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ABSTRACT

This chapter reviews key literature studying the effects of wars on minority and underrepresented groups in U.S. labor markets in the 20th century. These labor markets, characterized by historically pervasive barriers to entry into certain occupations and industries, promotions, and fair pay for underrepresented workers, experienced severe challenges during times of war. These challenges served to break down some of the barriers faced by underrepresented workers. Recent years have shown that sudden labor shortages, similar to those induced by large-scale wars, are not a feature of the past. Hence, a better understanding of such shortages and their effects on different groups continues to be important. The focus here is on the labor market outcomes of Black and white women, as well as Black men, during and after the two World Wars. Their labor inputs compensated for the lack of white male workers during the war years; however, only WWII generated significant and more prolonged socioeconomic progress for both groups. This chapter summarizes theoretical considerations that can explain why some war-induced labor market shocks are persistent while others are not, and the empirical literature related to the labor market experiences of women and Black workers during and after the World Wars.

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1 Introduction

Wars and violent conflicts have been a constant theme throughout human history. As marching, pillaging, and fighting armies brought death, disease, and destruction, these events often shook the institutional, cultural, and social foundations of the belligerent countries. Even though most of us today would agree that wars are terrible events that should be avoided at all costs, some of the resulting changes stemming from these misfortunes can be seen as blessings in disguise. This chapter focuses on the United States during the two World Wars of the previous century. Unprecedented in scale, the vast majority of the fighting and destruction did not occur on U.S. territory. However, war production, price controls, labor shortages, and other unintended consequences had significant impacts on the lives of Americans back then. This is particularly true for women, both Black and white, as well as Black men, who were historically disadvantaged in U.S. labor markets with respect to employment, occupational progress, and wages. The World Wars significantly disrupted these previous equilibria and broke down racial and gender barriers in the labor market. However, the experiences for these groups were substantially different in the first compared to the second World War.

This chapter provides an introduction to the study of the labor market outcomes of minority and underrepresented groups in the U.S. during the first and second World Wars. It first discusses commonly used theoretical approaches to model the impacts of wartime shocks to the labor market on different groups in terms of labor supply and demand, selection, wages, and patterns of substitution. This includes variations of the standard Roy selection model, as well as the Cobb-Douglas and the constant elasticity of substitution (CES) production functions. These models can help guide empiricists in their interpretation of results obtained from statistical analyses. In particular, issues of selection of workers into the labor market, different locations, or certain occupations and industries will become much more apparent when viewed through a theoretical lens. All of these are also issues that empirical researchers will need to consider when interpreting their data and results.

Equipped with these tools, the remainder of the chapter surveys the literature on the labor market impacts of World War I on Black and white women, and on Black male workers. World War II is then discussed maintaining the same structure. The common theme for World War I is that of disappointment. Even though both women and Black workers made significant progress in American labor markets, this tended to be short-lived. For women, this was one of the first large-scale opportunities to work in industry, but marriage-bars, discrimination, the short duration of the conflict, and displacement by returning veterans soon drove them out of these jobs. The major victory that was achieved by American women at this time was the right to vote in exchange for their service on the home front. Black workers, on the other hand, maintained their labor market gains at least until the onset of the Great Depression. Labor shortages and the end of the mass migration of Europeans to the U.S. led many Black Southerners to migrate north to leave agricultural jobs in favor of better-paying work in industry during the first Great Migration. They continued to face substantial discrimination in the North but compared to the situation in the South, migrating came with large economic gains during the wartime labor shortage, which was further amplified later by the 1918 influenza.

The second World War generated more sustained changes in the labor market outcomes for Black workers and women. While women workers were also displaced at the end of the war, this was a lesser issue for those who had at least a high-school degree or in particular sectors, such as manufacturing. Overall, the war not only changed the attitudes towards female labor among employers but it helped normalize working women in American society on a broader scale. For example, sons of women who

worked during the war years were more likely to have working wives later on themselves. Black workers made substantial socioeconomic progress too. The war restarted the Great Migration and Black men experienced large occupational gains inside and outside the South, moving from low-skilled, often agricultural work, into much better-paying semi-skilled employment. This resulted in several positive changes, including increased home ownership, education, or health outcomes among Black Americans. These insights are based on a vast body of literature, yet there is more to be done. Much work has focused its attention to Black and white women, and Black men, but other groups, including Hispanic or Native American men and women are still underrepresented in the academic discourse surrounding the labor market effects of the second World War.

In terms of the chapter's vocabulary, notice that women are not a minority group in the United States. Hence the title may at first appear to be a misnomer. It is therefore worth clarifying that the focus here is on labor markets, where women in the early and mid-twentieth century were indeed underrepresented as workers in many industries and occupations. To avoid confusion on other terms, when the following sections refer to *women*, this typically refers to white women unless otherwise stated.[1] This is mainly because white women and Black men are most often the demographic groups studied in the cited literature. Very few works on the two World Wars and their labor market effects focus on Black women alone, something I will reiterate on in the subsequent sections. Another dichotomy is between the treatment of the two wars themselves. World War II has seen significantly more scholarly attention in terms of the labor market outcomes of white women and Black men.[2] This trend is likely to continue with the release of the digitized full-count census of 1950. This preferential treatment of World War II is not just because of its prominence in American's collective memory, but the study of World War I is further complicated by the number of additional events that occurred at the same time. This includes the Great Migration, the end of the age of mass migration, and the influenza pandemic, among others.

2 Theoretical Considerations

When analyzing the impact of wars on the outcomes of underrepresented groups in the labor market, the magnitude and often even the sign of the effect can be ambiguous. The literature has put forward several useful models that can help guide empiricists in the interpretation of their results. The two main individual choices that are being affect by an exogenous war-induced shock to the labor market are their extensive and intensive margin responses. At the extensive margins, individuals choose whether or not to participate in the labor market, and which occupation or industry to select. At the intensive margin, they choose to optimize their wages and hours worked subject to their own budget and time constraints. Naturally, these are not the only constraints that are faced by disadvantaged groups, which are further tightened by racism, sexism, and other institutional features. However, these tend to be precisely the features that are likely to be shifted by shocks such as wars.

