Lynchings, Labour and Cotton in the US South

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I show that cotton price shocks predict lynchings of African Americans in the US South from 1882 to 1930. Specifically, a standard deviation decrease in the cotton price leads to a 0.095 to 0.16 standard deviation increase in lynchings, within a cotton-producing county. Lynchings also predict more black out-migration from 1920 to 1930. Using a simple model, I show that this is consistent with lynchings having labour market effects that benefitted whites: lynchings cause blacks to migrate away, lowering labour supply and increasing wages for white labourers. I run complier tests to show the mediating effects of railroads, the black-white farm worker ratio, and slavery. I then turn to the long-term effects of lynchings. I show that Mississippi counties with more violence during a 1964 Civil Rights campaign also had more lynchings during the earlier period. Finally, present-day outcomes show that lynchings predict higher black-white worker, family, and household income gaps; a standard deviation rise in past lynchings predicts a 0.08 to 0.15 standard deviation increase in black-white income gaps. These present-day results are robust to historical controls, to the use of California lynchings as a falsification, to the use of white-on-white lynchings as a placebo, and to the use of 1879 cotton acreage as an instrument; they also survive tests using Altonji, Elder, and Taber (2005) statistics.

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A growing literature examines persecution of minorities, and how its effects persist through time (Waldinger, 2010; Voigtlander and Voth, 2012; Jha, 2013). Ethnic conflict weakens political institutions by hampering consensus. More broadly, violence and civil unrest can limit state capacity and affect economic growth (Acemoglu and Robinson, 2000; Besley and Persson, 2010). Racial discrimi-

nation continues to affect countries like the United States (Fryer et al., 2013). Understanding the causes and effects of race-based violence is thus relevant, and important in preventing it.

In this paper, I examine lynchings of African Americans in the US South from 1882 to 1930, and find evidence that lynchings prevented black workers from fully participating in the labour market. Using the fact that world cotton prices are exogenous from a single county's perspective, I find that cotton price shocks strongly predict lynchings. More precisely, one standard deviation decrease in the world cotton price results in a 0.095 to 0.16 standard deviation increase in lynchings within a cotton-producing county. The findings are robust to the inclusion of controls, and to the use of tests with white-on-white lynchings and California lynchings. Cotton price shocks also do not predict legal executions of blacks, suggesting motives for lynching were different. These effects are more pronounced in counties that had railroads in 1890, suggesting that links to world markets and greater local labour demand had an impact on lynchings. Disenfranchisement attempts such as the poll tax and literacy tests do not strengthen this effect, suggesting the substitutability of informal violence with formal institutions as a way to control workers. All this is indicative that greater numbers of lynchings served, at least in part, as a way of controlling black workers.

Using these observations as a guide, I claim that lynchings had labour market effects that benefitted white workers. During years of low cotton prices, wages are low. When whites lynch blacks, this causes other blacks to migrate out of a county, thus reducing labour supply and increasing wages. I show in my data that lynchings predict greater black out-migration, and higher state-level agricultural wages. A one standard deviation increase in lynchings within a county leads to 6.5 to 8 % more black out-migration, and a 1.2 % increase in state-level wages. To understand these results, I analyse a simple model in which white workers can lynch blacks during low cotton price shocks, reducing labour supply and increasing wages.

I then turn to the long-term effects of lynchings, starting with the Civil Rights era. Although lynchings became very rare in the 1930s, discrimination against blacks continued. I focus on the 1964 Mississippi Summer project, a campaign to register African Americans to vote - the campaign's organisers encountered violence and discrimination throughout the summer. I show that Mississippi counties with more 1964 violence also had more lynchings in the past. Using data

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from the 2008-2012 American Community Survey, I also show that lynchings in the past predict white-black wage and income gaps today. This is robust to the inclusion of various controls and state fixed effects. Furthermore, I test the sensitivity of the coefficient estimates to control variables using Altonji, Elder, and Taber (2005) statistics. My results are shown to be robust to these tests, strongly suggesting that labour market discrimination has persisted from lynchings to the present day.

In Section I, I briefly survey the relevant literature and historical context. In Section II, I describe the data and empirical strategy for 1882-1930 lynchings, before reporting my estimates in Section III. I also analyse a mechanism through which lynchings might regulate southern labour markets. In Section IV, I examine how the effects of lynchings persist through time by examining violence during a 1964 Civil Rights campaign, and contemporary black-white wage and income gaps. Section V concludes.

I.   Literature and Background

In 1863, the Emancipation Proclamation freed 4 million African Americans from slavery. When the Civil War ended, the Union Army occupied the South, and the federal government established the Bureau of Refugees, Freedmen, and Abandoned Lands to help former slaves integrate into society. Until 1877, blacks did relatively well, and many were even elected to important Republican office posts (Foner, 1996), despite Ku Klux Klan intimidation. Historians call this period Reconstruction.

When Reconstruction ended, so did the protections African Americans enjoyed in the South. The Klan and similar groups waned in influence, as informal mob violence replaced the KKK's organised resistance to blacks. The South was a cotton-intensive region, and many blacks worked as wage labourers or sharecroppers in white-owned cotton plantations, often competing with white workers. It was during this time that lynchings became common.

The suggestion that lynchings were tied to the cotton economy comes from Tolnay and Beck (1995), whose study was the first to systematically collect lynchings data from county archives, newspapers, and National Association for the Advancement of Colored People (NAACP) records. According to their study, lynchings were due to competition between black and white farm workers. They
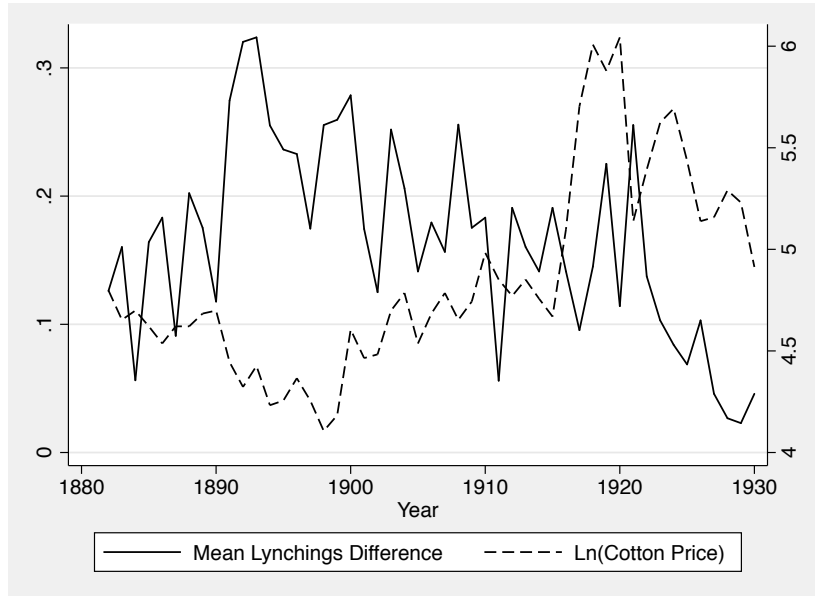
FIGURE 1. COTTON PRICE AND LYNCHINGS

