

The Impact of World War II Antidiscrimination Policy on Relative Black Employment in Pennsylvania

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Abstract

This paper assesses the contribution of the World War II antidiscrimination movement to the dramatic relative gains of black workers in Pennsylvania's manufacturing and mining sector that occurred during the 1940s. During the war, public leaders and the press spoke out against discrimination, and President Roosevelt signed an executive order prohibiting discrimination among defense contractors. Using new annual industry-specific employment data, this study finds that the antidiscrimination movement contributed to black workers' extraordinary relative gains. However, most gains were due to other factors such as tight labor markets.

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1 Introduction

During the 1940s, black workers experienced relative gains that surpass those of any other decade since. The percentage reduction in the black-white income gap during the 1940s was over twice that of the 1960s (Smith and Welch 1989, p. 522).² A significant portion of these gains was due to black workers moving into manufacturing and mining jobs in the North. Among nonfarm workers during the 1940s, between 9 and 11 percent of the reduction in the black-white income gap can be attributed to the movement of black workers into new occupations and industries (Maloney 1994, p. 371). According to evidence from the Palmer survey, black workers that had been employed by defense industries during World War II and were still employed by these industries in 1950, earned about a 14 percent premium over observationally similar black workers employed in other industries (Collins 2000). Potentially aiding black economic progress during the war was an antidiscrimination movement stemming in part from a sentiment that employment discrimination was an impediment to war production. Public figures and the press spoke out against discrimination, and President Roosevelt signed an executive order prohibiting employment discrimination among defense contractors. This paper explores the degree to which the integration of black workers into the Pennsylvania manufacturing and mining sector was influenced by these antidiscrimination forces targeted primarily at America's defense contractors.

During World War II, the first federal government agency designed to fight racism in employment, the Fair Employment Practice Committee (FEPC), was created.

² During the 1960s the increase in the black-white income ratio was about 11 percent while that of the 1940s was 24 percent (Smith and Welch 1989, p. 522).

William J. Collins (2001), in the first quantitative study exploring the effects of the FEPC, presented empirical evidence from city-level FEPC caseload data that this agency helped black workers find employment in high-wage World War II defense industries. To identify the effect, Collins (2001) instrumented for the number of FEPC cases. The need for instruments is due to the fact that the number of FEPC cases was likely affected by resistance to black employment which is an omitted variable. Collins's study also required the compilation of an innovative dataset. One significant data limitation that Collins did not address was that the number of FEPC cases likely does not measure the total impact of Executive Orders 8802 and 9346 which made it against the law for defense contractors to discriminate on the basis of race, religion, and national origin and created the FEPC. This is because many employers likely changed their behavior as a result of the executive orders without being investigated by the FEPC.

Though Collins's (2001) study was well crafted, the difficulty in identification and the difficulty of assessing the effects of the overall antidiscrimination policy on relative black employment using caseload data justify more research on the effects of World War II antidiscrimination policy. The data set developed for this study lends itself to an identification strategy that avoids some of these pitfalls. For this study, race-specific industry-level employment data have been combined with industry-specific data both on the proportion of establishments in the industry that were defense contractors and on the number of FEPC cases. Since whether a firm was contracting with the federal government during World War II was not a function of racial employment policies, the contractor status variable is not biased by the lack of a perfect control for resistance to

black employment.³ The contractor status variable is a relatively good measure of the overall antidiscrimination effort waged during World War II, since the movement exerted pressure almost exclusively on defense contractors.⁴

Evidence presented in this paper suggests that the antidiscrimination efforts of the federal government during World War II were successful at aiding black workers in obtaining employment in Pennsylvania's war industries. The results are consistent with the research of historians that have pointed out that the effectiveness of the FEPC seemed to have varied by geography according to the racial attitudes of the population (See Kersten 2000, pp. 47-74). Pressure from public leaders and the press that argued that war contractors who were not willing to hire black workers despite critical labor shortages were jeopardizing the war effort may also have contributed to the success in areas where the policy was successful. The effect attributed to antidiscrimination efforts targeted at war contractors accounts for at most 16.9 percent of the relative increase in black employment among manufacturing and mining wage earners in Pennsylvania, leaving a large proportion of the extraordinary gains to be explained by other factors, such as tight labor markets. Collins (2001), in contrast, attributed a much bigger effect to federal government intervention. This paper's finding of a smaller government effect is robust, given the fact that any bias due to inadequate controls for demand-side shocks and antidiscrimination efforts from non-government parties would cause a positive bias. The

³ See Section 3.2.

⁴ The executive orders creating the FEPC applied explicitly to firms contracting with the federal government. However, in practice there were a few instances where the FEPC was involved with cases that applied to non-contractors who were essential to the war effort. The Philadelphia Transit Case, discussed in this paper, is an example of a non-contracting company with whom the FEPC intervened. However, within this data set, all satisfactorily adjusted FEPC cases applied to industries that had received government war contracts.

results are also shown to be robust to any measurement error due to the specification of the contract status variable.

2 Race, Wartime Crisis, and the FEPC

During the interwar period, many concerned with black economic progress noted the fact that black workers were denied employment in certain industries and occupations (Hill 1936; Myrdal 1944, pp 291-296; Weaver 1944). It has been observed that among the unskilled, black and white workers were generally paid the same wage for comparable work in a given firm (Higgs 1977, 1989; Alston and Kauffman 2001; Fishback 1992, pp. 176-77; Margo 1995; Whatley and Wright 1990, pp. 72 & 81; Wright 1986, pp. 182-185). However, in 1940 the typical black worker earned only about 43 percent as much as the typical white worker (Smith and Welch 1989). Segregation is a factor which scholars argue significantly hampered black socioeconomic progress (see Maloney 1995; Maloney and Whatley 1995; Margo 1990, pp. 87-108; Sundstrom 1994; Wright 1986, pp. 177-97; Whatley and Wright 1990). However, during the 1940s, northern black workers were able to make significant inroads into high-wage manufacturing jobs. The reductions in occupational and industrial segregation were a significant factor in the extraordinary relative black gains of the period (Maloney 1994, Margo 1995).

The dramatic movement of black workers into the manufacturing and mining sector during the 1940s is seen in Pennsylvania's annual industry data. The 1940 census indicates that black workers were underrepresented in the manufacturing and mining

sector and were significantly overrepresented in the personal service sector.⁵ Within Pennsylvania's manufacturing and mining sector in 1916, less than 2 percent of all the employed wage earners were black. By the mid-1920s this had risen to a little over 4 percent, but by 1933 it had decreased to less than 3 percent. Between 1940 and 1944 the percentage of manufacturing and mining wage earners that were black increased from less than 3 percent to about 6.5 percent. The level of segregation within the manufacturing and mining sector also decreased during this period (Johnson 2004). Understanding why racial employment policies changed in these key industries during this period of extraordinary black progress not only helps fill an important void in black economic history, but can yield insights applicable to current policy debate.

2.1 The FEPC: Constraints and Tradeoffs

One possible source of the extraordinary relative black gains of the 1940s was the FEPC. The FEPC was a small agency with limited resources and enforcement powers and tenuous political strength. As the FEPC sought to help black workers, and perhaps garner support for its post-war existence, it faced tradeoffs. Understanding the environment in which the FEPC acted and constrains the agency faced is essential in understanding how to assess the effects it had.

Without the war and the manpower shortages it is doubtful that the FEPC would have been created. The FEPC was created after A. Philip Randolph threatened to lead

⁵ In Pennsylvania in 1940, according to the Sixteenth U.S. Population Census, 35 percent of all male white workers were in manufacturing compared to 27 percent of black workers. These two percentages for the mining sector were 9 and 4 percent for white and black workers respectively. For the personal service

one hundred thousand protesters down Pennsylvania Avenue in protest of discrimination. President Roosevelt feared that the March on Washington Movement would cause disruption in war production and greater division in the Democratic Party. He was able to negotiate an end to the movement by signing an executive order that made it against the law for government agencies and defense contractors to discriminate on the basis of race, religion, or national origin. The executive order, signed on the 25th of June, 1941, also created the FEPC to enforce the order (Reed 1991, p. 12-17). The text of the executive order suggests that the primary aim of the FEPC was to support war production. It stated that “available and needed workers [had] been barred from employment in industries engaged in war production solely by reason of their race, creed, color, or national origin, to the detriment of the prosecution of the war, the workers’ morale, and national unity” (FEPC 1945, p. 103).

