Bank Regulatory Reforms and Racial Wage Discrimination

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Abstract: U.S. bank regulatory reforms that enhanced the competitiveness of the banking industry lowered entry barriers facing nonfinancial firms, which in turn increased competition for labor throughout the economy. This intensification of product and labor market competition among nonfinancial firms reduced the manifestation of racial prejudices on the demand for labor and raised the wages of black workers toward those of equally productive white workers.

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1. Introduction

Banks influence economic opportunities directly and indirectly. Banks directly shape economic opportunities by determining who has access to credit. They influence who can start a business and who cannot, who can expand a business, and who is credit constrained (Levine, 1997, 2005; Demirguc-Kunt and Levine, 2009). Banks also indirectly affect economic opportunities by shaping the economic environment in which people—even people who never use a bank—work and search for work. For example, more efficient banks can lower entry barriers facing nonfinancial firms, spurring product market competition and affecting the demand for labor. Beck, Levine, and Levkov (2010) show that an exogenous increase in competition among U.S. banks reduced income inequality among salaried workers in nonfinancial industries by disproportionately increasing the demand for lower-skilled workers. Thus, banks can influence the economic opportunities of people who never use banking services to start a business.

Based on our analyses in Levine, Levkov, and Rubinstein (2013), this paper contributes to research on how banks influence economic opportunities by assessing the impact of bank regulatory reforms on racial discrimination in labor markets. Research documents that black workers earn about 20 percent less than their white counterparts after controlling for differences in education, experience, and other characteristics. These lower wages not only define the economic opportunities of the workers themselves, they also shape the opportunities available to the workers' children and hence to future generations. In this paper, we examine whether U.S. bank deregulation indirectly influenced racial wage discrimination by altering the relative demand for black workers. More specifically, we ask whether U.S. bank regulatory reforms that enhanced the

competitiveness of the banking industry (a) reduced the manifestation of racial prejudices on the demand for labor, (b) boosted the wages of black workers toward those of equally productive white counterparts, and hence (c) expanded the economic opportunities of black workers and their families?

To address these questions, we build on two lines of research. First, Becker's (1957) theory of racial discrimination provides a natural framework for understanding and evaluating the indirect mechanisms through which banks influence labor markets and hence racial discrimination. Becker argues both that taste-based discrimination, the disutility that employers attach to hiring black workers, can create a gap between the wages of equality productive white and black workers and that intensified product market competition will erode this gap. More specifically, Becker argues that with lower entry barriers, firms with weaker racial prejudices can initiate profitable operations by hiring equally productive black workers at lower wage rates than their white counterparts, boosting the relative demand for black workers and reducing the racial wage gap. From this perspective, an intensification of competition in labor markets does not alter racial prejudices; rather, an increase in competition for labor among firms reduces the manifestation of those prejudices on the labor market outcomes of workers.

The second line of research that is crucial for assessing the impact of banks on racial discrimination emphasizes that more competitive, efficient banks spur competition in nonfinancial sectors. Black and Strahan (2002), Cetorelli and Strahan (2006), and Kerr and Nanda (2009) show that the deregulation of geographic restrictions on the establishment of bank branches and subsidiaries improved the functioning of the U.S. banking industry, lowered entry barriers facing nonfinancial industries, and intensified product and labor

market competition in these nonfinancial industries. In particular, from the mid-1970s to 1994, individual U.S. states relaxed restrictions on the entry of banks from other states and the branching of banks within states, which intensified competition, boosted bank efficiency, and enhanced the effectiveness of credit allocation (Jayaratne and Strahan, 1998; Hubbard and Palia, 1995). These improvements in the banking industry lowered barriers to the entry of new firms within nonfinancial industries, intensifying competition throughout the economy. Critically, this research does not just show that bank deregulation enhanced the efficiency of the banking sector. It shows that more efficient banks boosted the contestability and competitiveness of nonfinancial industries.

Combining these two lines of research, we argue that if racial prejudices create a racial wage gap, then Becker's (1957) theory of racial discrimination predicts that bank deregulation that intensifies product and labor market competition will reduce the manifestation of those racial prejudices on wages, boosting the relative wages of black workers. Thus, a deregulatory-induced improvement in the banking system will boost blacks' relative wages and enhance their economic opportunities in economies where racial prejudices were repressing blacks' wages. From this perspective, more competitive, efficient banks can expand the economic opportunities of a historically repressed group by altering labor market conditions.