2.1 Selection into Employment and Occupations

To formalize this argument, consider a modified version of the Roy-type model developed by Borjas (1987). Assume that workers can choose between two types of occupations, a and b. These need not

[1] Likewise, when I refer to "women and Black Americans", this should be read as "Black and white women, and Black men" but consistent usage of this more accurate term would lead to excessive length of the text and repetition.

[2] When searching for "female workers" and "black workers" together with "World War I" on Google scholar leads to 602 results for studies since the year 2000; when instead searching the two first keywords together with "World War II", this yields 918 results. Closer inspection reveals that a non-trivial share of the World War II results also is included in the World War I search.

be occupations per se but could as well be the binary decision between working and not working. The model can also accommodate a continuous menu of occupations or sectors. Workers seek to maximize income y which can be expressed as $y_j = \mu_j + \epsilon_j$ for each occupation $j \in \{a, b\}$, with μ_j being the average income in a given occupation j and ϵ_j represents the individual-specific return to ability in each of the two jobs with $\epsilon_j \sim N(0, \sigma_j)$. If income is not the only factor a researcher wishes to consider, the model goes through in the same way when income is replaced with utility, for instance (see Heckman and Sedlacek, 1985). Workers either belong to the majority group m or the underrepresented group u. Lastly, assume that one job is more desirable than the other due to the wage differential $y_a > y_b$ but switching jobs from b to a is associated with a cost c_g with $g \in \{m, u\}$ which is group-specific because the underrepresented group faces additional costs due to discrimination or other factors. The probability that workers from either group transition from job b to a can be expressed as,

$$\Pr(a)_m = \Pr(y_a - c_m > y_b) = \Pr\left(\frac{\nu}{\sigma_\nu} > z_m\right) = 1 - \Phi(z_m) \tag{1}$$

$$\Pr(a)_u = \Pr(y_a - c_u > y_b) = \Pr\left(\frac{\nu}{\sigma_\nu} > z_u\right) = 1 - \Phi(z_u) \tag{2}$$

where $\nu = \epsilon_a - \epsilon_b$ is an individual's relative ability advantage across the two occupations with variance σ_ν. A worker who is relatively more talented in job b would have $\nu < 0$, for example. Workers can be talented in both occupations and more switching occurs in general if $Cov(\epsilon_a, \epsilon_b)$ is close to zero.[3] Lastly, $z_g = (\mu_b - \mu_a + c_g)/\sigma_\nu$, and $\Phi(\cdot)$ is the cumulative distribution function (CDF) of the standard normal distribution.[4] In other words, individuals move from job b to a if their standardized ability wage premium in job a is larger than the standardized switching cost. If workers' ability in job a increases, due to training after a war via the G.I. Bill for example (see Turner and Bound, 2003), or if the wage in a increases because of war-induced labor shortages (e.g. Aizer et al., 2020), then more switching from b to a would be expected for both groups m and u.

How does the war affect the switching probabilities for members of the underrepresented group? Recall that $c_u > c_m$ because of racism, sexism, or other features of the labor market that raise the costs of entering the higher paying occupation for the underrepresented group. Such a labor market equilibrium can be disturbed by wars in many ways, including labor shortages due to increased demand for labor from ramping up war production and investment in war production facilities (Fishback and Cullen, 2013; Jaworski, 2017; Rhode et al., 2018; Garin and Rothbaum, 2022), the drafting of prime-aged individuals into the military (Goldin, 1991b; Acemoglu et al., 2004; Aizer et al., 2020), or permanent labor shortages due to war casualties (Cook et al., 2022; Ferrara, 2022), direct policies to reduce labor market discrimination to alleviate such labor shortages (Collins, 2001), the restriction of prices (Rockoff, 1984; Vickers and Ziebarth, 2022), changing patterns of discrimination (Fouka, 2019), or because military service provided by a minority group affected their social standing in society or increased demand for equal treatment (Parker, 2009), among others. Given the comparative statics provided by equation (2), it is intuitive that a reduction in the switching cost c_u due to war-related factors would increase the number of workers from the underrepresented group u to enter occupation a, however, there are two additional points to consider.

[3] A negative correlation is also possible in which case one would expect strong sorting across the two occupations based on relative ability, i.e. all workers with a comparative advantage in job a would work in a while all workers with a comparative advantage in b would work in b. This will be true unless the wage differential $\mu_b - \mu_a$ is sizable as well.

[4] The last term in both equations comes from the assumption of the ability variables being distributed according to standard normals, which gives rise to the Probit formulation of the switching decision.

First, a labor demand shock should affect switching costs not only for workers from group u but also for those in group m. If switching costs can be decomposed into a group-specific cost that is only paid by the underrepresented group, k_u, and a common cost k, such that $c_m = k$ and $c_u = k_u + k$, knowledge about the pre- and post-war employment shares for each group and occupation can shed light on whether the war simply reduced the common cost or the group-specific cost. If only k is reduced due to a labor demand effect, then the relative inflow of workers into occupation a should be proportionally similar for both u and m. Conversely, if underrepresented workers saw a reduction in their group-specific cost, for instance due to a reduction in discrimination against this group, then their share in occupation a should increase relatively more, adjusting for relative group size differences during the war. This is particularly suitable for short-run settings where it is reasonable to assume that physical and human capital are essentially fixed. An example of such an analysis is provided by Ferrara (2022) in the context of wartime occupational upgrading of Black and White Southern men from low- to semi-skilled employment during World War II.