Some scholars have argued that the FEPC was too weak to have contributed substantially to black economic progress (see Dalifume 1969, pp. 118-21; and Bernstein 1968, p. 298; Polenberg 1972, pp. 117-30). Since it was created by executive order it could not subpoena, fine, or jail violators and it has been argued that its small staff and limited budget were hardly equal to the task at hand (Bernstein 1968, p. 298; Polenberg 1972, pp. 117-30; Reed 1991, pp. 1-17). The powers of the committee “were mainly exhortatory” (Thernstrom 1997, p 72; also quoted in Collins 2001). If a firm was resistant to the directives of the FEPC, the committee could hold public hearings, potentially embarrassing the party, and it could recommend that the firm lose its war contract—although the latter was never actually carried out. It also could call on a

sector, 3 percent of male white workers were employed in the personal service sector compared to 13 percent of black workers.

stronger federal agency with statutory authority to step in and help (Polenberg 1972, pp. 117-30; Reed 1991, pp. 1-17).

Though the need for full manpower utilization was likely what made it politically possible to have the FEPC, the paramount objective of efficient war production was likely a primary reason behind its lack of strength. It was created to curb protest and facilitate full manpower utilization, and an overly aggressive campaign that inspired protest would not have been tolerated. Many in the press and among national leadership who were sympathetic to the plight of black workers argued that an overly aggressive movement for racial equality would be detrimental to black socioeconomic progress. The press denounced black leaders who, as Ralph McGill of the *Atlanta Constitution* stated, were “willing to pull the house down” in their quest for equality (as quoted by Polenberg 1972, p. 109). Some of the FEPC leadership argued that the FEPC should not push faster than public opinion would allow (Polenberg 1972, p. 119). Eleanor Roosevelt, a friend to the black Civil Rights cause, and Oswald Garrison, a founder of the NAACP, expressed similar sentiments about the necessity of the general black movement not moving too fast and stirring up antagonism (Brown 1942). President Roosevelt personified this public opinion. Constrained by the southern wing of his party and the goal of war production, he supported the cause of racial justice when it complemented war production but resisted the cause when it threatened to hamper production (Polenberg 1972, 108-9).

The demise of the first committee illustrated the limits of Roosevelt’s support for the FEPC. One of the FEPC’s first activities was to hold a series of public hearings investigating and exposing cases of employment discrimination. After the FEPC put southern racial prejudices on trial, protest ensued. This led to the committee being put

under the control of the War Manpower Commission (WMC), whose leader, Paul McNutt, did not like the FEPC. Most of the leaders of the FEPC saw this change in organization as an attempt to control the FEPC and subsequently resigned. With threats of black protest, a second committee was created on May 27, 1943. Though it had a larger budget and more personnel, some scholars argue that its resources were still not sufficient and that it lacked adequate enforcement powers (Bernstein 1968, p. 298; Polenberg 1972, pp. 122-3; Reed 1991, pp. 1-17).

The significant constraints that the FEPC faced likely influenced how the agency allocated its limited resources. In evidence of this, some historians have observed that the FEPC “sometimes acted not against the worst offenders but against those whose policies were already fair,” thus avoiding politically damaging resistance (Polenberg 1972 p. 117 and see pp. 121-123). Some scholars have observed that the FEPC’s success differed significantly according to geographic variation in resistance. Collins (2001) found that the FEPC was very successful in the North but was not successful in the South. Even within Northern or Midwestern states there could be a large variance in racial mores and FEPC effectiveness (see Kersten 2000). Kersten (2002, pp. 47-70) found within Indiana the FEPC had relatively little success in Gary and had even less success in Evansville but did relatively well in Indianapolis. The FEPC may have pragmatically allocated its limited resources to the places where it was having the most success and away from areas where resistance to FEPC directives could have been politically damaging.

2.2 A Multifaceted Effort and Employer Incentives

Another key to understanding the effects of the antidiscrimination efforts lies in understanding how the efforts interacted with the incentives of defense employers in the wartime environment. Despite the weaknesses of the FEPC, it is very possible that the executive order and the small dedicated agency given the task to enforce the law were successful. Donohue and Heckman (1991), faced with the task of explaining “how an apparent straw might have broken the back of Southern employment discrimination” (the straw being affirmative action during the 1960s), pointed out that “substantial numbers of Southern employers appear to have been willing to gain access to the supply of cheap black labor, but required the excuse of the federal pressure to defy long-standing community norms regarding employment of blacks.” Similarly, Collins (2001) pointed out that the FEPC may have made a difference partly because it supplied northern employers with an excuse to integrate during a time when employers’ costs of discrimination were likely rising due to tight labor markets and industry expansion. Collins also points out that the FEPC offered advice to employers on how to successfully integrate black workers into the workforce.

The federal government was not the only source of an excuse to integrate black workers. A contemporary observer, Gunnar Myrdal (1944, p. 414), noted that the failure to fully employ black workers in war production had received considerable publicity from both “Negro and white groups.”⁶ Much of the wartime publicity pointed out the

⁶ The complete quote by Myrdal (1944 p. 414) gives a pretty good sense of the pervasiveness of the news. He stated that “The failure to let the Negro participate fully in war production has not gone unnoticed. Obviously it has embittered the Negroes, and being better organized than ever before, they have known how to protest. Both Negro and white groups have been giving great publicity to the matter. There have

hypocrisy of U.S. discrimination, or argued that the war effort was hampered by the refusal of war contractors to hire the needed black workers. An article in *Fortune* stated that “One-tenth of the U.S. population still has not a full share in America’s greatest undertaking. Nine-tenths may have to pay the costs of wasteful discrimination.”⁷ Dr. Seuss drew political cartoons criticizing employers producing war munitions that complained of labor shortages but did not utilize black workers. One of his cartoons portrayed Hitler rejoicing over news of “the U.S. Labor Mess.” Another portrayed “war industry,” playing a piano using only the white keys and Uncle Sam pointing out to the “maestro” that real harmony required both the white and black keys (Mandeville 2000). The *New York Times* reported that in a public speech New York Governor Lehman referred to discriminating employers as “un-American.”⁸ The *New York Times* also reported “Miss Negro Victory Worker” awards being given for outstanding service in war production to black women.⁹ Paul McNutt, the Chairman of the War Manpower Commission, who was not favorably disposed towards the committee and is given at least partial credit for the first committee’s demise, publicly called for “unity for victory.”¹⁰

In a time when the failure to use black workers in war production could be seen as “un-American”¹¹ or as “hampering the nation’s war program,”¹² the FEPC’s ability to publicly embarrass noncompliant employers may have been an effective tool of

been a large number of reports on the subject in the daily press, in both the South and the North, as well as articles in national magazines, and pamphlets. Leading personalities like Wendell Willkie, Pearl Buck, and Eleanor Roosevelt have dealt with the problem repeatedly. This publicity, of course, never reached such proportions that the man in the street came to know about what the barring of Negroes from defense jobs really meant; but the better informed part of the public has some notion about it”.

⁷ “The Negro’s War,” *Fortune* 1942.

⁸ See “Lehman Signs Bill to End Racial Ban” 1942.

⁹ See “2 Share Negro Honor” 1944.

¹⁰ See “6,000 in Harlem Cheer War Pleas.”

¹¹ See “Lehman Signs Bill to End Racial Ban” for a 1942 *New York Times* article that uses the term “un-American” to describe war industries that discriminated.

punishment. Industry openly resented being subjected by the FEPC to public hearings that were often publicized in the nation's newspapers (see Catledge 1943). Without the exigency of national crisis and the accompanying public pressure to sacrifice for victory, the threat of public embarrassment from the FEPC might have been relatively impotent. Even if employers did not fear the threat of public embarrassment, the need for full manpower utilization for victory made it easier for firms that were eager to employ black workers to justify employing them to white racists.