Note: The solid line depicts the difference between (mean) lynchings in cotton counties and (mean) lynchings in non-cotton counties. It is assoicated with the left y-axis. The dotted line is the logged cotton price, and is associated with the right y-axis.
Source: Cotton prices are from Blattman, Hwang and Williamson (2007), and data on cotton counties are from the dicennial US Census. Lynchings data are from Tolnay and Beck (1995).

claim that lynchings had little to do with popular justice or politics, and more to do with cotton. My work develops Tolnay and Beck's general thesis by subjecting it to more rigorous tests and analysis that were not available to the authors. For example, instead of using a time series analysis like Tolnay and Beck, I use fixed effects, which allows me to control for unobserved heterogeneity at both the county and year levels. I also provide empirical evidence for a mechanism through which black-white competition led to lynchings through lower labour supply, and therefore less wages. Furthermore, I empirically test the long-term consequences of lynchings, and how they might have had an effect on labour markets today.

Figure 1 shows the difference between mean lynchings in cotton producing counties and mean lynchings in non-cotton counties (solid line), and the world cotton price (dotted line). Mean lynchings in cotton counties were greater than those in non-cotton counties, giving creedence to Tolnay and Beck's general observations. Lynchings broadly follow cotton prices, and years of low cotton prices involve more lynchings. This is the variation that drives my results.

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Work subsequent to Tolnay and Beck's study has attempted to establish a link between lynchings and contemporary outcomes: homicides (Messner et al., 2005), hate crimes (King et al., 2009), and capital punishment (Zimring, 2003). These studies, however, all make links between lynchings and present-day crime. Yet, as this paper shows, lynchings were in fact a means of enforcing labour market outcomes, and no work to my knowledge has examined the link between lynchings and current black-white wage and income gaps.

My study is therefore the first to show that lynchings had labour market effects that benefitted whites. In particular, I contribute to the civil conflict literature (Collier and Hoeffler, 2004; Miguel et al., 2004). The literature on the effect of economic shocks on conflict requires more evidence and microdata, which I provide. In this respect, my paper is similar to Dube and Vargas's (2013), which shows that in Colombia, negative coffee price shocks cause violence due to an opportunity cost effect, while positive oil price shocks cause violence due to a rapacity effect. In particular, Dube and Vargas claim that when coffee prices decline, it is more profitable for workers to enter armed militias. Like Dube and Vargas, I focus on a single location, but show that negative cotton price shocks cause lynchings due to labour market competition between whites and blacks, not labour substitution into violent professions.

My work is related to economic work on path dependency (Acemoglu et al., 2001; Nunn, 2008; Dell, 2010), since I show that lynchings can have long term consequences. In particular, recent work has shown that attitudes can persist, and affect present-day institutions, norms, and actions, but no work to my knowledge shows that past *events* can affect present labour-market *outcomes*. Nunn and Wantchekon (2011) discuss the long-term consequences of Africa's slave trades, showing that the intensity of slave extraction causes mistrust in Africa today (i.e. institutions affect attitudes). Voigtlander and Voth (2012) demonstrate that anti-Semitic violence during the Middle Ages predicts anti-Jewish violence in the 1920s and 1930s during the Nazi Party's rise in Germany (i.e. past events affect later ones). In contrast to these studies, I show that historical violent events can affect modern-day labour market outcomes.

My study is related to recent work on American slavery (O'Connell, 2012; Acharya et al., 2013) and postbellum African American history (Naidu, 2010; Hornbeck and Naidu, forthcoming). For example, Naidu (2010) shows that post-bellum restrictions on black agricultural workers' ability to change employment

TABLE 1—SUMMARY STATISTICS

Variable	N	Mean	Std. Dev.	Min	Max
Lynchings	13,475	0.18	0.86	0	24
Cotton × ln(Price)	13,475	4.20	1.71	0	6.04
Mississippi River × ln(price)	13,475	0.42	1.38	0	6.04
1880 Black Proportion × ln(price)	13,475	1.84	1.10	0.03	5.51
White lynchings	13,475	0.02	0.23	0	11
Executions	13,475	0.12	0.59	0	16
California lynchings	4,032	0.08	0.55	0	15

decreased black wages and lowered the probability of job turnovers. Hornbeck and Naidu (forthcoming) use the Great Mississippi Flood of 1927 to show that counties with more flooding had greater African American out-migration - this led landowners in flooded counties to mechanise agricultural production moreso than those in non-flooded counties.

Finally, there have been a few economics studies that look at lynchings, though not as a primary question. Naidu (2012) examines disenfranchisement of African Americans during the late 19th Century, using adjacent county-pairs that straddle state boundaries to show that state disenfranchisement laws lower black electoral turnout, participation, and education quality. He finds no significant effect of disenfranchisement on lynchings, suggesting that violence was not an effective substitute for legal disenfranchisement. Ager (2013) investigates the persistence of Southern US elites, showing that counties with a wealthier planter elite performed economically worse after the Civil War, and even after World War II. He also shows that counties with wealthier elites predict fewer lynchings. However, no economics study, to my knowledge, has investigated lynchings primarily, or as a labour market phenomenon.

II. Data and Empirical Strategy

In this section, I introduce my sources of data and my empirical strategy. I give summary statistics in Table 1.