By rigorously linking the analyses to Becker's (1957) theory of discrimination, our research better identifies how banks indirectly influence racial discrimination through their effects on labor markets. Becker's model implies that financial regulation that intensifies product market competition will reduce racial discrimination in states with a sufficiently high degree of racial prejudice. According to this theory, competition will not

boost blacks' relative wages in states in which racial prejudices were not depressing blacks' relative wages. This is tested explicitly by differentiating states by their degree of racial prejudice. From the 1970 U.S. census, we compute the predicted rate of racial intermarriage based on individual and state characteristics. The difference between the predicted rate of intermarriage that would emerge with no racial biases and the actual rate—the racial bias index—is used as a proxy for the state's degree of racial prejudice. Although imperfect, this racial bias index captures marriage decisions made far before the period of bank deregulation. Furthermore, as shown in Levine, Levkov, and Rubinstein (2013), the results are robust to using survey-based measures of racial attitudes from Charles and Guryan (2008).

The results from Levine, Levkov, and Rubinstein (2013) illustrated below are striking: bank deregulation that intensified competition among nonfinancial firms substantially reduced racial wage discrimination by reducing the manifestation of racial prejudices on blacks' relative wages. Moreover, consistent with Becker's (1957) theory of racial discrimination, bank deregulation increased blacks' relative wage rates only in "economies, " i.e., U.S. states, where racial prejudices had been depressing blacks' wages. Specifically, in states with above the median level of the racial bias index, bank deregulation eliminated about one-third of the initial racial wage gap after five years. But, in states with below the median level of the racial bias index, the intensification of product market competition triggered by bank deregulation had little impact on the relative wages of black workers. Thus, while bank deregulation boosted the intensity of competition among nonfinancial firms in both high and low racial bias states, there is a positive association between blacks' relative wages and bank deregulation only in high racial bias

states. These results are fully consistent with Becker's theory of racial discrimination, using bank deregulation as an exogenous source of variation in product market competition.

Several sensitivity tests confirm these findings. First, blacks' wages rise relative to comparable white workers within the same occupation and industry. Second, bank deregulation boosted blacks' relative wages in particular, not the relative wages of comparatively low-income workers in general. Third, the results hold after accounting for state and year fixed effects, which controls for all national influences, as well as state-specific factors. Fourth, as demonstrated by Levine and Rubinstein (2013), the results are stronger for bank-dependent industries: Bank deregulation boosted blacks' relative wages only in industries that rely heavily on bank financing, within high racial bias states. The results imply that competition boosts blacks' relative wages by eroding the adverse effects of racial prejudices on the relative demand for black workers.

Banks, and hence bank regulations, exert a powerful influence on economic opportunities. Beyond making loans or selling other financial services directly to a few people, banks can influence product and labor markets and therefore indirectly influence the economic lives of virtually all workers. As illustrated below, regulatory changes that intensified competition among banks also boosted product market competition among nonfinancial firms and increased the relative demand for a historically repressed group in the United States. Financial deregulation reduced racial inequality by diminishing the impact of racial bigotry on labor market opportunities.

2. Bank Deregulation and Competition in Nonfinancial Industries

A considerable body of evidence highlights the validity of treating U.S. bank deregulation from the mid-1970s through the mid-1990s as an exogenous source of variation in the competitiveness and efficiency of the U.S. banking industry. Geographic restrictions on banking protected local banks from competition for much of the 20th century. This created a powerful lobby for maintaining those restrictions. By the 1970s, however, several technological innovations (discussed by Levine, Levkov, and Rubinstein, 2013, and others) lowered the costs of using distant banks. This reduced the value of lobbying for the maintenance of regulations restricting the geographic expansion of banks both within states and across state boundaries. As these lobbing efforts weakened, states deregulated geographic restrictions on banking between the mid-1970s and 1994, when the Riegle-Neal Act essentially eliminated them. Research also indicates that the forces driving the state specific timing of the removal of these geographic restrictions were exogenous to competition in the nonfinancial sector and the racial wage gap. The timing of deregulation was not shaped by new firm formation (Black and Strahan, 2002, Kerr and Nanda, 2009), the degree of earnings inequality (Beck, Levine, and Levkov, 2010), the nature of labor unions (Levkov, 2012), or the racial wage gap (Levine, Levkov, and Rubinstein, 2013). Levine, Levkov, and Rubinstein (2013) provide the dates when each state removed regulatory limits on intrastate branching and interstate banking.