2.3 Black Worker Incentives and Militancy

If black workers responded rationally to the incentives they faced during the war, their actions may offer insights into the effects of antidiscrimination policy and the wartime environment. Interestingly, a wave of black workers striking in protest of job discrimination occurred between July 1943 and December 1944. Certainly, the expected costs incurred by a striking black worker exceeded the expected costs of simply filing a complaint with the FEPC. The answer to the puzzle likely lies in the relative expected benefits of the two courses of action. The fact that the Smith-Connally Act (June 1943) made wartime strikes against the law assured a striking worker that a government agency with statutory authority would get involved. For instance, when white Philadelphia Transit workers struck in protest of the employment of black trolley operators, the Army intervened. The pragmatic need for full manpower utilization and the antidiscrimination executive orders made it likely that the law would comedown on the side of reinstating

¹² This claim was made by CIO and AFL delegates in a 1942 *New York Times* article, "Equality for Negro in War Work Urged."

black workers. Filing a complaint of discrimination with the FEPC did not create the sense of urgency that disruptive worker militancy did.

It is somewhat ironic that the increase in strike behavior occurred after the FEPC was recreated in May of 1943. It was during this period that the FEPC was the strongest. However, it was the first and weaker committee that had received the most optimistic, enthusiastic support from black leaders. When Roosevelt took actions that limited the committee in response to southern resistance, A. Philip Randolph stated that Roosevelt's actions proved the "FEPC was just a sop, an appeasement, in the first place to stop the March on Washington for jobs and justice" (as quoted in Kersten 2000, p. 40). When the FEPC was reestablished in May of 1943, it was not blessed with the same support and outpouring of enthusiasm from black leaders and newspapers that the first committee had received (Kersten 2000, p. 43). The fact that many disgruntled black workers were willing to incur the costs of striking rather than just filing a complaint with the FEPC, casts doubt on the agencies effectiveness in handling difficult cases during this period of relative FEPC strength.

3 Data, Model, and Results

3.1 Data

This study, by employing an alternative research design and data set, offers additional evidence and insight into the effects of the World War II antidiscrimination movement. The industry-specific contract status data used in this study lend themselves

to a relatively clean identification strategy. By not relying on caseload data, this study may be better suited to assess the overall effect of the executive order since many firms likely changed their behavior due to the executive order without ever being investigated by the FEPC. It also offers more insight in how the effects of the antidiscrimination effort varied across geography. This study uses race-specific employment data for 191 manufacturing and mining industries from the “Report on Productive Industries, Public Utilities and Miscellaneous Statistics of the Commonwealth of Pennsylvania,” for every year between 1916 and 1950. These data have been organized into a balanced panel spanning the 35-year period and matched with annual national union density, contract status, and FEPC case data. The data used are for wage earners only, because the Pennsylvania reports did not furnish race-specific information on salaried workers. The union densities were calculated by dividing the union membership data of Leo Wolman (1936) and Leo Troy (1965) by national employment data obtained from the United States Census. The union data are not Pennsylvania specific, but are national, and were matched up to the employment data at the level of 11 aggregate industry classifications. Since the FEPC data and contract status data were firm-level, it was possible to match these data at the finest level of industry classification.¹³

For each industry a variable equal to the proportion of establishments in Allegheny or Philadelphia County was created. This variable may be important in light of the observations made by some historians that the success of the FEPC varied by geography and that the FEPC allocated its resources away from the toughest areas to areas where it was needed the least (see Kersten 2000 and Polenberg 1972, p. 117 and 121-123). Allegheny County, where Pittsburg is located, and Philadelphia County were

¹³ See Data Appendix for more on data collection, matching, and classification.

the two most populated Pennsylvania counties. In 1940, about 73 percent of all Pennsylvania blacks resided in one of these two counties. Philadelphia County was about 13 percent black and Allegheny County was 6.3 percent black. The median county was 0.63 percent black. Consistent with this, Figures 1 and 2 indicate that the industries with a relatively large presence in Allegheny or Philadelphia County experienced the biggest relative gains during the World War II expansion. The two figures indicate that before 1940 this difference was much smaller. For these two counties, the relative increase in relative standing of blacks in the population was much smaller than that in the manufacturing and mining sector shown in Figures 1 and 2. In Philadelphia County, the population changed from 13 percent black in 1940 to 18.2 percent black in 1950. In Allegheny County, the change was from 6.4 percent to 7.5 percent.¹⁴

3.2 Regression Model and Identification

Richard Butler and James J. Heckman (1977) and Donohue and Heckman (1991) summarize a number of firm-level studies of the impact of the Contract Compliance Program, which began in 1965 with an executive order that prohibited race discrimination among federal contractors and established the Office of Federal Contract Compliance (OFCC). Each of these studies used an index of black status as the dependent variable and employed a dummy variable for whether or not the firm contracted with the federal government and other control variables. To control for the initial level of black status, each of these studies either first differenced the dependent

¹⁴ Population statistics come from the *Sixteenth Census of the United States: 1940, Population*, Vol II, Table 22 and from the *Census of the Population: 1950*, Vol II, Part 38, Tables 42 and 50.

variable or included a lag value of the dependent variable as a regressor (Donohue and Heckman 1991). The following model is a natural extension of the models used by previous scholars assessing the impact of post-1965 contract compliance with firm-level data to the World War II case using industry-level data.

$$1) \quad Pblack_{it} = \alpha_i + \alpha_1 Pblack_{it-1} + \alpha_2 EO_{it} + \alpha_3 EO_{it} * Ct_i + X_{it} \delta + \omega_i Time_t + \lambda_i Time_t^2 + \varepsilon_{it}$$

$Pblack_{it}$ is the proportion of wage earners in industry i at time t that were black. The lagged value of the dependent variable controls for the previous level of the proportion of the wage earners that were black, controlling for a number of factors influencing black employment up to that point. Industry fixed effects control for factors that differed across industry but that were constant within the industry over time. Both the lagged dependent variable and the fixed effects help control for resistance to black employment. Ct_i is the proportion of establishments in industry i that was in either Allegheny or Philadelphia County. It allows for the antidiscrimination efforts to have a different effect in the counties where blacks had already made significant inroads.

The key variable of interest is EO_{it} , the proportion of establishments in the industry that held a major war contract for the years after Executive Order 8802 was signed.¹⁵ Since the executive order only applied to defense contractors, EO_{it} is a measure

¹⁵ The first war contracts were issued in 1940, however, Executive Order 8823, outlawing racial discrimination, was not signed until July 18, 1941 and the Committee on Fair Employment Practice didn't begin public hearings until October 20th, 1941. The first were in Los Angeles. In 1942 the committee began its work in Chicago and New York. December 7, 1941 was the Japanese attack on Pearl Harbor. These facts suggest that anti-discrimination efforts aimed at war contractors with the intent of full manpower utilization really did not get into operation until very late in 1941 or early in 1942. The results, however, are robust to measures of war contractor status that begin in 1941.

of the coverage of the law.¹⁶ There are a number of reasons to believe that the proportion of an industry receiving war contracts during World War II was exogenous. The proportion of any given industry receiving war contracts was determined by inelastic wartime demand. It is possible that some firms avoided obtaining a war contract for fear they would be forced to integrate black workers, however, this behavior would only impact the mix of firms in the industry receiving contracts, not the proportion.¹⁷ Further, there is not any evidence that past racial employment practices were considered when allocating war contracts during World War II. The FEPC only investigated firms contracting with the federal government after a complaint of discrimination had been issued. Since past behavior with regard to discrimination was not considered when allocating government contracts, firms could not improve their chances of getting a government contract by hiring black workers.

Since the distribution of contracts across industry was independent of industry resistance to black employment, contract status is not biased by the omission of a perfect control for industry resistance to black employment. However, EO_{it} is not a perfect measure of the proportion of the industry covered by the law since firms within the industry differed by size. Ideally, the data needed to create a better measure would be collected. However, due to the nonexistence of the ideal data a less direct approach must

¹⁶ The executive orders creating the FEPC applied explicitly to firms contracting with the federal government. However, in practice there were a few instances where the FEPC was involved with cases that applied to non-contractors who were considered essential to the war effort. The Philadelphia Transit Case, discussed in this paper, is an example of a non-contracting company with whom the FEPC intervened. However, within this data set, all satisfactorily adjusted FEPC cases applied to industries that had received government war contracts.