A. Data

Lynchings. Lynchings data are from Tolnay and Beck (1995), who identified lynchings in ten southern states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee. The au-

thors began with data from the National Association for the Advancement of Colored People (NAACP), Chicago *Tribune* and Tuskegee Institute's lynchings databases. They then attempted to confirm a lynching by locating a contemporary newspaper account of it. The authors' definition of lynching, and therefore my own, requires that: (1) there must be evidence that the person was killed; (2) the person met death illegally; (3) a group of three or more persons participated in the killing; (4) the killers acted under the pretext of service to judgment or tradition. Number (3) is important in order for lynchings to be classified as mob activity. There are 2,805 lynchings in their dataset, and data is collected at the county level, from 1882 to 1930. Figure 2 shows the geographic spread of lynchings.

Other states, like Texas and Virginia, also had a significant number of lynchings, but Tolnay and Beck were unable to find reliable newspaper sources on these events. The data span from 1882 to 1930 for two reasons: (1) there are no reliable lynchings data prior to 1882; and (2) Lynchings declined significantly after 1930.

As a placebo check for present day income-gap outcomes, I use California lynchings data from Gonzales-Day (2006). He collects data on lynchings from 1850 to 1935, at the county level, from various sources, including the Tuskegee Institute and NAACP records. There are 352 lynch victims in his dataset, only 6 of whom are black. A large number of California lynch victims were Native American, Chinese, or Hispanic.

Cotton. World cotton price data are from Blattman, Hwang, and Williamson (2007), and are time series data. Cross-sectional data on which counties produced cotton are from the dicennial US Censuses from 1880 to 1930.

Controls and Compliers. I include a dummy for counties along the Mississippi river, interacted with the lagged cotton price index. The Mississippi River control is included because counties along the river have more fertile soil, ideal for growing cotton. I also include the 1880 black proportion and 1880 black proportion squared, each interacted with the lagged cotton price index. This is to account for the fact that the African American proportion of the population will account for more lynchings. Data on legal executions are from Espy and Smykla (2004).

For compliers, I acquire additional data. Data on farm labourers by race are from the 1880, 1900, 1910, 1920 and 1930 microcensus, from IPUMS (see Ruggles, 2010); specifically, I use the data on occupations to create a ratio of black to white
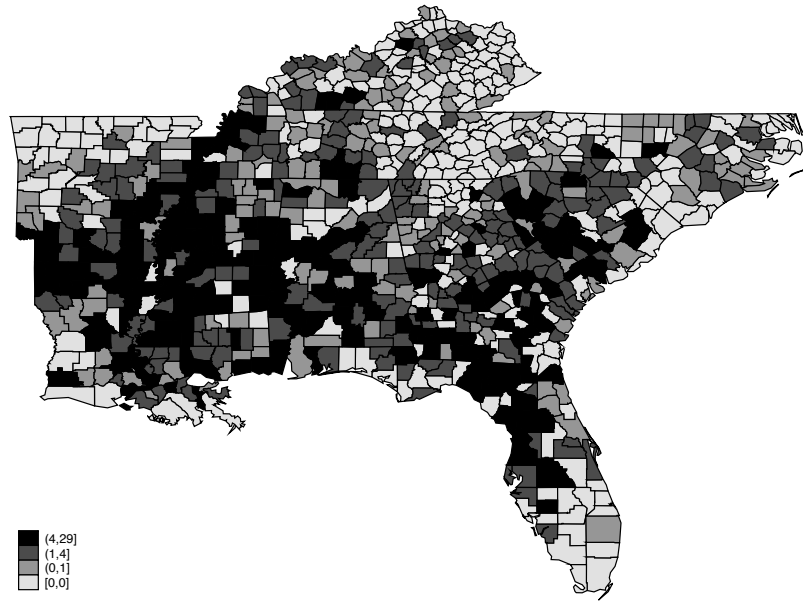
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FIGURE 2. LYNCHINGS IN TEN US SOUTHERN STATES, 1882-1930

farm workers - this helps to test the labour market competition theory. Slavery data are from the 1860 US Census, which shows how many slaves exist per county. Data on which counties had railroads in 1890 are from Donaldson and Hornbeck (2013).

To account for county boundary changes during this period, I use the Atlas of Historical County Boundaries Project, and then merge counties to their smallest consistent unit, forming multi-county units in many cases. This reduces my number of counties from 876 to 275.

Migration. I acquire micro-level migration data from Boustan et al. (2012), which describes whether an African American migrated from their county of origin between 1920 and 1930. The authors acquired these data from US Census microdata for this period. As controls, I include data on Rosenwald schools from Aaronson and Mazumder (2011).

State-level Agricultural Wages. Data on state-level agricultural wages are from Naidu (2010), who acquires his data from the US Department of Agriculture's "Crops and Markets" reports from 1866 to 1930.

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B. Empirical Strategy

I first test whether adverse cotton price shocks are related to lynchings. My main specification is:

$$(1) \quad Lynching_{i,t} = \beta Shock_{i,t} + \delta_i + \eta_t + \epsilon_{i,t}$$

Here, $Lynching_{i,t}$ is the number of lynchings of African Americans in county i in year t.

$Shock_{i,t}$ is a lagged value of $Cotton_i^j \times \ln Price_t^j$. Here, $Cotton_i^j$ is an indicator for whether the county produces cotton from 1882-1930 - it is not time varying. $\ln Price_t^j$ is the world commodity price index for cotton, and varies over time. County and time fixed effects are δ_i and η_t respectively, which I use to control for omitted heterogeneity at the level of counties and years. I show that this is robust to the inclusion of county-specific trends. For my identification strategy, I exploit the fact that world commodity prices are exogenous from a single county's perspective. My unit of observation is a county-year.

What I am interested in, then, is whether a cotton price shock affects lynchings *within* a cotton-producing county. I also include, as controls, the lagged cotton price interacted with: a dummy for a Mississippi River county, the 1882 black fraction of the population, and 1882 black proportion of the population squared. Black population is important, since African Americans were largley employed in cotton plantations in the US South. In the appendix I show that this is robust to interacting the cross-sectional control variables with a time trend, instead of the price.

III. Results

A. Main Results

I claim that lynchings occurred during poor economic times, when whites lynched blacks to terrify the black labour force into migrating, thus reducing labour and increasing wages. It is therefore important that cotton shocks predict lynchings.