Deregulation increased competition within the banking sector. Intrastate deregulation allowed banks to open branches across markets within a state. Interstate deregulation allowed banks to purchase, and in some cases, open new subsidiaries in other

states. Bank deregulation reduced interest rates on loans, raised them on deposits, lowered overhead costs, and shrunk the proportion of bad loans (Jayaratne and Strahan, 1998).

Furthermore, by enhancing the efficiency of the banking industry, bank deregulation reduced entry barriers facing nonfinancial sectors firms, which intensified competition throughout the economy. Black and Strahan (2002) show that deregulation helped entrepreneurs start new businesses, with the rate of new incorporations per capita in a state increasing by six percentage points following deregulation. Kerr and Nanda (2009) show that deregulation both increased the number of new start-ups and the rate of firm exit, suggesting that bank deregulation increased contestability and competition within nonfinancial industries.

3. Blacks' Relative Wages and the Racial Bias Index

Since Levine, Levkov, and Rubinstein (2013) provide extensive details on the construction of the relative wages of black workers and the racial bias index, here we simply summarize these data. The U.S. Current Population Survey (CPS) provides data on wages and worker traits. We start in Survey year 1977 because that is when the CPS reports information on each person's state of residence. We restrict the sample to non-Hispanic white and black civilian males between the ages of 18 and 65.

We define the relative wage rate of a black worker, *i*, in state *s*, during year *t* (R_{ist}) as the difference between the wage rate that a white worker with identical experience and educational traits would earn in the same industry and occupation and the black worker's actual wage rate. To construct R_{ist}, we run Mincerian wage regressions for all white workers where the regressors are years of completed education, potential experience,

dummy variables for occupation, industry, and state, and where we run these regressions separately for each year, so that the estimated coefficients on education, experience, and the dummy variables vary over time. We then use these estimated coefficients along with the actual traits of each black worker to compute the wage rate that a white worker with identical traits would earn on average. Finally, the difference between this estimated wage rate of a white worker with identical traits as a black worker and the black worker's actual wage is our estimate of the relative wage rate of each black worker, R_{ist}.

We also develop a measure of the degree of racial prejudice in each state. Recall, that one implication of Becker's (1957) theory is that an intensification of competition will only boost blacks' relative wages in economies in which racial prejudices materially influence labor markets. If racial prejudices do not repress the relative wages of black workers, then intensified competition will not boost blacks' relative wages within the confines of Becker's (1957) theory.

To examine this prediction, we construct a racial bias index for each state based on racial intermarriage in 1970. The racial bias index equals the difference between the rate of intermarriage that would exist if married people were randomly matched and the actual intermarriage rate. Larger values of the racial bias index indicate that intermarriage occurs less in practice than if marriage pairings were random. We interpret larger values as indicating greater racial bias. As shown in Levine, Levkov, and Rubinstein (2013), we obtain the same results discussed below when using (1) a racial bias index that accounts for education and age in forming a "predicted" intermarriage rate or (2) subjective, survey measures of racial attitudes.

Armed with this racial bias index, we assess whether an intensification of competition influences blacks' relative wages in states with higher values of the racial bias index. For simplicity, we illustrate the findings using the median. Thus, we define states with above the

median value of the racial bias index as high racial bias states and states with below the median value as low racial bias states.

4. Results

4.1. Prerequisites

Our empirical strategy assumes that racial inequality did not affect the timing of bank deregulation across the U.S. Figure 1 validates this assumption, as neither the level of blacks' relative wages before deregulation (Panel A) nor the rate of change in blacks' relative wages before deregulation (Panel C) predict the timing of interstate bank deregulation. Similarly, Panels B and D show that neither the level nor the rate of change in blacks' relative wages predicts the timing of intrastate bank branch deregulation.

The empirical strategy also assumes that bank deregulation intensified competition among firms in nonfinancial industries. As discussed in the Introduction, a substantial body of research demonstrates that bank deregulation spurred the entry of new, nonfinancial corporations. Levine, Levkov and Rubinstein (2013) provide additional evidence on the dynamics between deregulation and competition. Here, Figure 2 illustrates the link between interstate and intra state bank deregulation and subsequent rates of new incorporations.