¹⁷ There are a number of reasons to doubt that this type of behavior was widespread. Many of the defense industries received contracts before the creation of the FEPC and received even more before the creation of the second FEPC. This type of reaction by firms is not consistent with the observed lack of FEPC strength and limited number of satisfactorily adjusted complaints.

be taken. Under the assumption of classical measurement error the probability limit of the estimated coefficient is given by:

$$2) \quad p \lim \beta_{OLS} = \beta \frac{\text{var}(x^* | z)}{\text{var}(x^* | z) + \text{var}(\eta)},$$

where x is EO_{it} , z is the additional covariates, η is the measurement error, and β is the unknown true parameter being estimated. The ideal measure of contract status is given by

$$x^* = x + \eta. \quad \frac{\text{var}(x^* | z)}{\text{var}(x^* | z) + \text{var}(\eta)} = \lambda$$

is equal to the coefficient on X_i from a regression of

X_i^* on X_i and the other covariates (Angrist and Krueger 1998).¹⁸ If all firms in an

industry were the same size the measurement error would be zero and λ would be equal to 1. Due to differences in firm size it is likely that measurement error does exist.

However, it is also likely that the correlation between the proportion of firms in an industry contracting with the government and a more ideal measure, the proportion of an industry's workers in firms contracting with the government, is very high. As more

covariates are added the attenuation bias from the measurement error is generally aggravated since the covariates are correlated with X_i^* and not η_i , thus substantially

decreasing $\text{var}(x^*|z)$ and not $\text{var}(\eta)$. First-differencing the data also should aggravate the

measurement error (Angrist and Krueger 1998). If measurement error is a substantial

problem we should see a decrease in the size of the estimated coefficient on contract

status as we add additional controls and difference the data.

¹⁸ Even if the measurement error is not classical λ is equal to the coefficient on X_i from a regression of X_i^* on X_i and the other covariates (Angrist and Krueger 1998).

Another possible concern arises from the high correlation between contract status and demand-side shocks to the labor market. To avoid omitted variables bias the matrix X_{it} contains some controls for labor market tightness and industry expansion common in the studies looking at contractor status after the mid-1960s (see Butler and Heckman 1977 and Donohue and Heckman 1991). Each of the regressions contains time-effects that control for labor market tightness and general supply-side changes to the extent that the labor market was integrated. $\Delta \ln N_{it}$ is the annual change in the natural log of the total wage earners in the industry, capturing the relative change in employment. An interaction between Ct_i and $\Delta \ln N_{it}$ in some specifications allows industry expansion in Allegheny or Philadelphia County to have a different effect. The coefficient on EO_{it} will be biased upward if these variables do not sufficiently control for demand-side shocks. Industry specific time trends and quadratic time trends have also been included in some specifications to control for different long-run factors producing different trends.¹⁹ It is likely that the industry fixed effects and the industry-specific time and quadratic time trends are an adequate control for resistance to black employment. $Union_{it}$, the proportion of workers affiliated with a union, and the lagged dependent variable, also help control for resistance to black employment.

Due to the presence of a lagged dependent variable, not all of the explanatory variables in equation 1 are strictly exogenous (ε_{it} and $pblack_{it+1}$ must be correlated). Under the standard panel assumption of fixed T (time periods) the fixed effects estimates of equation 1 are inconsistent of order T^{-1} if the time series process is approximately stable and weakly dependent. Since the fixed effect regressions employed utilize 34 (one

¹⁹ Since the time and quadratic time trends are industry specific, they are not collinear with the year effects. See Raphael and Winter-Ebmer (2001) for a study that uses both.

year is lost due to the lag), 29, or 8 years of time series data, if the process is stable and weakly dependent, the order of inconsistency should be between about 3 percent to 12.5 percent, depending on the number of time periods used. Equation 1 can be estimated consistently under fixed T asymptotics if the data are differenced and lags of the differenced strictly exogenous variables are used as instruments for $\Delta p_{black_{it-1}}$. In this model, coefficients on the lagged dependent variable greater than 1 are no longer a concern (see Wooldridge 2002, ch. 11). Newey-West standard errors can be used for hypothesis testing in the presence of serial correlation.

3.3 Contract Status Regression Results

The regression results found in Tables 2, 3, and 4 suggest that antidiscrimination efforts aimed at the war industries had an economically and statistically significant impact on black employment. The fixed effect and first differenced estimates of the effects of contract status are very similar. To ensure that results are robust to regime changes and other long-run factors, regressions have been run for three different periods of time. Table 2 contains regression results for the period of economic expansion that is of particular interest. Focusing on the fixed-effect regression results reported in column 3, the short-run effect ($\alpha_2 + \alpha_3 * Ct_i = 0.018$ where $Ct_i = 0.486$, the mean) suggests that an increase in the percent of firms in an industry that were contracting with the government of about 2 percentage points (about a 10% increase over the 1942-1945 mean in Table 1) would increase the percentage of wage earners that were black by 0.035 percentage points, a 0.70 percentage increase over the 1938-1945 mean percentage black (5.1%).

However, the coefficient on the lagged dependent variable suggests that not all of the change would take place in the first period, but that most of the change would take over two years to occur.²⁰ The long-run effect $((\alpha_2 + \alpha_3 * Ct_i) / (1 - \alpha_1))$ suggests that a 2 percentage point change in the proportion of firms contracting with the government would produce a 0.08 percentage point change in the proportion of black wage earners, or about a 1.63 percent increase over the mean proportion black. These results are similar for the first-differenced estimates.

Figure 3 contains the dynamic recursive predictions from the estimates found in the third column of Table 2. They were calculated recursively so that the predicted value of $Pblack_{it-1}$ was used as an explanatory variable to get the next period's predicted value of $Pblack_{it}$. Counterfactual predicted values of $Pblack_{it-1}$ were also calculated to obtain an upper bound on the amount of the relative gains of black wage earners in Pennsylvania's manufacturing and mining sector that were driven by antidiscrimination efforts aimed at war contractors. The counterfactual predicted values were calculated the same way the noncounterfactual values were, except that the variable measuring the proportion of firms contracting with the government in each industry was set to zero. The results suggest that though contractor status had a significant impact, other factors such as tight labor markets were responsible for the majority of the movement of black workers into the manufacturing and mining sector. The predicted values suggest that in 1941, the industry average percentage black was 4.05 percent. By 1945 it was 7.30 percent and would have been about 6.75 percent if industry employment had expanded the way it did but yet there had been no contractor status. This suggests that

²⁰ Most of the adjustment should occur in $1/(1 - \alpha_1)$ periods (see Ramanathan 2002, pp. 442-3).

antidiscrimination efforts targeted at war contractors accounted for at most²¹ 16.9 percent of the increase in black worker representation in Pennsylvania's manufacturing and mining industries during the World War II expansion. In contrast to these results, Collins (2001) found much bigger effects. Using city-level data for the whole nation, he found that between 43 and 82 percent (depending on the estimate) of the increase in relative black employment within defense related industries could be attributed to "direct government intervention" (p. 281).

The effect of contractor status was negligible in industries where less than 48 percent (the median) of their establishments were located in Allegheny or Philadelphia County. Figure 4 shows that in these industries, being covered by the executive order did not contribute at all to relative black gains. Figure 5 shows the actual and counterfactual predicted proportion black in industries with over 48.6 percent of their establishments in Allegheny or Philadelphia County. In these industries, coverage by the executive order explains at most 30.6 percent of the relative gains.

There are a number of possible reasons why this study finds a significant smaller result than did Collins's study. The industry data used in this study made an alternative identification strategy possible. Also, Collins's study employed data for the whole nation while this paper uses data for only the state of Pennsylvania. There may also have been broad spillover effects to the FEPC's activities missed in this study but captured in Collins's. When discussing the effects of FEPC interventions, Collins (2001) stated that "These gains could be larger at the local level than at the firm level if FEPC intervention

²¹ If we have failed to fully control for the degree to which contracting industries disproportionately grew and faced tighter labor markets, the coefficient on EO_{it} will be biased upward.

at a few firms altered local hiring norms and therefore had spillover effects on other firms' hiring patterns.”

The fact that the defense contracts for World War II started in 1940 and the FEPC started closer to 1942 provides an opportunity to test whether the contractor status variable (EO_{it}) is actually picking up an effect of the antidiscrimination movement. Like EO_{it} , Con_{it} is equal to the proportion of establishments in each industry contracting with the federal government. However, Con_{it} starts in 1940 rather than 1942.²² The FE regressions are consistent with the hypothesis that contractor status only had an effect after the creation of the FEPC and United States entry into the war. However, the FD regressions suggest that contractor status had an effect before 1942, though the effect more than doubled after the creation of the FEPC.