Results for (1) are shown in Table 2. In the first column, I conduct a simple regression of lynchings on the cotton shock. In column 2, I include controls, which are the lagged cotton price multiplied by a dummy for Mississippi river county,

TABLE 2—OLS RESULTS FOR THE EFFECT OF COTTON SHOCKS ON LYNCHINGS

Dependent variable: Lynchings	(1)	(2)	(3)	(4)	(5)	(6)
Cotton shock	-0.082***	-0.071***	-0.048	-0.057***	-0.082**	-0.071***
	(-2.92)	(-3.12)	(-1.62)	(-2.79)	(-1.96)	(-2.63)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes
County time trends	No	No	Yes	Yes	No	No
Double clustering	No	No	No	No	Yes	Yes
Observations	13,475	13,475	13,475	13,475	13,475	13,475
Counties	275	275	275	275	275	275

Note: t statistics are in parentheses, and standard errors are clustered by county. Controls are the lagged cotton price interacted with: 1880 black proportion of the population, 1880 black proportion squared, and Mississippi River county dummy.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

1880 black proportion, and 1880 black proportion squared. I replicate these in columns 3 and 4 with county-specific time trends. I show that the results are robust to double clustering (Cameron et al., 2011) by both year and county in columns 5 and 6. Clearly, lynchings reacted strongly to world cotton price shocks. A standard deviation decrease in the cotton shock leads to a 9.5 to 16 percent standard deviation increase in lynchings.[1]

However, this result could be merely due to frustration rather than labour market concerns; whites who feel economic hardship might take to violence of any kind. I therefore report additional tests in Table 3. Instead of white-on-black lynchings as a dependent variable, I use legal executions of African Americans. Southern executions, even towards the turn of the century, were public affairs. According to Wood (2011),

> Even when southern judges and sheriffs... did attempt to hold executions in private,... citizens often actively resisted by bribing sheriffs, climbing rooftops, and breaking down enclosures. Not incidentally, at the same time, lynchings were becoming more public, more ritualized, and more spectacular. Just as they resisted when local and state authorities prevented them from attending executions, white southerners resorted to lynching to guarantee their active involvement in and witnessing of criminal punishment.

[1]In the appendix, I show that these results are robust to the use of a lynchings dummy, to the use of different controls, and to using post 1892 data. Post 1892 data is used for robustness because Thurston (2011) raises the concern that data before then suffers from reporting quality.

TABLE 3—OLS RESULTS FOR EXECUTIONS AND WHITE-ON-WHITE LYNCHINGS

	(1) Executions	(2) Executions	(3) White lynchings	(4) White lynchings
Cotton shock	-0.027*	-0.002	-0.013*	-0.127**
	(-1.80)	(-0.16)	(-1.93)	(-2.22)
Controls	No	Yes	No	Yes
Time FE	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes
Observations	13,475	13,475	13,475	13,475
Counties	275	275	275	275

Note: t statistics are in parentheses, and standard errors are clustered by county. Controls are the lagged cotton price interacted with: 1880 black proportion of the population, 1880 black proportion squared, and Mississippi River county dummy.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

I also include white-on-white lynchings to show that lynchings were driven by labour market concerns for southern whites. White-on-white lynchings are from Tolnay and Beck (1995). Although lynchings of whites were rare, the ones that occurred mainly victimised immigrants, who threatened the status of southern white workers in a similar manner as African Americans. Therefore, the white-on-white lynchings should still react to cotton shocks.

As the table shows, cotton shocks do not predict executions with much significance, and predict white-on-white lynchings with significance. The coefficient on cotton shocks is also smaller than that for lynchings of blacks. This suggests that white-on-black lynchings were not merely motivated by general feeling of frustration. It further indicates that such lynchings were not uniquely racial phenomena, and used as a signal to force 'outsiders' to migrate away from a county, reducing their labour supply.

B. Compliers

Table 4 reports results for some compliers. The first column reports compliers for the presence of railroads in a county in 1890 (from Donaldson and Hornbeck, 2013). Railroads were important in the American South even up to the 1920s, when the automobile replaced more traditional methods of transport. Early automobiles and trucks were not as efficient at transporting agricultural produce as railroads. Railroads proxy connection to world markets, as well as local demand for labour. It is therefore unsurprising that railroads have a strong effect on lynchings' responsiveness to cotton price shocks; if a county grows cotton and

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TABLE 4—OLS RESULTS FOR COMPLIERS

	(1)	(2)	(3)	(4)	(5)
Shock	-0.009	0.033*	-0.027	-0.082***	-0.095***
	(-0.37)	(1.66)	(-1.34)	(-2.83)	(-2.77)
Shock × Interaction	-0.082**	-0.002***	-0.025**	-0.0003	0.005
	(-2.14)	(-5.27)	(-2.56)	(-0.03)	(0.61)
Interaction	1890 railroad	1860 Slavery	Black-white ratio	Poll tax	Literacy test
Controls	Yes	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
No. of observations	13,475	13,475	13,475	13,475	13,475

Note: t statistics are in parentheses, and standard errors are clustered by county. Controls are the lagged cotton price interacted with: 1880 black proportion of the population, 1880 black proportion squared, and Mississippi River county dummy.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

has a railroad, then a standard deviation decrease in the cotton price implies a 0.20 standard deviation increase in lynchings.

Column 2 reports the impact of slavery in 1860. The interaction is 10,000 slaves. Slavery exacerbates the shock's effect, implying the persistence of slavery as an institution over time. More specifically, areas which had more slaves in 1860 are more likely to have black cotton workers after Reconstruction. This threatens white farm workers. It could also be that slave-intense regions retain their racism after slavery is abolished, and this exacerbates the effects of cotton price shocks, a finding in line with Acharya et al. (2014).

Column 3 reports the ratio of black farm workers to white farm workers in 1880. When this ratio is higher, there is a potentially greater threat to white workers. As the result shows, when the greater the ratio, the stronger the shock is felt. This again supports the labour market story, where lynchings scare blacks into migrating and reducing their labour supply.

Finally, columns 4 and 5 report results for poll taxes and literacy tests, which were intended to disenfranchise African Americans. These do not appear to have significant effects, and the point estimates are small. This suggests that areas that repressed blacks through formal laws did not need to use informal practices such as lynchings.