Figure 2 shows that bank deregulation increases the rate of new incorporations. Specifically, Figure 2 depicts the year-by-year relationship between the natural logarithm of new incorporations in state *s* during year *t* (N_{st}) and both forms of bank deregulation. The figure starts nine years before each form of deregulation and traces out the relationships until nine years after each form of deregulation. Year zero is the year that each particular state started removing inter and intra state banking restrictions respectively. We omit this year from the figure. We control

for state and year fixed effects, so that the figures provide a picture of the relationship between bank deregulation and the rate of new incorporations for the average state.

Figure 2 illustrates three key points. First, interstate and intra state boost the rate of new incorporations, suggesting that these forms of bank deregulation intensified competition among firms in nonfinancial industries. Second, there is a dynamic relationship: the impact of bank deregulation on competition among nonfinancial firms emerges over at least five years. Thus, we should also expect the impact of bank deregulation on the relative wages of black workers to also emerge dynamically. Third, bank deregulation boosted competition in high and low racial bias states, though the marginal impact of intrastate deregulation on the rate of new incorporations in low racial bias states is less pronounced than in high racial bias states. Thus, we can test whether an exogenous intensification of competition only boosts blacks' relative wages in high racial bias states.

4.2. The Impact of Deregulation on the Blacks' Relative Wages

In this section, we examine the dynamic relationship between bank deregulation and the relative wages of black workers. As with the figures relating bank deregulation to new incorporations, we trace out the year-by-year relationship between deregulation and blacks' relative wages using the same procedure employed to create Figure 2.

Consistent with our approach of using Becker's (1957) theory of racial discrimination, we separately examine the impact of bank deregulation on blacks' relative wages in states with above the median value of the racial bias index and in states with below the median value. In Panel A of Figure 3, the subsample includes states with above the median values of the racial bias index. Panel B reports the dynamic relation between the relative wage rates of black workers and bank deregulation for the subsample of states with below the median values. The dashed line

depicts the evolving impact of interstate bank deregulation on blacks' relative wages. The solid line illustrates the dynamical relationship between intrastate bank branch deregulation and blacks' relative wages.

Figure 3 illustrates two major messages emerging from the more formal analyses presented in Levine, Levkov, and Rubinstein (2013). First and foremost, interstate and intrastate bank deregulation exert a much bigger impact on blacks' relative wages in high racial bias states than in states with below the median values of the racial bias index. Following interstate bank deregulation, blacks' relative wages rise over time in high racial bias states. But, blacks' relative wages to not rise after interstate bank deregulation in states with below the median values of the racial bias index. Besides being fully consistent with Becker's theory of racial discrimination, these results are fully consistent with the view that bank regulatory reforms that spurred competition among banks—and hence among nonfinancial firms—reduced the adverse manifestation of racial prejudices on the economic opportunities of black Americans.

Second, the impact of deregulation on blacks' relative wages grows over time in a manner that is fully consistent with the dynamic relationship between deregulation and competition among nonfinancial firms. As illustrated in Figures 2 and 3, both competition among nonfinancial firms and blacks' relative wages rose in the five years following deregulation, as predicted by Becker's view of competition and racial discrimination. These findings indicate that bank regulatory reforms that intensified competition reduced racial inequality.

4.3. Extensions

Several extensions of these analyses firms the finding that banking policies that encouraged competition reduced racial inequality in America. First, while Figures 2 and 3,

illustrate the close relationship between bank deregulation, competition, and blacks' relative wages, they do not formally use bank deregulation as an instrumental variable to identify exogenous sources of variation in competition among firms in nonfinancial industries and then trace the effects through to blacks' relative wages. Thus, while the figures are illustrative, they do not provide direct evidence on the underlying causal mechanisms. Levine, Levkov, and Rubinstein (2013) provide these assessments and also demonstrate the validity of the identification strategy. They confirm the message from Figures 2 and 3: Bank regulatory reforms that intensified competition both among banks and firms in financial industries reduced the manifestation of racial prejudices on blacks' relative wages.

Second, a major potential concern is whether deregulation boosted blacks' relative wages or the relative wages of lower-income workers. We know from Beck, Levine, and Levkov (2010) that bank deregulation exerts a disproportionately positive impact on the poor. We also know that blacks are on average comparatively poor. Thus, our current analyses could reflect this income distributional effect, rather than the impact of bank deregulation and competition on blacks in particular.

In extensions reported in Levine, Levkov, and Rubinstein (2013), however, we argue that these concerns are invalid. First, recall that bank deregulation boosted blacks' relative wages only in high racial bias states, but bank deregulation boosted the relative incomes of lower income workers in all states. This suggests that our results do not simply reflect the tightening of the distribution of income.