When comparing the FE and FD IV estimates it is not clear which of two are better. Due to the presence of a lagged dependent variable, the FE estimates will be inconsistent of approximately order $1/T$, which in Tables 3 and 4 is relatively small. The FD regressions use lagged values of the strictly exogenous variables as instruments to obtain consistent estimates. The Hansen J statistic suggests that the excluded instruments are not correlated with the second-stage error term, suggesting that they are valid instruments. The first stage F-test of the joint significance of the excluded instruments suggests significance at a 5 percent level. However, since the asymptotic bias towards the OLS estimates in finite samples with weak instruments is roughly $1/F$ -statistic it would be nice if this statistic was even larger (Bound, Jaeger, Baker 1995). Because the regression models in Tables 3 and 4 use a panel covering a relatively large number of

²² $EO_{it} = Con_{it} * Year1942-45$ where $Year1942-45$ is a dummy variable equal to one for the years 1942 through 1945.

years, the FE regressions may be more reliable than the FD IV regressions. Table 4 used 29 years of data suggesting that the expected inconsistency in the FE estimates would only be about 1/29.

Comparing the estimates across specification suggests that measurement error is not significantly biasing the results. The relative long time period covered in Table 3 allows for the inclusion of industry-specific time trends and quadratic time trends. Adding this substantial number of additional controls does not significantly alter the estimated effects. The estimates from the differenced regressions with the longer time period are almost identical to those from the regressions covering the shorter 1938 to 1945 time period. The fixed effect estimates are slightly larger. The robustness of the estimates to the inclusion of a substantial number of additional controls or to the differencing of the data suggests that measurement error is not a major concern. Further, this paper's finding of an effect smaller than that found by Collins is robust to the assumption of a large amount of attenuation bias. For instance, if the variance in the measurement error was as large as the variance in EO_{it} , making the attenuation bias λ equal to .5, the true effect would be two times the size of the estimated coefficient, which is still smaller than the effects estimated by Collins.

The estimates using the data for the whole time period (see Table 4) suggest that the black gains in contractor industries were not transitory but were maintained throughout the late 1940s. The specification in Table 5 includes a variable, EO_{it} , which is equal to the proportion of firms in industry i that had contracted with the government by time t starting in 1942. So in the years after World War II, the variable equals the proportion of firms in the industry that contracted with the government in the last year of

the war. The other variable used is $EO_{it} * PostWWII_t$, which is EO_{it} interacted with a dummy variable that is 1 during the years following the Second World War (1946-1950). A negative coefficient on $EO_{it} * PostWWII_t$ would suggest that there was disproportionate relative backsliding in the contracting sector of the economy after the war. The estimated coefficient on $EO_{it} * PostWWII_t$ is not statistically different from zero, suggesting that the effects of contractor status produced a regime change. These regressions suggest that once antidiscrimination efforts aided black workers in getting their foot in the door, they were largely able to maintain their increased representation in Pennsylvania's manufacturing and mining sector, at least until 1950.

4 Conclusion

The Executive Orders creating the FEPC justified its creation on the grounds that “the Nation can be defended successfully only with the help and support of all groups within its borders” (FEPC 1947). The objective of efficient war production was thus a reason behind the FEPC's creation, but it also served as a constraint, preventing the FEPC from being too aggressive. The agency's budget, personnel, and enforcement powers were limited. Despite these constraints, the evidence presented in this paper suggests that the antidiscrimination effort waged during World War II by the FEPC and others was successful in increasing the relative number of black workers employed in Pennsylvania's defense industries. However, most of the extraordinary increase in black representation in Pennsylvania's manufacturing and mining sector (at least 83 percent) was driven by other factors such as tight labor markets. Evidence suggests that the

policies were most successful in areas where black workers had already made some inroads into the community.

The executive orders which created the FEPC, the political cartoons of Dr. Seuss, and numerous opinion editorials in the press suggested a growing unwillingness of many Americans to incur the costs of discrimination. The costs of discrimination were no longer limited primarily to the employers' pocketbooks, but these sources suggested that discrimination impacted all Americans by threatening the success of the war effort. Employers prevented from employing low-cost black labor due to the resistance of white workers now had the excuse of federal law and patriotic duty to overcome resistance to integration.²³ Employers and unions had the added motivation that came from the interaction of the FEPC's fact finding activities, the newspapers' willingness to publish the facts found, and a patriotic spirit of sacrifice shared by many. The multifaceted nature of the effort may have been a key to its success.

²³ See "The Negro Worker" 1942.

5 Data Appendix

5.1 Pennsylvania Employment Data

The race-specific industry employment data were obtained from the “Report on Productive Industries, Public Utilities and Miscellaneous Statistics of the Commonwealth of Pennsylvania” for the years 1916 to 1950. These reports were compiled from annual reports from manufacturing and mining industries by the Department of Internal Affairs. The Department of Internal Affairs had a team of field workers who conducted surveys and also kept in close contact with chambers of commerce to ensure that the department collected data on all relevant firms (Pennsylvania Department of Internal Affairs 1941, p. xvi). There were about 315 industry classifications each year. The industrial classifications are so fine that some firms produced products that should be classified in multiple industries. In cases like this the data were coded by the Pennsylvania Department of Internal Affairs according to the classification of the product that represented the firm’s largest value of manufacture (see the forward of the 1926 report). In some years there were construction industry data reported also. This study used only the data on 191 manufacturing and mining industries since these data spanned the entire 35-year time period. Dropping some industries for a balanced panel is justified by the fact some of the models required a long time series for consistency and also by the fact that there is less noise in the data for the industries for which data are available for the whole period.

The following variables were included in the reports for every year between 1916 to 1935: number of establishments, capital invested, value of manufacture, number of

white wage earners (native white), number of black wage earners, number of foreign born wage earners, number of male wage earners, number of female wage earners, number of male minors, number of female minors, total number of wage earners, number of male salaried employees, number of female salaried employees, total number of salaried employees, total number of employees, total wages paid to male wage earners, total wages paid to female wage earners, total wages paid, total salaries paid to males, total salaries paid to females, total salaries paid, and total wages and salaries paid. In 1935, the age used to classify a worker as a minor increased from 16 to 18 years old. For some of the years the state of Pennsylvania collected data on the value added by manufacture and on the horsepower used.

5.2 World War II Contract Data

The World War II contract data came from the “Alphabetical Listing of Major Supply Contracts: Cumulative June 1940 through September 1945” (Civilian Production Administration 1946). The four-volume set listed all of the firms receiving contracts of \$50,000 or more. Pennsylvania published an index containing a list of the 17,915 firms reporting data and the industrial classification for each industry (Pennsylvania Bureau of Statistics 1941). Using this index, the war contract data for Pennsylvania firms contracting with the federal government were matched up to the Pennsylvania industry employment data. It was possible to match 75.3 percent of all of the Pennsylvania firms in the World War II contract data listings with an industry in the Pennsylvania employment data. For many of the firms, it was apparent from the title or other

information furnished that the firm was not part of a manufacturing or mining industry. For some of the Pennsylvania firms found in the contract listings but not found in the Pennsylvania industry index, it was ambiguous whether the firm was part of the manufacturing or mining sector. The Department of Internal Affairs claimed that “every effort has been made to make the list of manufacturing firms complete, not only through close contact with chambers of commerce and business organizations in the principle cities, but through surveys conducted by our field force in each county of the State” (Pennsylvania Department of Internal Affairs 1941 p. xvi). The contract data were used to calculate the number of firms in each industry that were contracting with the government for the years between 1940 and 1945.

5.3 Fair Employment Practice Committee Caseload Data

The data for the FEPC came from microfilmed records held in the National Archives, “The Records of the Committee on Fair Employment Practices, Records of the Division of Field Operations.” For each close case investigated by the FEPC a 5 X 8 card was created containing the following information: name of the firm, union, or government agency charged with discrimination; industry of party charged (only sometimes reported); reason for discrimination (e.g., Negro, etc.); type of discrimination (e.g., hire, fire, promotion, working conditions, wages, etc.); sex of complainant; date of complaint; disposition (e.g., dismissed for insufficient evidence, dismissed on merits, withdrawn by complainant, satisfactory adjustment, etc); and the date the case was

closed. The information from all of the cards for Pennsylvania cases was entered into a computer-readable form.