Second, if one wishes to make statements regarding the type of selection of workers from each group into occupation a, this crucially depends on assumptions made about the cost function. Up until now we have treated this cost as linear and exogenous. Assume that wages now also depend on an individual's education S such that $y_j = \mu_j + \delta_j S$, and that the return to education is higher in occupation a with $\delta_a > \delta_b$. This formulation is appealing because in actual data it is much easier to observe education than ability. If the switching cost of moving from occupation b to a is linear, as in Borjas (1987), the implication is that new workers who move into occupation a during or after the war should be negatively selected, meaning that they come from a lower part of the education distribution. Chiquiar and Hanson (2005) show that if the cost function is non-linear and also dependent on education, $\pi_g = \exp(c_g + \delta_g S)$,[5] then job switchers come from the middle of the education distribution. This formulation of the cost function introduces diminishing marginal wage returns to education. This is a useful extension of the Roy model that can accommodate the theoretical possibility that soldiers accumulate human capital during their service or via government sponsored education programs after the war.

2.2 Wages and Spillovers

Another metric that economists often use to evaluate changes in the labor market for different groups are the wages individuals earn relative to others. The previous discussion has provided a framework with which we can study the properties of workers who move into employment or across occupations and industries, outlining priors for the patterns of selection that one may expect to see in real data. It is less suited for an analysis of how the flow of workers from different groups across sectors or into the labor force affects their own group members' wages or those of members of other groups. Such spillover effects are informative as they may limit the scope for wage convergence within and between groups.

Acemoglu et al. (2004) study such effects in the context of the World War II draft and the increased labor market entry of women into formal work during the war years. They start with a simple Cobb Douglas production function, where A is technology, K is capital, L is labor, and α is the output elasticity

[5] Notice that the cost function in Chiquiar and Hanson (2005) is not group-specific but it is made so here to be consistent with the previous discussion of the model. In fact, differential changes in education may be another way in which war-related shocks may alter the occupational transition probabilities across groups.

of capital,

$$Y = AK^{\alpha}L^{1-\alpha} \tag{3}$$

$$L = [(1-\lambda)(P^{m}M)^{\rho} + \lambda(P^{u}U)^{\rho}]^{\frac{1}{\rho}} \tag{4}$$

and labor supply follows a CES production function where P^{g} is the productivity of each group, M and U are the number of majority and underrepresented workers. In their setting, these represent men and women. λ is a share parameter, and ρ is the substitution parameter.

After substituting (4) into (3) and taking first order conditions, assuming perfectly competitive labor markets, wages for each group are given as

$$w^{m} = (1-\alpha)(1-\lambda)P^{m}AK^{\alpha}(P^{m}M)^{-\alpha}\left[(1-\lambda) + \lambda\left(\frac{P^{u}U}{P^{m}M}\right)^{\rho}\right]^{\frac{1-\alpha-\rho}{\rho}}$$

$$w^{u} = (1-\alpha)\lambda P^{u}AK^{\alpha}(P^{u}U)^{-\alpha}\left[\lambda + (1-\lambda)\left(\frac{P^{m}M}{P^{u}U}\right)^{\rho}\right]^{\frac{1-\alpha-\rho}{\rho}}$$

assuming capital as fixed in the short run, taking logarithms and differentiating $\ln w^{u}$ with respect to $\ln U$ yields the elasticity of labor demand for group u,

$$\frac{\partial \ln w^{u}}{\partial \ln U} = -(1-s^{m})\alpha - s^{m}\frac{1}{\sigma_{MU}}$$

where $s^{m} = \frac{w^{m}M}{w^{m}M + w^{u}U}$ is the labor cost share of majority group workers and σ_{MU} is the elasticity of substitution between labor from each group. Suppose workers from each group are perfect substitutes, $\sigma_{MU} \to \infty$, then an increase in the number of workers in U will reduce w^{u}. For fixed capital in the short run, an increase in U implies an increase in the share of overall labor supply by group U, which is $(1-s^{m})$, and the elasticity of wages with respect to total labor supply is $-\alpha$. In other words, more labor from group U, holding the number of workers from group M fixed, means that there is less capital for each unit of labor, reducing productivity and thus wages. This is a standard result from the neoclassical labor market model, i.e. wages decline in response to an increase in labor supply.

How does an increase in U affect the wages of the other group? To see what the spillover effects are, take logs and differentiate $\ln w^{m}$ with respect to $\ln U$, which gives the cross-price elasticity of labor demand,

$$\frac{\partial \ln w^{m}}{\partial \ln U} = -(1-s^{m})\alpha - (1-s^{m})\frac{1}{\sigma_{MU}}.$$

Again, under the assumption that both capital and the number of workers from group m are fixed in the short-run, and $\sigma_{MU} \to \infty$, then wages for workers in group m also decline by $-(1-s^{m})\alpha$. However, if $\sigma_{MU} \to 0$, i.e. U and M workers are complements, then w^{m} will increase if U increases.

There are several appealing features of this model. First, it not only provides theoretical predictions regarding the wage and employment effects for inflows of different types of workers into the labor market, but the main model parameters can be estimated from publicly available micro-data such as the U.S. Census of Housing and Population. Two quantities of interest that can be estimated from a simple wage equation are the inverse of the own-price elasticity for each group of workers, as well as the inverse of the elasticity of substitution between m and u workers, which are immediately policy relevant.[6] These elasticities not only shed light on wage and employment mechanics at work in the labor market, but they

[6] See the individual-level wage regression in equation (11) in Acemoglu et al. (2004), for instance.

can also be informative on the reasons for potential political or social backlash against a certain group due to increased labor market competition (e.g. Boustan, 2016; Ferrara and Fishback, 2023).

Second, the model can accommodate interesting extensions. For instance, Acemoglu et al. (2004) consider heterogeneity among men (the m group here) with respect to their level of skill to generate predictions for how high- and low-skilled men would be affected by increased female labor force participation due to draft-induced labor shortages. This can inform which group women (the u group here) compete with the most in the labor market, i.e. whether they are a closer substitute for low- or high-skilled men during the 1940s.