Second, and most directly, we perform a rank analysis and compare the change in blacks' relative wages with those of comparable whites across the full distribution of relative wage rates. If deregulation is simply helping the poor, we should not see that blacks converge toward whites

at each point in the wage distribution. But, as shown in Figure 4, the results show that bank deregulation, and the accompanying boost in competition in nonfinancial industries, disproportionately helped black workers across the full distribution of wages in high racial bias states. Figure 4 shows the rank plot for the high racial bias states, and for the sample of states with below the median level of the racial bias index. The solid and dashed lines represent the location of blacks within the conditional log hourly wage distribution of whites before and after deregulation respectively. The median black among the high racial bias states, for example, corresponds to the 28th percentile white worker prior to deregulation and the 32nd percentile white work after deregulation. The median black, therefore, gained four ranks in the white wage distribution as a result of deregulation, but only in high racial bias states. Consistent with the earlier results, there is little change in relative wage rates in the low racial bias states. These results suggest that deregulation exerted a particularly pronounced effect on black workers.

5. Conclusions

In this paper, we find that U.S. bank regulatory reforms that enhanced competition among nonfinancial firms reduced the manifestation of racial prejudices on the demand for labor and raised the wages of black workers toward those of equally productive white workers. Our research emphasizes the role of indirect channels. We do not find that banks reduced racial inequality by lending more to African Americans. Rather, we find that bank regulatory reforms that fostered competition reduced the adverse effects of racial bigotry on labor markets, expanding the economic opportunities of a historically repressed group.

Our analyses indicate that banking reforms—and hence banks—shape the economic environment in which people work and search for work (Beck, Levine, and Levkov, 2010;

Levine, Levkov, and Rubinstein, 2013; Levine and Rubinstein, 2013; and Levkov, 2012). By affecting the barriers facing the entry of new nonfinancial firms, banks influence product market competition and hence the demand for labor in non-financial sectors. This highlights the powerful influence of banks on the economic opportunities of virtually all individuals, including people with no entrepreneurial tendencies.

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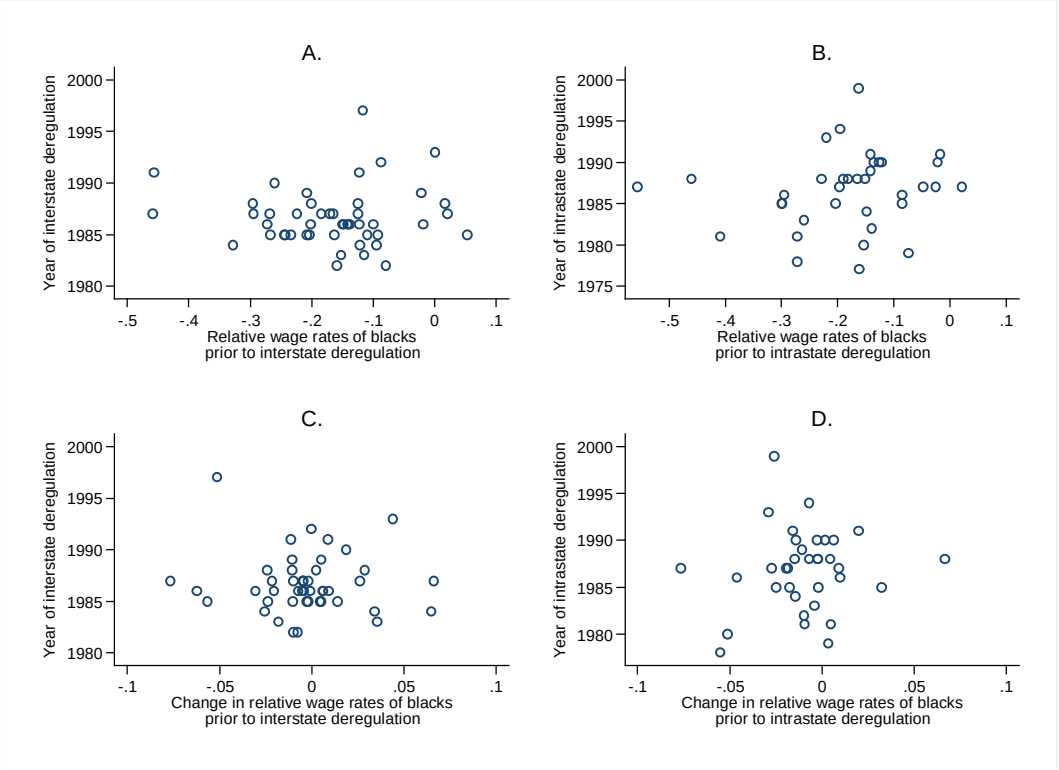
Figure 1