Pennsylvania published an index containing a list of all the firms reporting data under each industrial classification for which employment data were reported (Pennsylvania Department of Internal Affairs 1941). Since the name of the firm charged with discrimination was reported on each card corresponding to a case against a private sector party, it was possible to match the FEPC cases up with industries at the most disaggregated level of classification using the index. In a few cases one firm produced products in more than one industry. In these few instances, the relevant FEPC case information was matched up to each industry for which the firm belonged.

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Figures and Tables

Table 1: Variable Means

Variable	1917-1950	1917-1945	1938-1945	1942-1945
Pblack _{it}	0.049 (0.073)	0.044 (0.068)	0.054 (0.079)	0.067 (0.089)
Pblack _{it-1}	0.047 (0.072)	0.043 (0.066)	0.048 (0.074)	0.058 (0.085)
$\Delta \ln N_{it}$	-0.001 (0.333)	0.001 (0.343)	0.044 (0.296)	0.003 (0.334)
$\Delta \ln N_{it} * Ct_i$	0.002 (0.185)	0.003 (0.193)	0.027 (0.17)	0.008 (0.205)
EO _{it}	0.055 (0.147)	0.027 (0.107)	0.113 (0.194)	0.197 (0.223)
EO _{it} * Ct _i	0.024 (0.065)	0.012 (0.047)	0.049 (0.086)	0.085 (0.099)
Con _{it}	0.059 (0.151)	0.032 (0.114)	0.133 (0.201)	0.197 (0.223)
Con _{it} * Ct _i	0.025 (0.067)	0.014 (0.049)	0.057 (0.088)	0.085 (0.099)
Union _{it}	0.237 (0.196)	0.193 (0.159)	0.343 (0.169)	0.376 (0.18)
County _i	0.486 (0.283)	0.486 (0.283)	0.486 (0.283)	0.486 (0.283)
Obs	6494	5539	1528	764

Source: See Data Appendix and text.

Notes: Standard deviations are in parenthesis.

Table 2: The Determinants of Black Employment Gains, 1938-1945

Dependent Variable: Proportion Black ($pblack_{it}$)										
	FE	FE	FE	FE	FE	FD	FD	FD	FD	FD
$lpblack$	0.58** (0.078)	0.568** (0.078)	0.573** (0.078)	0.572** (0.078)	0.573** (0.078)	0.31 (0.422)	0.362 (0.319)	0.412 (0.363)	0.403 (0.354)	0.371 (0.341)
$\Delta \ln N_{it}$	0.015** (0.007)	0.016** (0.007)	-0.006 (0.008)	-0.006 (0.008)	-0.005 (0.008)	0.016** (0.008)	0.017** (0.008)	-0.004 (0.006)	-0.004 (0.006)	-0.004 (0.006)
$\Delta \ln N_{it} * Ct_i$	.	.	0.041* (0.021)	0.041* (0.021)	0.041* (0.022)	.	.	0.043* (0.023)	0.043* (0.022)	0.042* (0.022)
EO_{it}	0.003 (0.006)	-0.025** (0.007)	-0.026** (0.007)	-0.025** (0.007)	-0.018* (0.009)	0.003 (0.013)	-0.024* (0.013)	-0.027** (0.013)	-0.027** (0.013)	-0.019 (0.012)
$EO_{it} * Ct_i$	.	0.086** (0.02)	0.09** (0.02)	0.091** (0.02)	0.074** (0.031)	.	0.086** (0.033)	0.095** (0.034)	0.094** (0.034)	0.07** (0.032)
Con_{it}	.	.	.	.	-0.011 (0.009)	.	.	.	.	-0.022* (0.012)
$Con_{it} * Ct_i$	.	.	.	.	0.021 (0.028)	.	.	.	.	0.062** (0.03)
$Union_{it}$	.	.	.	-0.012 (0.021)	.	.	.	.	-0.035 (0.029)	.
Obs	1528	1528	1528	1528	1528	1528	1528	1528	1528	1528
Hansen J	NA	NA	NA	NA	NA	0.052	0.157	0.244	0.594	0.993
First-Stage F	NA	NA	NA	NA	NA	2.70*	4.61**	3.75**	3.41**	2.94**
IV	no	no	no	no	no	yes	yes	yes	yes	yes

Source: See Data Appendix and text.

Notes: FE refers to fixed effects and FD refers to first differenced. Each regression contains year effects. Standard errors (in parentheses) have been corrected for heteroscedasticity and serial correlation using Newey-West standard errors. ** significance at a 0.05 level * implies significance at a 0.10 level. The Hansen J statistic is a specification test of the overidentifying restrictions that is consistent in the presence of heteroscedasticity and serial correlation. The First-Stage F-statistic is a joint test of the significance of the instruments excluded from the second stage regression.

Table 3: The Determinants of Black Employment Gains, 1916-1945

Dependent Variable: Proportion Black (pblack _{it})										
	FE	FE	FE	FE	FE	FD	FD	FD	FD	FD
lpblack	0.551** (0.043)	0.546** (0.043)	0.545** (0.043)	0.285** (0.045)	0.545** (0.043)	0.845* (0.509)	0.841* (0.454)	0.844* (0.454)	0.883* (0.5)	0.795* (0.426)
ΔlnN _{it}	0.01** (0.003)	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	0.014** (0.005)	0.003 (0.005)	0.003 (0.005)	0.003 (0.005)	0.003 (0.005)
ΔlnN _{it} *C _{t_i}	.	0.016* (0.009)	0.016* (0.009)	0.013 (0.009)	0.015* (0.009)	.	0.024 (0.015)	0.024 (0.015)	0.024 (0.016)	0.023 (0.015)
EO _{it}	-0.004 (0.006)	-0.036** (0.008)	-0.034** (0.008)	-0.03** (0.01)	-0.016* (0.009)	0.005 (0.015)	-0.019 (0.015)	-0.019 (0.015)	-0.021 (0.015)	-0.011 (0.014)
EO _{it} *C _{t_i}	.	0.1** (0.019)	0.1** (0.019)	0.123** (0.026)	0.079** (0.024)	.	0.077** (0.036)	0.077** (0.036)	0.084** (0.039)	0.053 (0.034)
Con _{it}	.	.	.	.	-0.02** (0.006)	.	.	.	.	-0.021 (0.013)
Con _{it} *C _{t_i}	.	.	.	.	0.022 (0.017)	.	.	.	.	0.06* (0.032)
Union _{it}	.	.	-0.009 (0.008)	.	.	.	.	-0.003 (0.016)	.	.
Obs	5539	5539	5539	5539	5539	5157	5157	5157	5157	5157
Hansen J	NA	NA	NA	NA	NA	0.035	0.622	0.744	0.617	1.532
First-Stage F	NA	NA	NA	NA	NA	3.53**	5.32**	3.29**	3.99**	3.02**
t _i & t _i ²	no	no	no	yes	no	no	no	no	yes	no
IV	no	no	no	no	no	yes	yes	yes	yes	yes

Source: See Data Appendix and text.

Notes: FE refers to fixed effects and FD refers to first differenced. Each regression contains year effects. The time trend and time trend squared (t_i & t_i²) are industry specific. ** significance at a 0.05 level * implies significance at a 0.10 level. The Hansen J statistic is a specification test of the overidentifying restrictions that is consistent in the presence of heteroscedasticity and serial correlation. The First-Stage F-statistic is a joint test of the significance of the instruments excluded from the second stage regression.