Third, it can be readily combined with other models to produce richer theoretical predictions that can be tested with data. Hsieh et al. (2019) combine the Cobb-Douglas production function with CES labor inputs with the Roy selection model discussed in section 2.1 to estimate the long-run GDP growth losses stemming from gender discrimination. This extension has been applied in recent work by Aizer et al. (2020) to study the effects of World War II-related government spending and anti-discrimination policies on the occupational upgrading of Black workers. They show that 25 percent of the reduction in the racial wage gap between 1940 to 1950 can be explained by war contract allocation. Their model further allows for migration and inter-regional trade, which adds yet another layer of subtlety to this powerful theoretical framework. Taken together, the flexibility and possible empirical application of the theoretical frameworks discussed in this section explain as to why they have been popular tools in the study of the labor market effects of wars on different groups.

3 World War I

3.1 Women Workers During the Great War - Getting a Foot in the Door

At the beginning of World War I, female workers were not a novelty in the American economy. Given that labor has historically been the scarce factor in the U.S. production function, women were always an important source of labor for agriculture and they were also preferentially employed in the nascent manufacturing sector in the early 19th century.[7] Mechanization, automation, and standardization of production in the later part of the century opened more work opportunities for women. Data from the census, however, grossly overstates the growth in female employment over time. This is due to the omission of unpaid family labor, especially women working on farms or in family businesses, and self-employed board-keepers. Another reason is stigmatization of working women on part of census enumerators or the reporting household head. A broader definition of labor force participation and employment was only implemented starting with the 1940 census (Costa, 2000). It is therefore not surprising that female labor force participation did not change dramatically in response to World War I. Instead, it mostly followed trends that were established one or two generations before and that were documented by Goldin (2006). This was also because the U.S. was directly involved in the conflict for a mere 20 months and the draft was considerably smaller in size than during World War II. What did change, however, were the opportunities available to women in new types of jobs and industries which began to normalize female workers in certain occupations, a brief recognition of women's contribution to the war effort, and women's perception of their own worth in the labor market. Many of these advances were either partially or entirely reversed after the conclusion of the conflict.

[7] Examples of labor arrangements to draw women into industry, especially in the northeastern parts of the country, were the Rhode Island and Waltham systems.

The United States already helped supply England and France during the early years of the war, providing a solid industrial basis for the war production that went into full swing when the U.S. officially entered the conflict. Labor shortages created by the draft and volunteering for armed service meant that up to four million prime-aged men were missing from the labor force in 1917 and 1918. The onset of the conflict essentially ended the *age of mass migration* from Europe to the U.S. and together with the influenza pandemic, these labor shortages intensified throughout the war years. While the source of European labor had dried up, around two million Black Southerners made their way north to fill the open vacancies during the first Great Migration (see Collins, 2021). The wartime opportunities for these different groups varied significantly, a theme that will reappear in the following sections, but in general one can summarize the labor market situation for each of them in the words of Greenwald (1980): "*white women took the places of white men, while black women filled the jobs left vacant by white women and black men*" (p. 10).

This claim is supported by the data. Using information from the 1910 and 1920 one-percent decennial census files, I generated aggregate wage (Y) and employment (L) cells defined by race (Black B and white W), gender (male M and female F), age group (age 15 to 65 in bins of 5 years, a), skill group (ten categories, s),[8] census region c, and census year t. Aside from the previously-mentioned issues with census data, one would ideally also consider work experience and education in constructing the cell-level data. However, these are not available prior to 1940. I consider only U.S.-born employed workers and exclude those with an unclassified occupation, non-occupational response, or blank responses, as well as those who stated that they did not participate in the labor force. I then estimated the following equation which can be derived from a standard Cobb-Douglas production function,[9]

$$\ln\left(\frac{Y_{FWasct}}{Y_{MWasct}}\right) = \beta \ln\left(\frac{L_{FWasct}}{L_{MWasct}}\right) + \delta_a + \delta_s + \delta_t + \delta_c + \frac{\epsilon_{FWasct}}{\epsilon_{MWasct}} \tag{5}$$

where Y is the cell-level average wage income in each age group (a), skill group (s), census region (c), and census year (t). Wages are proxied with occupational income scores provided by Saavedra and Twinam (2020).[10] L is the number of workers in each cell as measure of aggregate labor supply, δ are fixed effects for age bins, skill groups, census regions, and census years, respectively. The comparison in (5) is between female white (FW) and male white (MW) workers, however, I also provide estimates for comparisons involving male Black (MB) and female Black (WB) workers. Depending on the pairing, the regression also includes race or gender fixed effects as required. The implied elasticity of substitution is $\sigma = -\frac{1}{\beta}$, hence a statistically insignificant estimate of β that is close to zero implies that two groups are perfect substitutes as $\sigma \to \infty$. The results are reported in Table 1 for comparisons between white women and men (column 1), Black men and white men (column 2), Black women and white men (column 3), as well as Black women and white women (column 4). Results from the first three columns reject the null that any of the other three groups are perfect substitutes for male white workers. For white women, this null is only rejected at the ten percent level and white women appear to be the closest substitute for white men relative to Black men and women, while Black women appear to be a perfect substitute for white women which is in line with the statement by Greenwald (1980) above.

[8] These are professional and technical; farmers; managers, officials and proprietors; clerical and kindred workers; sales workers; craftsmen; operatives; service workers; farm laborers; laborers.

[9] See Boustan (2009) for the details of the derivation of the estimating equation from the Cobb-Douglas production function.

[10] Prior to the 1940 census, wage and income information was not enumerated. Income scores, in their most basic version, assign the median income or wage information for a given occupation in 1940 or 1950, when wages are available. See Saavedra and Twinam (2020) for an in-depth discussion.

Notice though that the results here do not make any causal claims.