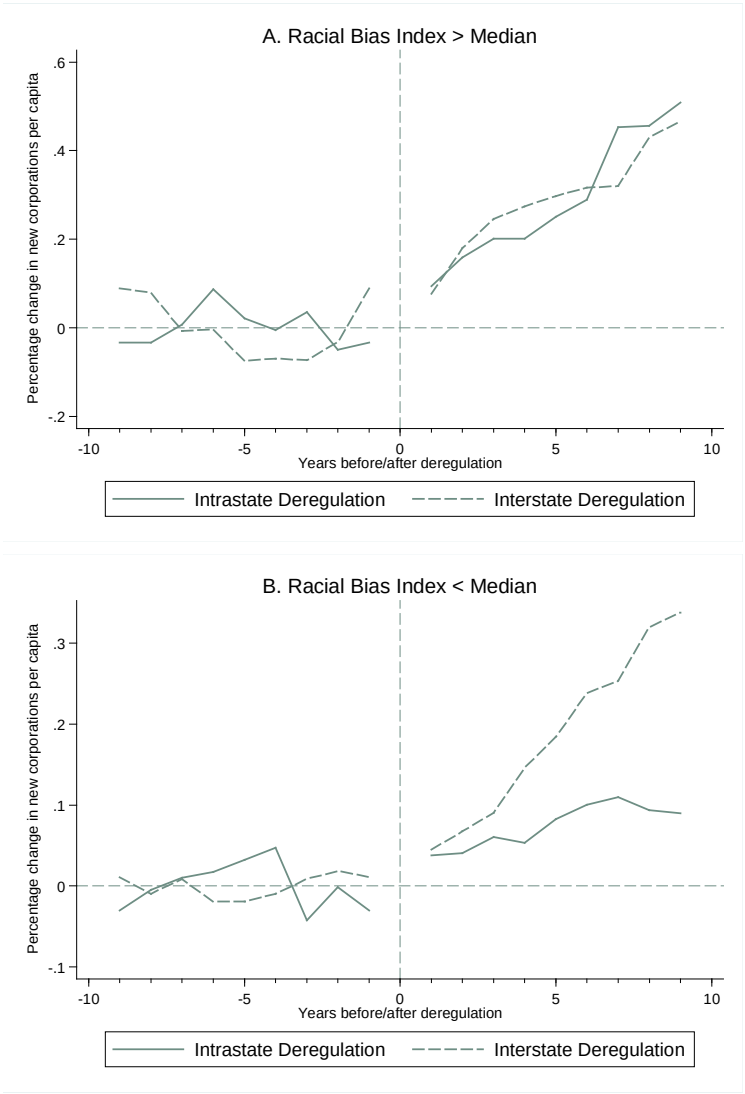
TRENDS AND INNOVATIONS IN THE RELATIVE WAGE RATES OF BLACKS PRIOR TO BANK DEREGULATION



NOTE – Figures A and B plot the year of bank deregulation against the average black-white wage differential prior to deregulation. In Figure A we consider years prior to interstate deregulation. In Figure B we consider years prior to intrastate deregulation. Figures C and D plot the year of bank deregulation against the change in the black-white wage differential prior to deregulation. In Figure C we consider years prior to interstate deregulation. In Figure D we consider years prior to intrastate deregulation.