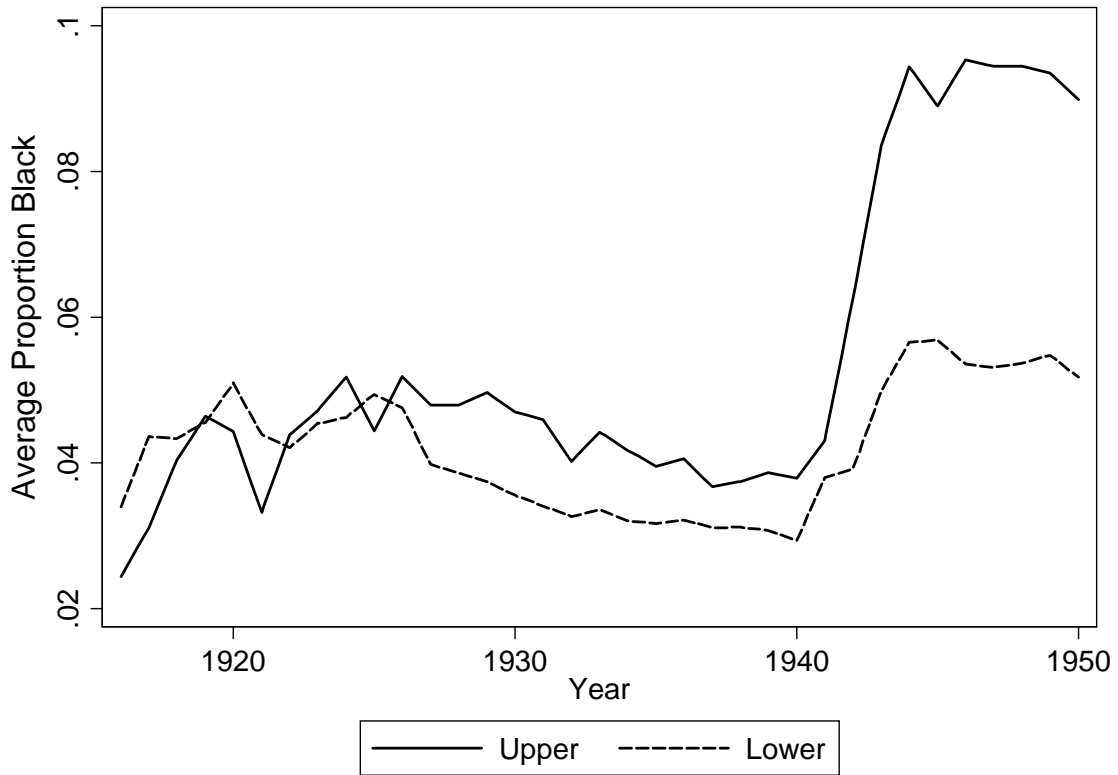
Table 4: The Determinants of Black Employment Gains, 1916-1950

Dependent Variable: Proportion Black (pblack _{it})				
	FE	FE	FD	FD
Pblack _{it-1}	0.634** (0.033)	0.342** (0.041)	0.757** (0.386)	0.782* (0.411)
ΔlnN _{it}	0.006 (0.004)	0.006* (0.004)	0.006 (0.005)	0.006 (0.005)
ΔlnN _{it} *C _t	0.013 (0.009)	0.009 (0.009)	0.019 (0.013)	0.019 (0.014)
EO _{it}	-0.030** (0.007)	-.031** (0.010)	-0.02 (0.014)	-0.021 (0.014)
EO _{it} *C _t	0.087** (0.007)	0.124** (0.026)	0.078** (0.035)	0.084** (0.037)
EO _{it} *PostwwII _t	-0.0001 (0.008)	0.002 (0.009)	-0.016 (0.015)	-0.018 (0.017)
EO _{it} *PostwwII _t *C _t	-0.024 (0.021)	-0.001 (0.023)	0.008 (0.037)	0.014 (0.043)
Union _{it}	-0.005 (0.006)	-0.011 (0.009)	-0.009 (0.015)	-0.01 (0.016)
Obs	6494	6494	6112	6112
Hansen J	NA	NA	1.814	1.9
First-Stage F	NA	NA	2.84**	2.45**
t _t & t _t ²	no	yes	no	yes
IV	no	no	yes	yes

Source: See Data Appendix and text.

Notes: FE refers to fixed effects and FD refers to first differenced. Each regression contains year effects. The time trend and time trend squared (t_t & t_t²) are industry specific. ** significance at a 0.05 level * implies significance at a 0.10 level. The Hansen J statistic is a specification test of the overidentifying restrictions that is consistent in the presence of heteroscedasticity and serial correlation. The First-Stage F-statistic is a joint test of the significance of the instruments excluded from the second stage regression.

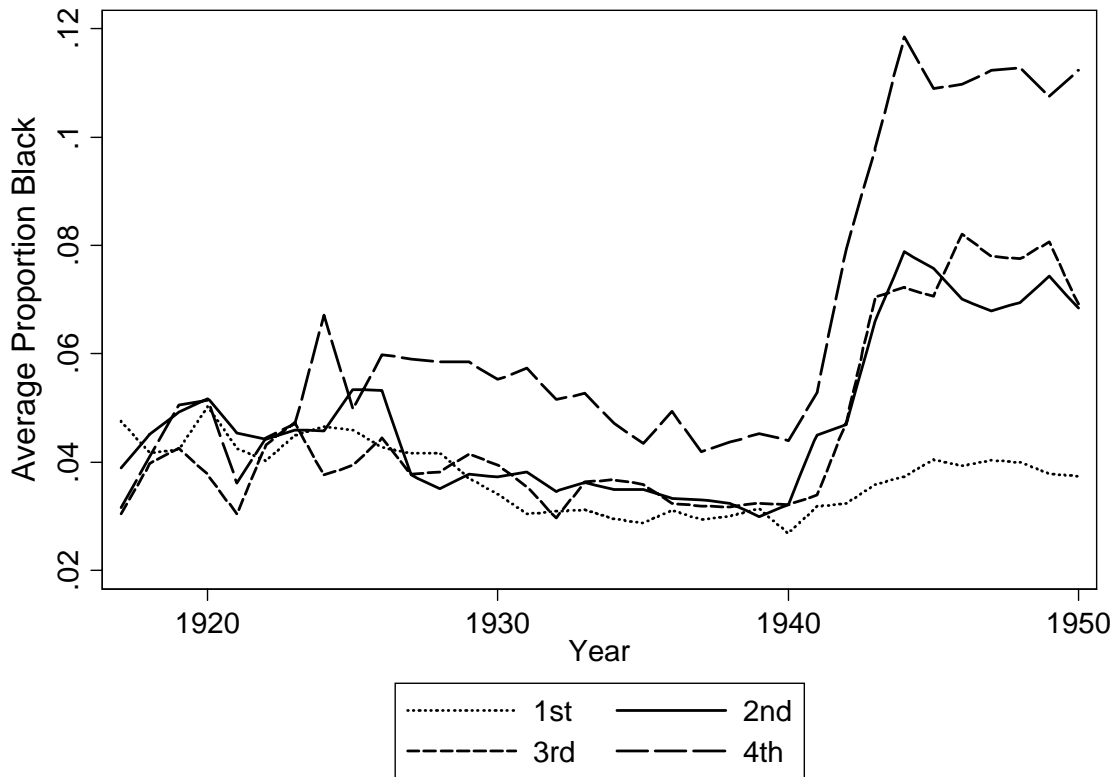
Figure 1: Average Proportion Black Divided into Halves by Allegheny and Philadelphia County Representation



Source: See Data Appendix and text.

Notes: The average proportion black was calculated for each year for two groups of industries. The two groups were divided by the median proportion of establishments in the industry in either Allegheny or Philadelphia County (.48). A balanced subset of the data was used.

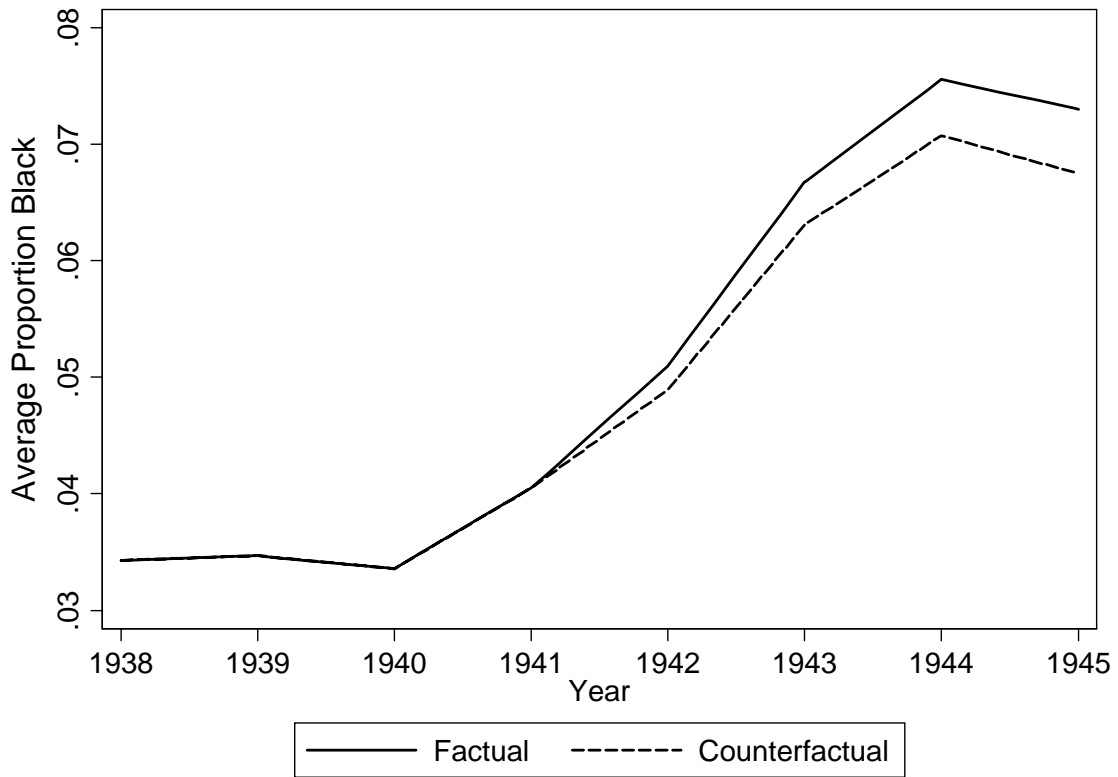
Figure 2: Average Proportion Black Divided into Quartiles by Allegheny and Philadelphia County Representation



