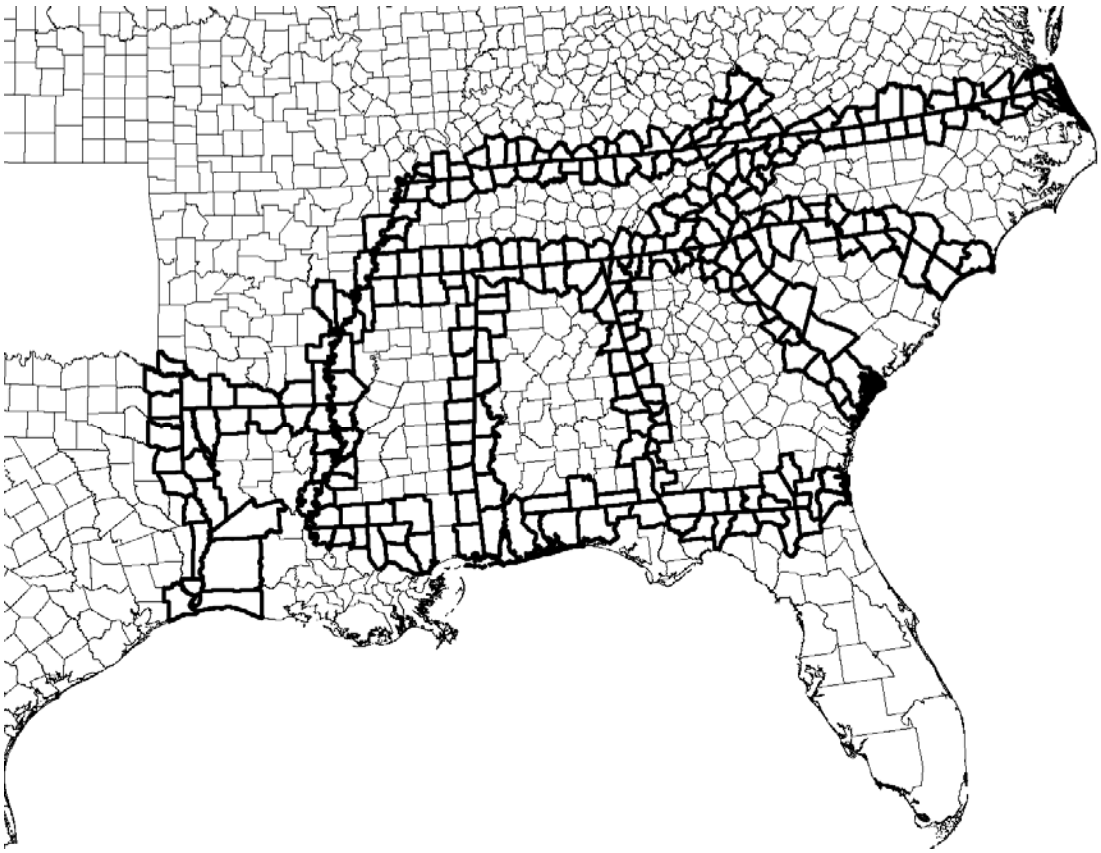


Figure 4a: Cumulative Effect of Disenfranchisement on Log Presidential Total Votes