Figure 2

THE IMPACT OF DEREGULATION ON ENTRY OF FIRMS



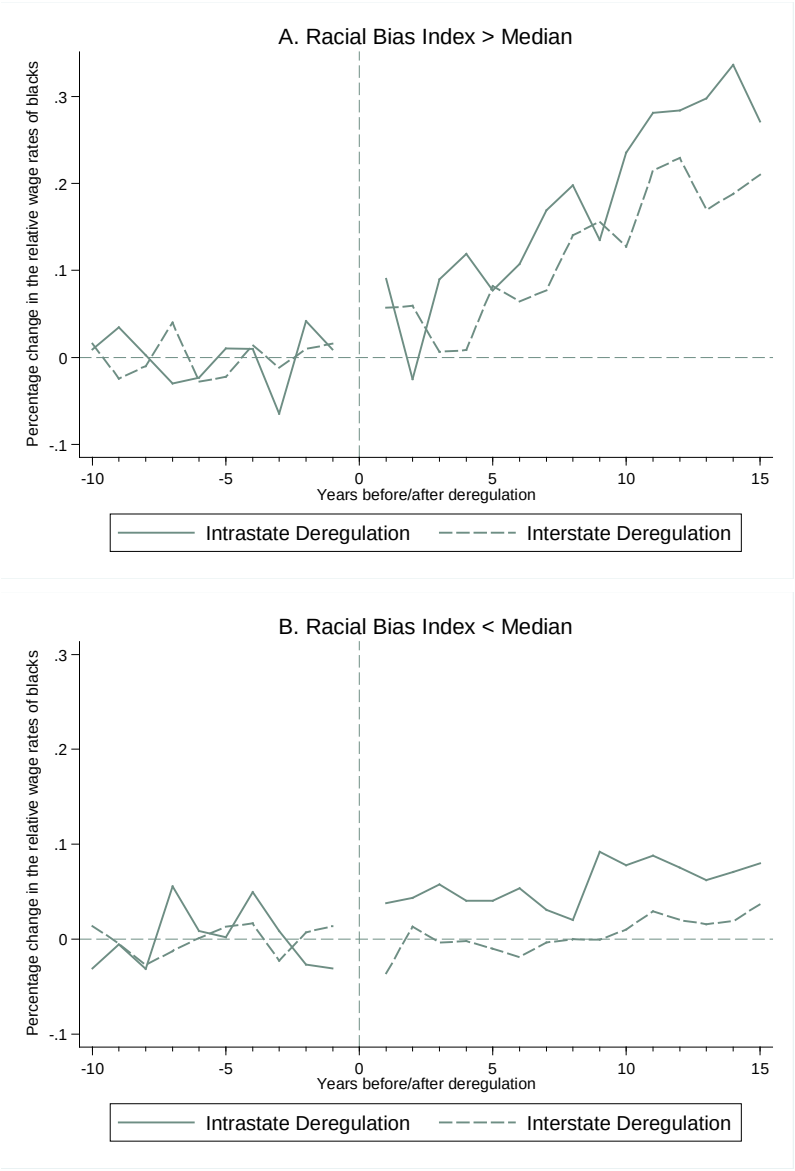
SOURCES – Data on new corporations per capita are taken from Black and Strahan (2002). Dates of intrastate and interstate deregulations are taken from Kroszner and Strahan (1999).

NOTE – The figures plot the impact of interstate and intrastate bank deregulations on log new corporations per capita. The upper figure is for states with racial bias index above the median. The lower figure is for state with racial bias index below the median. We consider an 18 years window spanning from 9 years before deregulations until 9 years after deregulations. The solid lines represent the impact of intrastate deregulation on log new per capita. The dashed lines represent the impact of interstate deregulation on log new corporations per capita. Specifically, we report estimated coefficients from the following regression:

$$Y_{st} = \alpha + \beta_1 Intra_{-9} + \gamma_1 Inter_{-9} + \beta_2 Intra_{-8} + \gamma_2 Inter_{-8} + \ldots + \beta_{18} Intra_{+9} + \gamma_{18} Inter_{+9} + \delta_s + \delta_t + \varepsilon_{st}$$

Y_{st} is log new corporations per capita in state s and year t. $Intra_{-j}$ equals one for states in the j^{th} year before intrastate deregulation and equals zero otherwise. $Intra_{+k}$ equals one for states in the k^{th} year after intrastate deregulation and equals zero otherwise. Similarly, $Inter_{-j}$ equals one in states in the j^{th} year before interstate deregulation and equals zero otherwise. $Inter_{+k}$ equals one in states in the k^{th} year after interstate deregulation and equals zero otherwise. δ_s and δ_t are state and year fixed effects, respectively. We exclude the year of intrastate and interstate deregulation, thus estimating the dynamic effect of deregulation on log new corporations per capita relative to the corresponding year of deregulation. We de-trend the coefficients by prior trends and normalize their average prior to deregulation to be zero. The estimates are weighted by the number of black workers.