Source: See Data Appendix and text.

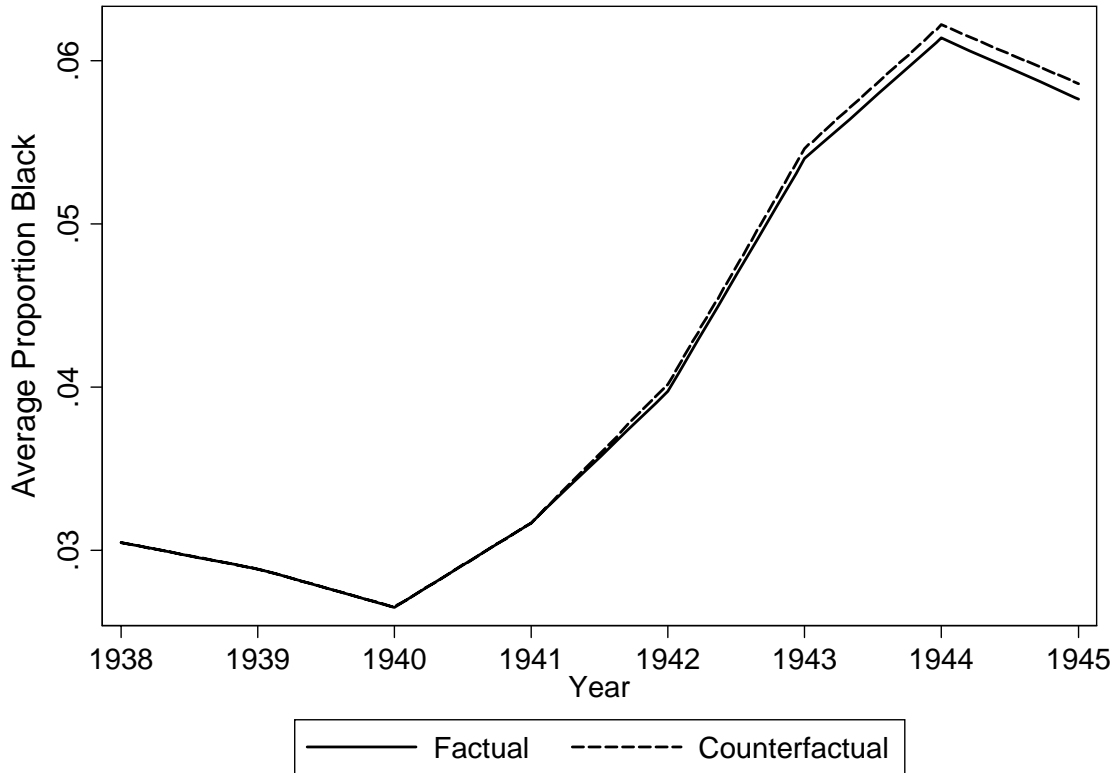
Notes: The average proportion black was calculated for each year for four groups of industries. The four groups were divided according to the quartiles of the proportion of establishments in the industry in either Allegheny or Philadelphia County (.286, .48, and .714). A balanced subset of the data was used.

Figure 3: Factual and Counterfactual Mean Predicted Proportion Black



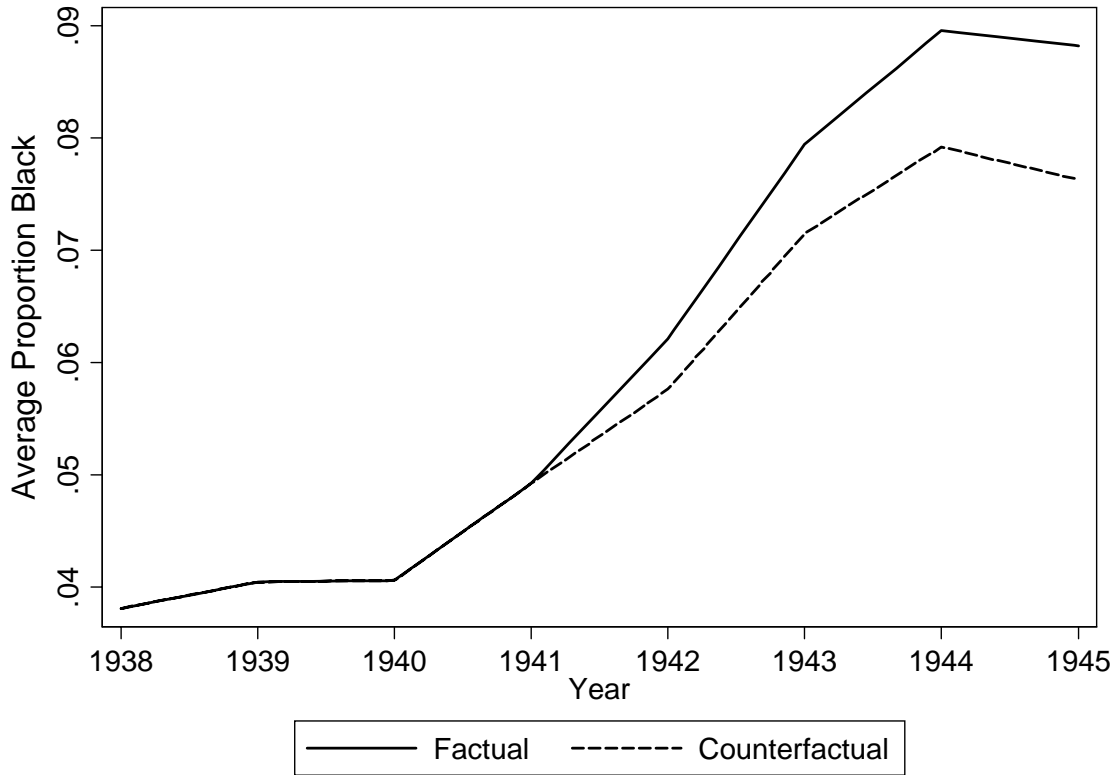
Notes: The predicted values for this graph were generated using the results from the regression reported in the 3rd column of table 3. The values for the counterfactual graph were created by constraining the proportion of firms receiving contracts in each industry to zero for each year. The whole balanced sample of industries was used.

Figure 4: Factual and Counterfactual Mean Predicted Proportion Black for Industries with a Low Allegheny and Philadelphia County Representation



Notes: The predicted values for this graph were generated using the results from the regression reported in the 3rd column of table 3. The values for the counterfactual graph were created by constraining the proportion of firms receiving contracts in each industry to zero for each year. Only industries with less than the median proportion of establishments in Philadelphia and Allegheny Counties (0.48) were used.

Figure 5: Factual and Counterfactual Mean Predicted Proportion Black for Industries with a High Allegheny and Philadelphia County Representation



Notes: The predicted values for this graph were generated using the results from the regression reported in the 3rd column of table 3. The values for the counterfactual graph were created by constraining the proportion of firms receiving contracts in each industry to zero for each year. Only industries with more than the median proportion of establishments in Philadelphia and Allegheny Counties (0.48) were used. The figure produced using only industries in the top quartile is very similar to this one.