Table 1: Estimated Elasticities of Substitution for Different Groups of Workers, 1910-20

	$\ln\left(\frac{Y_{FW}}{Y_{MW}}\right)$	$\ln\left(\frac{Y_{MB}}{Y_{MW}}\right)$	$\ln\left(\frac{Y_{FB}}{Y_{MW}}\right)$	$\ln\left(\frac{Y_{FB}}{Y_{FW}}\right)$
	(1)	(2)	(3)	(4)
$\ln\left(\frac{L_{FW}}{L_{MW}}\right)$	-0.019*			
	(0.011)			
$\ln\left(\frac{L_{MB}}{L_{MW}}\right)$		-0.214***		
		(0.022)		
$\ln\left(\frac{L_{FB}}{L_{MW}}\right)$			-0.123***	
			(0.013)	
$\ln\left(\frac{L_{FB}}{L_{FW}}\right)$				-0.007
				(0.019)
Elasticity of substitution	53.02	4.68	8.16	143.05
Standard error	31.73	0.49	0.86	396.56
Observations	1,425	1,319	1,086	1,069
Adj. R^2	0.520	0.369	0.522	0.512

Note: Regressions of cell-level log wage and employment ratios between four different groups, which are white men (MW), white women (FW), Black men (MB), and Black women (FB). The cell-level data were generated from the one-percent samples of the 1910 and 1920 census files for U.S.-born Black and white men and women aged 15 to 65 who were employed at the enumeration date. Cells are defined over each of the four groups, age groups in 5-year bins, skill groups, census region, and census year. Wage information is proxied using the occupational income scores provided by Saavedra and Twinam (2020). Regressions include age group, skill group, census year, and census region fixed effects. The implied elasticity of substitution is reported in the lower part of the table and corresponds to the inverse of the estimated coefficient times negative one. Robust standard errors in parentheses. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Where did such substitution occur and which industries saw the largest gains in job opportunities for women during the war? Contemporaries back then sought to answer these questions with detailed studies based on extensive data, a new trend that has emerged after the Civil War and spread across government agencies and private sector firms alike. The Women's Bureau (1920), a subdivision of the Department of Labor which was founded as a direct result of the war, published "The New Position of Women in American Industry," which contains the results from a large-scale nationwide survey of companies and their experiences with women workers during the war. The report found that women's gainful employment increased in industries that had employed them already prior to the conflict, namely food production and packaging, tobacco, as well as textile and clothing, aside from domestic services. After the implementation of the first and second draft during the war, women made significant headway into durables manufacturing. This included iron and steel, but more so chemicals, especially in the production of munitions.[11] War-related industries saw among the largest increases in female employment, such as in the new airplane industry, rubber production, or lumber.[12] Notice, however, that these gains were mostly realized by white women. Black women's access to industry was much more limited and the only manufacturers to substantially increase the number of Black women workers during the war were producers of cigars and tobacco products (Women's Bureau, 1933).

Two other noteworthy sectors saw substantial increases in the number of female workers, namely the railroad industry and telecommunications. Both of these sectors were taken over by the government for the duration of the war and thus afforded women with newly-enacted rules for equal employment opportunities in government occupations. Even though in practice these rules were not perfectly followed and

[11] After the first draft, there were 61 and 98 women workers per 1,000 employees in iron/steel and chemicals, respectively. After the second draft, these numbers rose to 95 and 140 female wage earners per 1,000 employees (Women's Bureau, 1920).

[12] Airplane manufactures, rubber, and lumber firms employed 169, 55, and 276 women per 1,000 workers in February 1918, respectively. Half a year later, they employed 186, 140, and 354 women per 1,000 workers (Women's Bureau, 1920).

discrimination against women was widespread, the employment situation in these two sectors was significantly better than elsewhere (Greenwald, 1980). Especially in telecommunications, employment of women followed an increasing pre-war trend with regards to telephone operation, a significant driver of women's white-collar employment at the time.[13] As Feigenbaum and Gross (2022) show, many women lost these jobs later on as telecommunication companies replaced telephone operators with mechanical switches.

Overall, women were successful in the jobs they obtained during the war years. The Women's Bureau survey includes information on on-the-job performance by gender for select occupations, such as drilling- and milling-machine operations, among others. The data show that women tended to be as fast and accurate with these machines as their male counterparts (Women's Bureau, 1920). While the war gave women a chance to prove themselves in new occupations, it did not come with significant gains in seniority, pay, or equal treatment. When employers stated that they dismissed women after the war, they often cite women's lesser ability to lift heavy objects or because their wartime labor demand had faded. These statements should be interpreted with caution given that they are self-reported and male managers were aware that their responses were recorded. Greenwald (1980) provides other examples where women were dismissed solely for sexist reasons, due to a lack of seniority, to re-employ returning veterans, or because of the implementation of marriage bars. According to the Women's Bureau (1933), "[w]ith the return of men from the front and the end of the labor shortage, many of these gains were lost" (p. 35).

Aside from returning soldiers, who were typically easily reintegrated into the labor market, an often cited reason for women's dismissals from wartime employment were traditional values that were sought to be protected via marriage bars (see Goldin, 1991a). The common view back then was that married women were supposed to be at home with their children instead of in the workplace. Mothers comprised only a small percentage of the women who entered the workforce during the war years though, since "[u]nlike the period of World War II [...] homemakers during World War I did not abandon their kitchens for toolrooms and airplane hangars" (Greenwald, 1980, p. 13). This is consistent with the lack of a baby boom after WWI. The birth rate even declined from 29.5 births per 1,000 population in 1915 to 27.7 in 1920 (NCHS, 2022), part of which can be explained with price increases in agriculture that particularly reduced the fertility rates among rural women living on farms (Kitchens and Rodgers, 2020).