C. Migration and Wages

If lynchings were indeed an effective tool of labour control, then we should observe blacks migrating away from areas with more lynching. As Wood (2011)

says of one event in Statesboro, Georgia, when a number of lynchings occurred, "violence subsided only when county farmers began to notice that many black laborers were fleeing the county just before the cotton harvest." Table A2 in the appendix reports results for regressions of migration on black lynchings. The dependent variable is an indicator for whether an African American migrated away from a county from 1920 to 1930, and the main independent variable is lynchings from 1920 to 1930. Controls are 1920 US Census values for urban population and African American population. I also include the number of Rosenwald schools a county had, since Aaronson and Mazumder (2011) find that Rosenwald schools caused more black out-migration. Rosenwald schools, founded by Northern philanthropist Julian Rosenwald to educate black children, increased African Americans' human capital and pushed them to seek employment opportunities in Northern cities.

As the results show, a lynching predicts more county out-migration. In Column 1, a standard deviation increase in lynchings predicts an 0.08 standard deviation increase in out-migration. In Column 2, it predicts a 0.065 standard deviation increase in out-migration. These results are significant and support the idea that lynchings were an effective tool in controlling black labour. Furthermore, I include 1910 to 1919 lynchings as a placebo, and find that the point estimate is small and insignificant, further supporting my hypothesis.

I also regress 1930 state-level agricultural wage data from Naidu (2010) on state out-migration. I use state-level wage data, since county-level data on wages from this period is unavailable. I find a positive result, consistent with the idea that lynchings lead to more black out-migration, and therefore increase agricultural wages. Migration and wages could be endogenous, and my sample of states is very small, but the result is suggestive.

To provide evidence that lynchings affected wages, I regress log state-level agricultural wages (Naidu, 2010) on past lynchings, using various specifications. State-level agricultural wages are from 1866 to 1930. Results are reported in Table 5. According to columns (1) and (2), a standard deviation increase in lynchings within a county predicts a 0.013 standard deviation increase in state-level agricultural wages. In columns (3) and (4), a standard deviation increase in the *change* in lynchings predicts a 0.002 standard deviation increase in wages. These results are not large, as I would expect; a lynching within a county will have limited state-level effects.

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TABLE 5—STATE-LEVEL AGRICULTURAL WAGES ON LYNCHINGS

Dependent variable: State-level wages	(1)	(2)	(3)	(4)
Lynchings$_{t-1}$	0.006*	0.006***		
	(1.97)	(5.56)		
ΔLynchings$_{t-1}$			0.0009***	0.0009**
			(3.47)	(2.52)
Cluster	State	County	State	County
County FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
No. of observations	13,200	13,200	12,925	12,925

Note: t statistics are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All regressions control for the lagged world cotton price (time varying) multiplied by a dummy for whether the county produces cotton (cross-sectional).

In sum, lynchings predict out-migration, and out-migration appears to predict wage increases. Furthermore, lynchings predict an increase in agricultural wages. This is all consistent with a labour market mechanism in which whites lynch blacks, which has the effect of raising wages. In the next subsection, I use a simple model to explicitly demonstrate this mechanism.

D. A Simple Model of Lynchings

I make sense of these results using a simple model. Although this model presents a rational actor making a conscious decision to lynch, I do not mean to suggest that all lynchings were necessarily tied to cotton production.

In a number of cases, of course, lynchings had economic motives. Starting in the early 1890s, poor white farmers engaged in the practice of "whitecapping" to intimidate African-American tenant farmers and labourers into leaving a community (Holmes, 1969). The 1903 lynching of Eli Hilson illustrates this. Hilson was a prosperous black farmer in Lincoln County, Mississippi. In December, a group of "whitecappers" gathered around his house and warned him to leave. Hilson ignored the threat, and was duly lynched. Although this and many cases highlight economic motives behind lynchings, my focus is on the *effects* lynchings had on labour markets.

In this stylised setup, there is only one player, white labourers (hencefort 'whites'). Wages are denoted w, and utility is binary:

$$U = \begin{cases} w, & \text{if } w \geq \bar{w} \\ 0, & \text{if } w < \bar{w} \end{cases}$$

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Here, $\bar{w}$ is the subsistence wage, since the US South had much poverty during this period. This is also consistent with a story in which when prices (and therefore wages) fall, employers prefer to hire cheaper black labourers. This displaces white workers, causing unemployment among whites, and hence a utility of zero. This is congruent with qualitative evidence (see Tolnay and Beck, 1995; Wood, 2011), though is difficult to test here, since there is no county-level dataset of unemployment from this period.

Wages are a function of cotton prices, p, and labour supply, L, both of which are determined before whites make any decision. Assume that $w = w(p, L)$, where $w_p > 0$ and $w_L < 0$. This is to capture the idea that wages increase when prices increase, and decrease when labour increases.

Whites can lynch blacks to reduce L and increase w. As I show, this happens when lynchings scare African Americans into migrating, lowering labour supply and increasing wages. However, lynchings cost whites $c\tilde{L}$, where $\tilde{L}$ is the amount of labour reduced by a lynching. Suppose that $0 < c < 1$. Assume that it is unprofitable to lynch in good times (i.e. the cost of lynching is prohibitive when $w \geq \bar{w}$). Also assume that $|\frac{\partial w}{\partial L}| > c$; if this were not the case, then lynchings would never occur

First, prices are determined exogenously by world markets, in turn affecting wages. Whites observe this, and if $w < \bar{w}$, then they derive zero utility, and can increase utility by lynching. They will do this up to a new wage, w^*, such that:

$w^* - \tilde{L}c = \bar{w}$

where $\tilde{L}$ is the amount that labour must decline so that whites can gain positive utility (i.e. so that $U = w$). Concretely, $\tilde{L}$ denotes the number of blacks that need to migrate away from a county, leading to a new labour supply of $L - \tilde{L}$, i.e. the original labour supply minus the blacks who left.