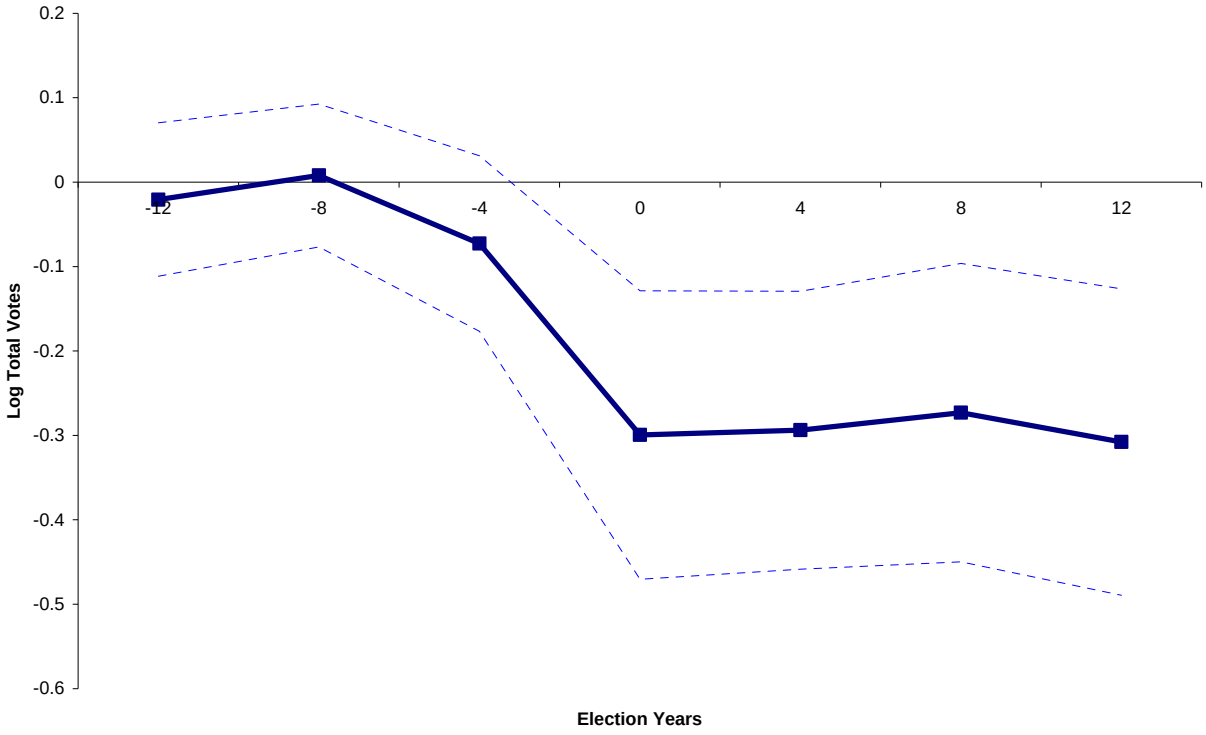


Figure 4b:Cumulative Effect of Disenfranchisement on Log Fraction Presidential Democratic Vote

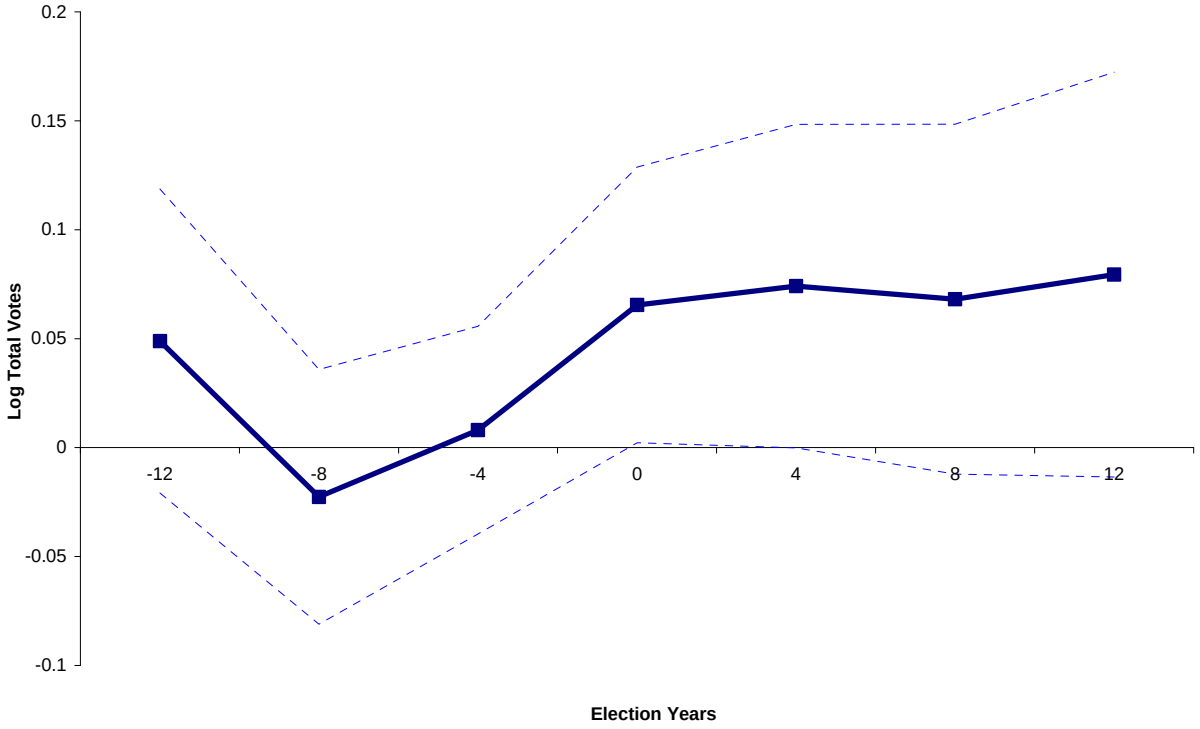


Figure 5: Effect of Disenfranchisement on Log Fraction Black by County Pair Centroid Distance