Overall, there is little empirical research on the relationship between the war and women's labor market outcomes and even less so that studies such questions in a causal framework. World War II, as the later sections will show, has received far more attention in this domain, a theme which is likely going to continue with the impending release of the digitized full-count 1950 census. Aside from the availability of wage income data in later census years starting in 1940, the downside of studying World War I is the cumulative impact of a larger variety of shocks. Aside from the war, the U.S. also experienced prohibition, women's suffrage, the end of the age of mass migration, and the influenza pandemic, among others. However, this also provides opportunities. In a recent paper, Arnsbarger (2023) studies the relationship between women's labor force participation during World War I and the success of the women's suffrage movement, culminating in the ratification of the Nineteenth Amendment in 1920.[14] She digitized information on women's wartime labor force participation by sector from the "The New Position of Women in American Industry" report (Women's Bureau, 1920) and uses these data together

[13] In 1870, only 2.6 percent of clerical workers in the U.S. were women. By 1910, this share had risen to 60.7 percent (Greenwald, 1980).

[14] For an overview, see Moehling and Thomasson (2020).

with census information in a shift-share instrumental variables setting. Her results show that places with larger inflows of women into industry were more supportive of women's suffrage. This is reflected in an increased probability of congressional representatives to vote in favor of the Nineteenth Amendment.

3.2 War, Migration, and Work - The Experience of Black Americans

It is difficult to overstate the importance of World War I for Black American workers at the time. From the onset of the conflict until the Great Depression, more Black Southerners left for the northern industrial centers and cities than in all decades since the Civil War combined (Eldridge and Thomas, 1964). Contemporaries, such as Scott (1920), listed many arguments for why this wave of outmigration from the South occurred, including the recession in the South in the middle of the 1910s and continued low wages for Black workers despite rising living conditions, the boll weevil infestation (Feigenbaum et al., 2020; Ferrara et al., 2023), several floods in the deep South during the summer of 1915, but also racial violence and discrimination (Bazzi et al., 2022; Testa and Williams, 2023).[15] The screening of the movie *Birth of a Nation*, the subsequent rise of the 2nd Ku Klux Klan, and the depressed economic conditions in the South contributed to an increased number of violence and lynchings, which led many Black Southerners to leave for the North where better conditions awaited. Scott (1920) argues that "[n]one of the causes was more effective than that of the opportunity to earn a better living. Wages offered in the North were double and treble those received in the South" (p. 17). Differences in wages and anti-Black sentiment existed already prior to the war,[16] but the essential shutting down of European migration to the U.S. and the war industry's demand for labor led northern industrialists to more actively campaign and recruit labor in the South (Collins, 2021). Newspapers like the Chicago Defender, and later the Pittsburgh Courier, advertised employment opportunities in the northern cities and those who relocated north would write home about their new lives (Grossman, 1989). This spread of information through social networks continued to influence the migration decisions of other Black Southerners later on (Stuart and Taylor, 2021).

According to data from the 1910 and 1920 census files, the largest gains made by Black men outside the South were in the manufacturing of durable and non-durable goods. The industry employment share among Black men in the north rose from 8.8 and 4.5 percent in durable and non-durable goods manufacturing, respectively, to 22.4 and 11.9 percent between 1910 and 1920.[17] Black women, on the the other hand, remained mainly in the service sector with minor increases in non-durables goods manufacturing employment, as mentioned in the previous section. This aligns with the account by Weaver (1943), who stated that Black employment was concentrated in only a few fields, such as iron and steel, meat packing, as well as ship and car manufacturing, and that this employment mostly occurred in the low-skilled occupations with very little upward occupational mobility into semi- or even high-skilled jobs. Even though the North was arguably less racist against Black workers at the time on some dimensions, it still posed significant hurdles to promotion and seniority for Black workers in northern factories: "Racial attitudes of employers, foremen, labor organizations, and white workers perpetuated the pattern and effectively restricted colored workers' opportunities for upgrading." (Weaver, 1943, p.

[15] Both positive pull and negative push factors were at work when driving migration decisions, meaning that not all migration was entirely voluntary. For a taxonomy between voluntary and forced migration see Becker and Ferrara (2019).

[16] It is important to also recall that such differences and racism existed in the North as well but compared to the South, they were arguably lower.

[17] This includes Black male workers aged 16-65 in the New England, Middle Atlantic, East North Central, and West North Central census divisions.

386) The large concentration of Black workers in low-skilled occupations is also reflected in the low degree of substitutability between Black and white men in Table 1.

Despite these barriers, Collins and Wanamaker (2014) provide empirical evidence that the gains to migrating from the South were typically large and that migrants tended to be positively selected in terms of their education and pre-migration occupations. This is something that employers realized after they began hiring their first Black employees and workers. Whatley (1990) uses data from firms in Cincinnati, Ohio, during World War I to show that previously all-white firms changed their priors about Black workers after these workers were introduced into their production processes. He argues that this generated new experiences in these firms which led to subsequent hiring of Black workers. With northern labor markets mainly sourcing external workers from Europe, and the South having very few inroads for Black workers into northern occupations before the war (Collins, 2021), the wartime employment of Black workers marked one of the first experiences that northern firms had with this group of workers.[18] As Whatley (1990) finds, this experience was mixed. Just before the war, 33.2 percent of the sampled firms in Cincinnati hired Black workers. By the end of 1918, this percentage had risen to just over 50 percent. Companies like Bethlehem Steel, who had also hired significant amounts of female workers (Greenwald, 1980), or the Westinghouse Electric and Manufacturing Corporation alleviated wartime labor shortages among native-born white workers in this way. The downside of the increased inter-racial contact in the north, however, was the onset of major race riots in cities such as St. Louis or Chicago, which culminated in significant racial violence during the *Red Summer* of 1919. Whatley (1990) also shows that the wages of Black workers lagged far behind those of whites, as the Cincinnati-based firms in his sample paid observationally equivalent Black workers 78 cents on the dollar compared to their white counterparts. Nonetheless, this was still better than the wages paid in the South.