Since $w^* = w^*(p, L - \tilde{L})$, I can substitute into the above expression, using $\hat{L} = L - \tilde{L}$,

$w^*(p, \hat{L}) - \tilde{L}c = \bar{w}$

Taking partial differentials,

$\frac{\partial w}{\partial p} - \frac{\partial w}{\partial \hat{L}} \frac{\partial \tilde{L}}{\partial p} - \frac{\partial \tilde{L}}{\partial p}c = 0$

And rearranging to isolate the effect of price on lynchings,

$\frac{\partial \tilde{L}}{\partial p} = \frac{\frac{\partial w}{\partial p}}{\frac{\partial w}{\partial \hat{L}} + c} < 0$

The above expression is negative, since $\frac{\partial w}{\partial \hat{L}} < 0$ and $\frac{\partial w}{\partial p} > 0$. Furthermore,

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$|\frac{\partial w}{\partial \tilde{L}}| > c$, by assumption. Thus, as prices decline, lynchings increase.

IV.   Civil Rights and Contemporary Outcomes

Lynchings subsided after the 1930s. In 1933, the US Congress passed the Agricultural Adjustment Act, which shifted production inputs from labour to capital. The increased mechanisation reduced economic competition between whites and blacks, and reduced lynchings (Markovitz, 2004).

However, it is possible that lynchings continue to have an effect up until the present by affecting attitudes through time. Although violence against African Americans declined, there are other methods of labour market discrimination, such as hiring practices (Bertrand and Mullainathan, 2004) and bank lending (Blanchflower et al., 2003) that may have replaced mob violence. This section explores this question.

A.   Civil Rights Era Violence

Using hand-collected primary source data, I briefly examine the Civil Rights Era, because of its economic implications for African Americans. From the beginning, its campaigners had economic motives and goals in mind, primarily for the U.S. South. For example, the 1950s bus boycotts and 1960s sit-ins involved demands for equal black employment (Wright, 2013). Many Southern whites actively opposed the movement, partly because it threatened to provide African Americans with better labour market opportunities. White resistance is likely to manifest in regions with historical labour coercion - like those counties with more lynchings. To test this, I consider a particular Civil Rights campaign: the Mississippi Summer Project.

In 1964, the Civil Rights group the Council of Federated Organizations (COFO) sent over 1,000 volunteers - mostly white students from the Northeast, Midwest, and California - to Mississippi to register African Americans to vote. This was known as the Mississippi Summer Project, under the leadership of the Student Nonviolent Coordinating Committee (SNCC), a COFO affiliate. Its volunteers encountered violence and harrassment throughout the summer and autumn.

SNCC recorded such incidents in its internal documents, which I read from McAdam's (1990) appendix. For example, the report for June 21 in McComb County says "Homes of two civil rights workers planning to house summer vol-

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TABLE 6—OLS RESULTS FOR FREEDOM SUMMER INCIDENTS

Dependent Variable:	(1) Incident	(2) Incident	(3) Violent	(4) Violent
Lynchings	0.733**	0.532*	0.821**	0.642**
	(2.26)	(1.74)	(2.77)	(2.34)
White proportion 1960		−1.149***		−1.238***
		(-2.80)		(-3.07)
White proportion squared		0.007**		0.008**
		(1.97)		(2.15)
Poverty rate 1960		−0.551***		−0.499***
		(-3.15)		(-2.58)
Constant	3.72	75.3***	4.87*	75.8***
	(1.58)	(3.71)	(2.02)	(3.74)
R^2	0.209	0.365	0.203	0.410
Observations	35	35	28	28

Note: Standard errors clustered by county, and t statistics in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

unteers bombed." I hand collected data from the SNCC documents on these incidents, a subset of which were violent, and manually input them into my computer. I then regressed these incidents on past lynchings. The results are in Table 6. Columns 1 and 2 describe an incident of any kind, while columns 3 and 4 are violent incidents.

According to the table, counties with a past lynching are more likely to have a racist incident. More precisely, a standard deviation increase in lynchings predicts 2 to 3 racist incidents. These effects are large, and support the path dependency of lynchings.

B. Contemporary Outcomes

DATA. — Most of my contemporary data come from the American Community Survey's 2008-2012 estimates. Rural-Urban Continuum Codes, a discrete, 9-point code which classifies counties' rural status (lower values mean less urbanised areas), are from the US Department of Agriculture. The racial income gap is calculated as the difference between median white and black incomes. These figures are annual dollar amounts. Table 7 contains Summary Statistics.

RESULTS. — Table 8 reports OLS regression results for the black-white income gap on past lynchings. I use three types of income gaps: that between households, between families, and between workers. This provides a good range of

TABLE 7—SUMMARY STATISTICS FOR CONTEMPORARY DATA

Variable	N	Mean	Std. Dev.	Min	Max
Household Gap	697	18,442	7,570.4	-25,341	51,195
Family Gap	697	23,826	10,142.1	-21,820	79,720
Worker Gap	699	8,504	4,318.4	-6,635	22,006
Unemployment Rate	699	0.11	0.03	0.03	0.27
Finance, Insurance, and Real Estate	699	0.04	0.02	0	0.12
Agriculture	699	0.04	0.04	0	0.29
Manufacturing	699	0.12	0.06	0.003	0.33
Service	699	0.16	0.03	0.07	0.34
High School Education	699	0.54	0.15	0.18	1
Single Mothers	699	0.08	0.03	0.02	0.19
Rural-Urban Code	699	4.30	2.45	1	9

measures. Columns 1 and 2 suggest that a past lynching in a county implies a black-white household income gap of $250 to $297. Columns 2 and 3 report that a past lynching predicts a black-white family income gap of $347 to $450. Finally, columns 4 and 5 report that a lynching predicts a black-white worker gap of $87 to $102. These effects are large; a standard deviation rise in lynching increases the black-white income gap by 0.08 to 0.15 standard deviations.

To account for arbitrary spatial correlation, I use Conley (1999) standard errors. If, for example, lynchings in one county had effects that spill over into others, then Conley standard errors can account for this. As Table 8 shows, my results are robust to using this strategy. At worst, column (8)'s result for the worker wage gap shows a 10 % level of significance.

These results support a story in which lynchings have persistence, since their effect can be felt today in black-white income gaps. However, they are only associations. To subject them to stricter tests, I employ four strategies: historical controls, the use of California as a falsification test, placebo checks using white-on-white lynchings, and reliance on Altonji, Elder, and Taber statistics (2005). I find that the results are robust to these additional tests.

California works as a falsification in this context because lynchings in the state were not targeted against African Americans. Only 8 of the 352 lynchings in my California lynchings data were against blacks. Mexicans and Native Americans were primary targets. California lynchings should therefore not show up in the contemporary black-white wage gap in that state.