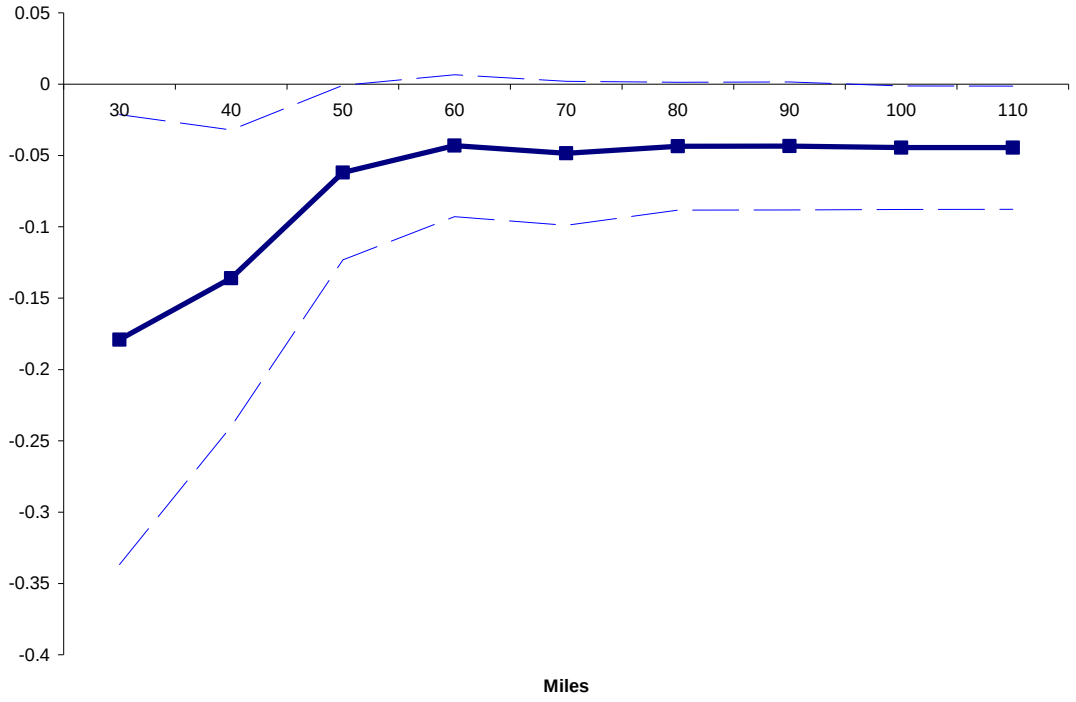


Figure 6: Effect of Disenfranchisement on Log Land Value by County Pair Centroid Distance

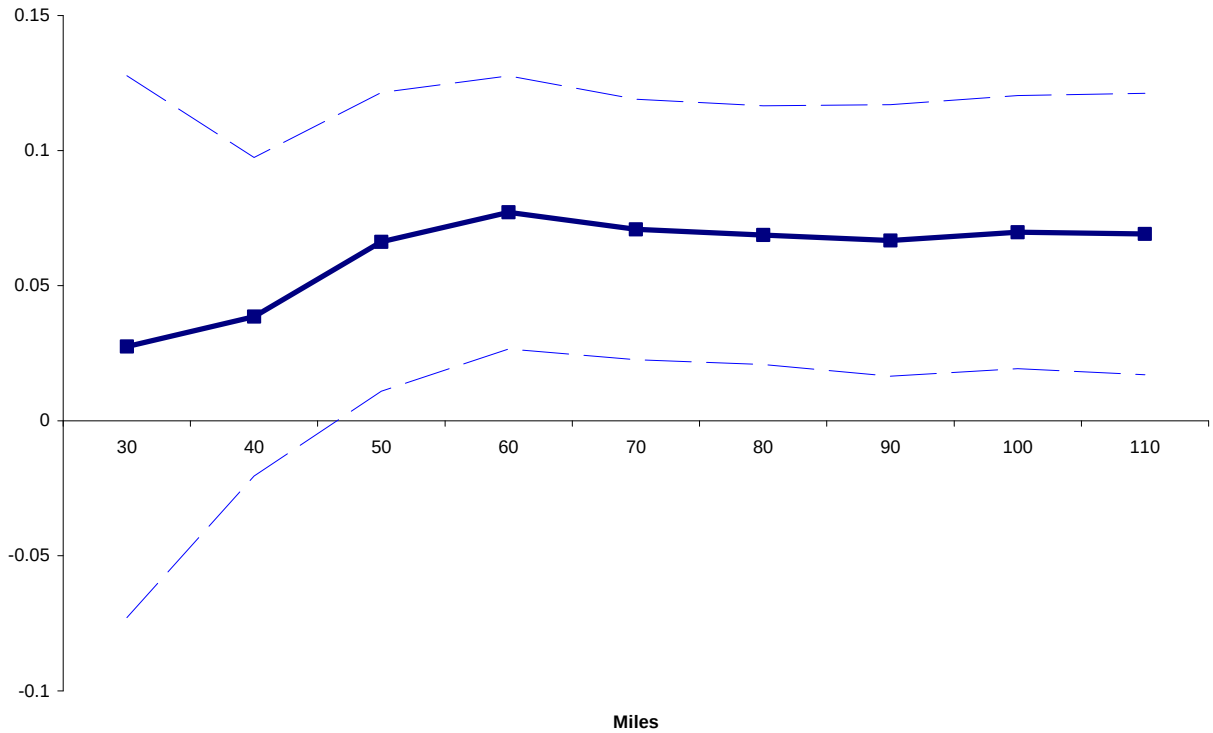


Figure 7: Tail of Farm Capital Distribution.