Another concern is the selection of Black Southern migrants not only into different kinds of jobs but also into different neighborhoods. Maloney (2005) studies whether residential segregation during the war years hindered occupational mobility. He too focused on Cincinnati, where Black Southerners were concentrated in the west end of the city, while Black workers from the north avoided the west end. Given that the 1910 census is too early to observe changing residential patterns during the war and over time, Maloney (2005) instead links WWI selective service registration records to the 1920 census.[19] These records include detailed information on each registered person's residence in the year they had to register for the draft. Together with the 1920 census, this provides a clearer picture of residential segregation and within-city mobility during the war years. Interestingly, he finds no adverse effects on the residential segregation of Black Southerners in the west end relative to other Black workers in the city and, in fact, the so-called "west enders" were actually at a lower risk of occupational downgrading after the war. As potential explanation for this Maloney (2005) cites the possibly stronger cultural and social ties among the Black Southern migrants in the west end. An alternative explanation relates to the finding by Collins and Wanamaker (2014) that Black Southern migrants during the first Great Migration were positively selected, hence their chances of maintaining their wartime occupations would have been higher. This highlights the complications when studying the wartime labor market outcomes of different groups, as self-selection into migration, jobs, and residential location can significantly affect the interpretation of results.

[18] While there were Black workers in the north prior to World War I, the inflow from the South to northern cities and manufacturing centers between the end of reconstruction and World War I was much more limited.

[19] The men who had been registered and examined for the draft not necessarily fought in the war, they were merely tested for mental and physical suitability to be drafted.

After the end of the war, Black men tended to maintain their occupational status for a bit longer than most women who had acquired wartime employment. Only ten years later, however, "[w]ith the depression, they [Black men] lost many jobs and most of this occupational progress" (Weaver, 1943, p. 387). Since Black workers in northern firms had been a more recent phenomenon, their lack of seniority was often used as a reason to dismiss them. Together with the concentration of Black workers in low-skilled jobs with very little participation in unions or other labor groups, they further lacked the legal security that was afforded to many white workers (Weaver, 1943). Despite the different wartime and post-war labor market experiences between Black men and white as well as Black women, the war proved disappointing for all of these groups. While women almost immediately lost their wartime employment gains, they secured a major victory in their quest for equal treatment, namely suffrage. A similar aim had been chased by leaders of the Black community, who argued for an active engagement of Black Americans in the war, both at home and abroad, to be in a position to renegotiate the social contract with white Americans (Parker, 2009). Their sacrifice and effort was meant to help improve not only the economic but also the social position of Black Americans in society. With the U.S. being involved in the war for a mere twenty months, and little promotion of the heroic deeds by Black soldiers abroad and Black workers at home, this sacrifice and effort went largely unnoticed and thus did not lead to a bettering of their social status or a reduction in the racism they continued to face. One of the few bright spots was that, incidentally, Black Southerners in the South started to receive slightly better treatment. As Monroe N. Work (1919, p. 10) described it, the migration northwards "caused the South to assume a new attitude toward [Black] labor. This new attitude found expression in the tendency to pay [Black] laborers higher wages, to accord them juster treatment, including here, better protection under the law and to provide better educational facilities". This is in line with recent work by Feigenbaum et al. (2020), who find that Southern counties that saw more boll weevil-induced outmigration of Black Southerners had less KKK activity, fewer lynchings, and became less oppressive towards Black Southerners.

4 World War II

4.1 The Legacy of Rosie the Riveter

Compared to the first World War, the second global conflict left a much more substantial and lasting mark on the role of women in the U.S. labor market. This time, involvement of the U.S. in the war lasted for almost four years with 16 million Americans eventually serving in the military, 10 million of whom were inducted via the draft.[20] The longer duration of the war and its scale meant that labor shortages at the home front were more pronounced than in the preceding conflict. Goldin (1991b) provides statistics for the magnitude of the increase in women's wartime labor force participation.[21] According to her figures, 15.6 percent of all married women worked in 1940 with this number rising to 21.7 percent in 1944. Among women whose husbands were absent due to service in the military, 52.5 percent worked in 1944. Data from the 1950 census shows that women's labor force participation remained high at 23.8 percent. Using information from the Palmer survey, Goldin (1991a) studied the retrospective work histories of sampled women and found that among the married women who were gainfully employed in 1950, over half had already been working before the U.S. entry into the war in 1940, and another 33

[20] This compares to 123 million total population in the U.S. in 1940 versus 4 million soldiers who served in World War I out of a population of 100 million in 1915.

[21] A comprehensive contemporaneous review of women's employment across sectors and occupations is provided by Miller (1980).

percent of women who worked in 1950 entered employment between 1944 and 1950. This is not to say that the war did not generate significant employment among women. The data mainly show that many women who worked during the war also eventually left employment but that attitudes towards female workers had shifted substantially due to the war, leading to higher postwar employment among women.

The findings are corroborated by Acemoglu et al. (2004). They combine census data with information from the Selective Service System on the share of drafted men in each state as a shifter of women's labor force participation. Women who lived in states with higher mobilization rates were more likely to work in 1950 but not in 1940. Using the model introduced in Section 2.2, they estimate the own- and cross-price elasticity of substitution for male and female workers. The increase in women's labor force participation led to a reduction in both male and female wages. These results are confirmed when replicating the previous elasticity estimation from equation (5) using census data from 1940 and 1950 which are reported in Table 2. Unlike the previous exercise for the decade of World War I, the regression no longer rejects perfect substitutability between white men and women, hence one would expect a decline in wages for both groups for an increase in women's labor force participation. The story, however, is somewhat more nuanced as shown by Acemoglu et al. (2004). To further study the heterogeneous effects of the inflow of women into the labor force, they augment the model with different educational levels for men where they consider high-school and college-educated men. The results provide evidence that women were closer substitutes to high-school rather than college educated male workers. Hence a given increase in the female labor force participation rate reduced wages of men with a completed high school degree by more than it did for those with a college degree, increasing earnings inequality between the two groups of men. This increase in earnings inequality, however, is substantially smaller than the overall reduction in the wage gap between the top and bottom wage earners during the 1940s, a period that has been termed the *Great Compression* (Goldin and Margo, 1992).