I show California results in the appendix. None of the results are statistically significant, and in the case of worker earnings are negative, suggesting that lynchings had no effect on the black-white wage gap in California. Furthermore, the

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TABLE 8—OLS RESULTS FOR THE EFFECT OF LYNCHINGS ON BLACK-WHITE INCOME GAPS

Black-White Gap:	(1) Household	(2) Household	(3) Family	(4) Family	(5) Worker	(6) Worker
Lynchings	295.6***	247.2***	448.3***	341.6***	101.9**	86.2**
	(4.11)	(3.50)	(4.78)	(3.89)	(2.57)	(2.15)
	[3.19]	[2.92]	[3.67]	[3.92]	[1.81]	[1.68]
Controls	No	Yes	No	Yes	No	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
AET Stats		6.11		4.20		6.49
Constant	19043.5***	18363.6***	23267.8***	17515.9***	8471.2***	5387.3***
	(25.65)	(5.46)	(19.66)	(4.11)	(14.77)	(2.80)
	[19.53]	[6.45]	[14.54]	[4.89]	[11.86]	[3.98]
N	697	697	697	697	699	699

Note: Round parentheses show t statistics using standard errors clustered by county. Square brackets show t-statistics using Conley standard errors with 5-decimal-degree cutoffs. Controls include the unemployment rate; proportion of the population working in the FIRE (financial, insurance, and real estate), agriculture, manufacturing, and service industries; proportion with a high school education, proportion of single mothers; and a rural-urban continuum code.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

coefficients are much smaller than those for the US South.

Next, I use white-on-white lynchings in the US South from 1882 to 1930 as a placebo check. If these lynchings predict a higher black-white income gap today, then this would call into question my main results. However, as I show in Table A.5, white-on-white lynchings do not predict present income gaps with significance.

It is possible that lynchings affect present-day outcomes because of geography, or historical conditions that precede lynchings. To account for this, I include controls for latitude, longitude, cotton suitability, and proportion slave in the appendix. The proportion slave measure is taken from O'Connell (2012), who bases her data on the 1860 US Census. Cotton suitability data is from the Food and Agriculture Organization. The only result that is affected is the worker wage gap, but the point estimate is still large. An additional lynching increases the household income gap by \$189, and the family income gap by \$335, and the results are significant.

This could be because past lynchings affect the extensive margin (for example, whether or not an African American gets a job, and hence their family or household income), but not the intensive margin (i.e. antidiscrimination policy makes it difficult to pay blacks less on the job). To test whether this is plausible, I regress the black-white unemployment ratio (black-unemployment/white-

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unemployment) on past lynchings. Results, reported in the appendix, Table A7, show that lynchings predict a higher black-white unemployment ratio. A standard deviation increase in lynchings predicts a 0.08 to 0.10 standard deviation increase in the unemployment ratio.

Next, I consider AET statistics. These are based on the observation that selection on observables can be used to assess potential bias from unobservables. This measure is calculated using the coefficient from two regressions: one without controls ($\hat{\beta}^r$), and one with controls ($\hat{\beta}^f$). The coefficient on lynchings is saved in each case, and used to calculate the statistics according to the following formula: $\frac{\hat{\beta}^f}{\hat{\beta}^r - \hat{\beta}^f}$. The intuition behind this is that the smaller the difference between $\hat{\beta}^f$ and $\hat{\beta}^r$, the less selection on observables affects the estimate, and the stronger selection on unobservables needs to be to explain away the entire result.

Table 7 and Table A.6 report AET statistics. Of the three ratios reported, none are less than one. The ratios range from 2.21 to 5.63. In the worst case, selection on unobservables would have to be twice the selection on observables. The median ratio is 4.08. This makes it less likely that the estimated effects of lynchings on contemporary income gaps is fully driven by unobservables.

As a final robustness check, I instrument for past lynchings using cotton acreage planted in 1879, from the 1880 US Agricultural Census. Such an instrument is valid if 1879 cotton acreage affects black-white income gaps only through its effect on lynchings. This is plausible, since cotton acreage determined the extent of black-white labour market competition from 1882 to 1930, and therefore could affect income gaps today. Table A.8 reports these results. My number of observations drops in each case because a number of counties in 1880 had not yet been created. In each case, the first-stage F-statistic is above 10, mitigating weak instrument concerns (Staiger and Stock, 1997). Furthermore, lynchings significantly predict current income gaps.

C.   Discussion

The modern-day and Mississippi Summer results suggest that the effects of lynchings persist up until the present day. This is consistent with a mechanism in which discrimination continues to affect African Americans. Such prejudice starts with lynchings of African Americans, and subsequently manifests in violence when Civil Rights community organisers went to Mississippi in 1964. It continues to

affect contemporary black incomes, relative to their white neighbours.

V. Conclusions

This article adds to a growing literature on the economics of persecution, and the way that past events and institutions persist through time. The empirical literature has so far not demonstrated that labour market concerns can motivate persecution. In this study, I argue that lynchings of African Americans in the US South were a response by whites to suppress blacks' participation in the labour market.

I have shown that lynchings were a response to cotton price shocks, and that these effects were stronger in counties with more black farm workers and railroads. The shock's effect was also stronger in counties with slavery in 1860. Tests using white-on-white lynchings and legal executions of African Americans suggest that this was not merely due to general feelings of frustration. I provide an explanation for these results: during times of bad cotton prices, whites lynch blacks, and this has the effect of reducing labour supply and increasing wages. Indeed, blacks appear to migrate after a lynching takes place, as my results show.

I then turn to the long-term effects of lynchings, first showing that Mississippi counties with greater violence in 1964 also had more lynchings in the past. I also demonstrate that lynchings contribute to the explanation of black-white income gaps in the US South today.

These results suggest that violent events, like lynchings, can be motivated by labour market concerns and their effects can persist through time. They further indicate that economic shocks can lead to racist violence. Finally, the evidence seems to support Miguel et al.'s (2004) policy suggestion, that income insurance during hard times may reduce violence. The government can invest in public works programs or provide its citizens with better access to savings to prevent violent conflict. Furthermore, contemporary black-white income gap results suggest the need for affirmative action policies to redress historical imbalances that have persisted up until the present.