Figure 3
THE IMPACT OF DEREGULATION ON THE RELATIVE WAGE RATES OF BLACKS



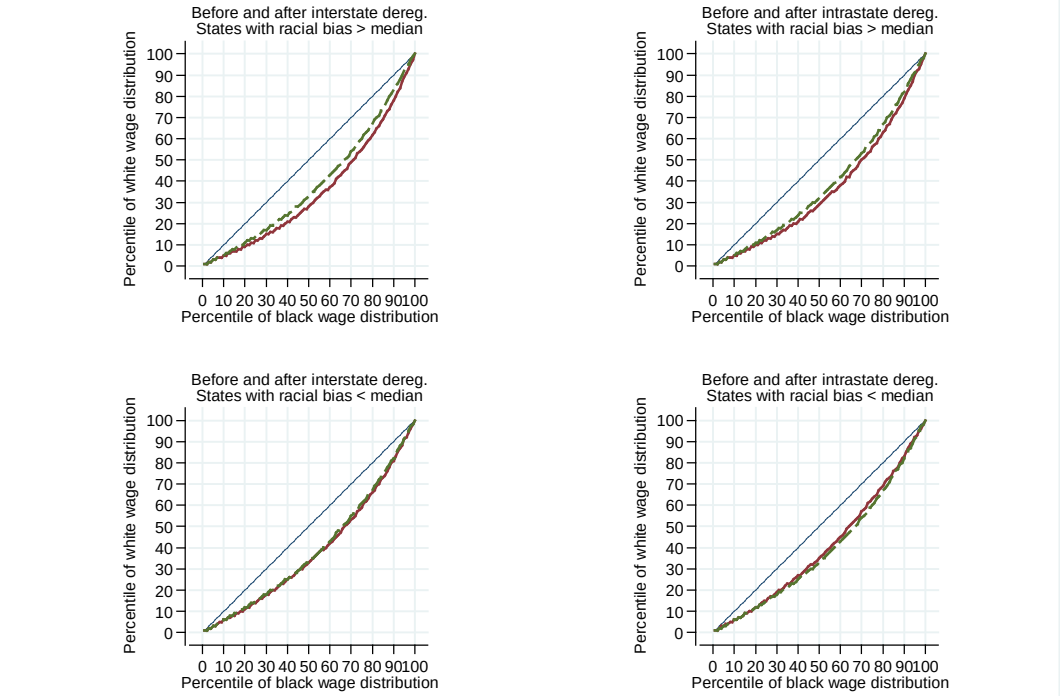
NOTE – The figures plot the impact of interstate and intrastate bank deregulations on the relative wage rates of blacks. The upper figure is for states with racial bias index above the median. The lower figure is for state with racial bias index below the median. We consider a 25 year window, spanning from 10 years before deregulation until 15 years after deregulation. The solid lines represent the impact of intrastate deregulation on the relative wage rates of blacks. The dashed lines represent the impact of interstate deregulation on the relative wage rates of blacks. Specifically, we report estimated coefficients from the following regression:

$$\hat{R}^{B}_{ist} = \alpha + \beta_1 D^{-10}_{st} + \beta_2 D^{-9}_{st} + \ldots + \beta_{25} D^{+15}_{st} + \delta_s + \delta_t + v_{ist}$$

The D's equal zero, except as follows: D_{-j} equals one for states in the j^{th} year before deregulation, while D_{+j} equals one for states in the j^{th} year after deregulation. We exclude the year of deregulation, thus estimating the dynamic effect of deregulation on the relative wage rates of blacks relative to the year of deregulation. We de-trend the coefficients by prior trends and normalize their average prior to deregulation to be zero. The estimates are weighted by the number of black workers.

Figure 4

THE LOCATION OF BLACKS IN THE WHITE WAGE DISTRIBUTION BEFORE AND AFTER DEREGULATION



NOTE – The figures provide rank analyses and compare the change in black workers' relative wages with those of comparable whites across the full distribution of wage rates, before and after bank deregulation. The results in the plots were obtained using the following procedure: First, we calculate residuals for black and white workers from equation (7) in Levine, Levkov, and Rubinstein (2013). We keep 100 black workers, each corresponding to a different percentile of black workers' relative log hourly wage distribution. Next, we calculate their position in the white workers' log hourly wage distribution. We repeat this procedure before (solid line) and after (dashed line) inter- and intrastate deregulations. The upper figures refer to states with racial bias index above the median. The lower figures refer to states with racial bias index below the median. We use sampling weights in all estimations.