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Table A1—OLS Results for Cotton Shock Robustness Checks

Dependent Variable:	(1) Dummy	(2) Dummy	(3) Count	(4) Count	(5) Lynchings after 1892	(6) Lynchings after 1892
Cotton shock	-0.028***	-0.023***	-0.082***	-0.066***	-0.083***	-0.072***
	(-3.38)	(-2.63)	(2.92)	(-2.62)	(-2.90)	(-3.17)
Controls with time trend	No	No	No	Yes	No	No
Main Controls without time trend	No	Yes	No	No	No	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13,475	13,475	13,475	13,475	10,450	10,450
Counties	275	275	275	275	275	275

Note: Standard errors are clustered by county, and t statistics are in parentheses. 'Controls with time trend' means that 1880 black proportion, 1880 black proportion squared, and Mississippi River county dummies are interacted with the time trend instead of the lagged world cotton price.

TABLE A2—OLS RESULTS FOR THE EFFECT OF LYNCHINGS ON COUNTY OUT-MIGRATION

Dependent Variable: 1920-1930 County Out-Migration	(1)	(2)	(3)	(4)
1920-1930 Lynchings	0.03**	0.02*		
	(2.23)	(1.66)		
1910-1919 Lynchings			0.006	-0.004
			(1.04)	(-0.63)
Controls	No	Yes	No	Yes
State FE	Yes	Yes	Yes	Yes
Constant	0.69***	0.68***	0.69***	0.68***
	(28.6)	(23.3)	(27.3)	(22.5)
N	864	601	864	580

Note: t statistics are in parentheses, and standard errors are clustered by county. Controls include the African American population, urban population, and number of Rosenwald Schools. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A3—OLS RESULTS FOR THE EFFECT OF MIGRATION ON AGRICULTURAL WAGES

Dependent Variable: State-Level Wages	(1)
1930 State Out-Migration	0.19*
	(2.16)
Constant	0.29***
	(4.74)
N	10

Note: t statistics are in parentheses, and standard errors are clustered by state. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Black-White Gap:	(1) Household	(2) Household	(3) Family	(4) Family	(5) Worker	(6) Worker
Lynchings	166.9	99.8	34.6	33.9	-126.4	-126.0
	(0.97)	(0.67)	(0.17)	(0.22)	(-1.50)	(-1.64)
Controls	No	Yes	No	Yes	No	Yes
Constant	12155.0***	82862.9*	18335.0***	92224.0*	5179.9 ***	3069.0
	(3.70)	(2.01)	(4.71)	(1.86)	(3.59)	(0.15)
N	40	40	39	39	41	41

Note: t statistics are in parentheses, and standard errors are clustered by county. Controls include the unemployment rate; proportion of the population working in the FIRE (financial, insurance, and real estate), agriculture, manufacturing, and service industries; proportion with a high school education, proportion of single mothers; and a rural-urban continuum code. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Black-White Gap:	(1) Household	(2) Household	(3) Family	(4) Family	(5) Worker	(6) Worker
Lynchings	353.6	257.7	824.9	596.0	163.9	122.2
	(1.38)	(1.10)	(1.54)	(1.35)	(1.25)	(0.90)
Controls	No	Yes	No	Yes	No	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	20107.0***	18792.7***	24772.6***	17515.9***	8822.1***	5531.9***
	(28.59)	(5.48)	(21.27)	(4.14)	(16.25)	(2.85)
N	697	697	697	697	699	699

Note: t statistics are in parentheses, and standard errors are clustered by county. Controls include the unemployment rate; proportion of the population working in the FIRE (financial, insurance, and real estate), agriculture, manufacturing, and service industries; proportion with a high school education, proportion of single mothers; and a rural-urban continuum code.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A6—OLS RESULTS FOR THE EFFECT OF LYNCHINGS ON BLACK-WHITE INCOME GAPS, HISTORICAL CONTROLS

Black-White Gap:	(1) Household	(2) Family	(3) Worker
Lynchings	189.3**	334.9***	55.76
	(2.16)	(3.15)	(1.13)
Modern Controls	Yes	Yes	Yes
Historical Controls	Yes	Yes	Yes
State FE	Yes	Yes	Yes
AET Stats	2.78	3.95	2.21
Constant	34042.5*	56916.6**	10897.4
	(1.75)	(2.12)	(1.00)
N	634	634	636

Note: t statistics are in parentheses, and standard errors are clustered by county. Modern controls include the unemployment rate; proportion of the population working in the FIRE (financial, insurance, and real estate), agriculture, manufacturing, and service industries; proportion with a high school education, proportion of single mothers; and a rural-urban continuum code. Historical controls include latitude, longitude, 1860 slavery, and cotton suitability. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent Variable:	(1)	(2)
Black-White Unemployment Ratio		
Lynchings	0.04**	0.03*
	(2.38)	(1.93)
Controls	No	Yes
State FE	Yes	Yes
Constant	2.11***	1.71***
	(15.37)	(3.22)
N	848	848

Note: t statistics are in parentheses, and standard errors are clustered by county. Controls include the unemployment rate; proportion of the population working in the FIRE (financial, insurance, and real estate), agriculture, manufacturing, and service industries; proportion with a high school education, proportion of single mothers; and a rural-urban continuum code. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A8—IV RESULTS FOR THE EFFECT OF LYNCHINGS ON BLACK-WHITE INCOME GAPS

Black-White Gap:	(1) Household	(2) Household	(3) Family	(4) Family	(5) Worker	(6) Worker
Lynchings	1797.11***	2110.16***	2482.67***	2470.03***	625.47***	671.21***
	(4.88)	(3.49)	(4.82)	(3.57)	(3.46)	(2.65)
Controls	No	Yes	No	Yes	No	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
F-stat	24.55	15.15	24.55	15.15	24.56	15.24
Constant	12828.44***	14731.2***	14828.02***	12597.69**	6287.3***	4305.68**
	(6.60)	(3.50)	(5.95)	(2.51)	(6.71)	(2.00)
N	612	612	612	612	612	612

Note: z statistics are in parentheses, and standard errors are clustered by county. The F-stat is from the first-stage regression. Controls include the unemployment rate; proportion of the population working in the FIRE (financial, insurance, and real estate), agriculture, manufacturing, and service industries; proportion with a high school education, proportion of single mothers; and a rural-urban continuum code. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.