Table 2: Estimated Elasticities of Substitution for Different Groups of Workers, 1940-50

	$\ln\left(\frac{W_{FW}}{W_{MW}}\right)$	$\ln\left(\frac{W_{MB}}{W_{MW}}\right)$	$\ln\left(\frac{W_{FB}}{W_{MW}}\right)$	$\ln\left(\frac{W_{FB}}{W_{FW}}\right)$
	(1)	(2)	(3)	(4)
$\ln\left(\frac{L_{FW}}{L_{MW}}\right)$	-0.006			
	(0.007)			
$\ln\left(\frac{L_{MB}}{L_{MW}}\right)$		-0.065***		
		(0.016)		
$\ln\left(\frac{L_{FB}}{L_{MW}}\right)$			-0.145***	
			(0.015)	
$\ln\left(\frac{L_{FB}}{L_{FW}}\right)$				-0.061***
				(0.021)
Elasticity of substitution	165.80	15.50	6.89	16.26
Standard error	185.91	3.81	0.71	5.64
Observations	1,435	1,396	1,230	1,225
Adj. R^2	0.780	0.296	0.481	0.407

Note: Regressions of cell-level log wage and employment ratios between four different groups, which are white men (MW), white women (FW), Black men (MB), and Black women (FB). The cell-level data were generated from the one-percent samples of the 1940 and 1950 census files for U.S.-born Black and white men and women aged 15 to 65 who were employed at the enumeration date. Cells are defined over each of the four groups, age groups in 5-year bins, skill groups, census region, and census year. Wage information is proxied using the occupational income scores provided by Saavedra and Twinam (2020). Regressions include age group, skill group, census year, and census region fixed effects. The implied elasticity of substitution is reported in the lower part of the table and corresponds to the inverse of the estimated coefficient times negative one. Robust standard errors in parentheses. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

According to the census files for 1940 and 1950, employment among women grew particularly in

the durables manufacturing, retail, and wholesale industries, while their employment share in services declined the most. Bellou and Cardia (2016) analyze the occupations of women before and after the war. They find that cohorts of younger women, who were not yet of working age during the war, accumulated more education and were more likely to work in white-collar jobs later on. However, they also show that World War II led to a permanent rise in blue-collar employment among women who were between 15 and 34 years of age in 1940. This was matched by a corresponding decrease in white-collar employment in this group. This is in line with the finding by Acemoglu et al. (2004) that women were the most likely substitute for men in the middle of the skill distribution as opposed to substituting those at the very top or bottom. Another argument for the relative decline in white- versus blue-collar work among working-age women in 1940 is provided by Jaworski (2014). He shows that higher mobilization rates decreased educational attainment for women of high-school age in 1940. Women therefore appear to have shortened their educational career in favor of entering wartime jobs, however, these were also the women who exited such jobs at higher rates after the war, while wartime employment was mostly maintained by those with a completed high-school degree or more (Goldin and Olivetti, 2013). This is also evidenced by the fact that they tended to start families at an earlier age (Jaworski, 2014). The women in this group realized the gains to education after marriage and by 1970, the educational gap appears to have closed entirely (Davis and Bumpass, 1976).

Even though blue-collar work was a key driver of occupational progress, especially via employment in war-related industries, manufacturing employment was in large part a transitory experience for female workers. Rose (2018) documents a sharp decline in women's employment in 1950 stemming from the return of veterans and the discontinuation of war production, especially in areas that were most exposed to wartime increases in labor demand. Once taken into account, the increase in manufacturing employment among women in these areas appears to have been only marginal. A different view is provided by Shatnawi and Fishback (2018). They too acknowledge that sharp rise and contraction of female employment in the manufacturing sector, but they also argue that the level of female employment in manufacturing after the war remained much higher than in 1940. This level was higher than the counterfactual growth path in women's employment extrapolated from the high-growth period of the 1920s.

The overall increase in women's labor force participation has been aided by unintended consequences of policies and unrelated technological developments. This includes the *Training within Industry Program* (TWI) which was provided by the U.S. government to improve managerial practices in firms that produced for the war effort. The idea was to raise productivity in these companies via managerial training. Bianchi and Giorcelli (2022) provide empirical evidence for the success of this program as treated firms indeed increased their productivity and were more likely to adopt beneficial managerial practices. As a byproduct, these firms were also more likely to employ women and Black workers. Another feature that aided women's workforce participation was the increased availability of household technology which reduced the time required for certain household chores. Bose et al. (2022) provide evidence that working women adopted appliances, such as washing machines, refrigerators, or vacuum cleaners, at higher rates. In counties with an average increase in women's labor force participation rate, appliance ownership increased by 25 percent. They explain this by the increased incomes of women which enabled them to purchase household labor-savings technology. The impact of working women also had spillover effects into the next generations. As stated before, wartime employment of women shifted attitudes of employers towards female workers, this time in a more permanent fashion as opposed to the temporary gains during World War I. Fernandez et al. (2004) show that the sons of

women who worked during World War II later on also had working wives. They explain this with the cultural transmission of norms into the next generation as working mothers provided a role model that normalized working women in the eyes of their sons.

While much of the previous discussion has focused on women in general, the wartime experience varied significantly by sub-group. The divisions along the dimensions of marriage and educational status have been discussed so far, but another important delineation is along the lines of race. Much work has focused either on women in general or on white women. The labor market outcomes of Black women in relation to the war are often either discussed in the context of heterogeneity analyses or, unfortunately, not at all. A noteworthy exception is a study by Bailey and Collins (2006), who focus their attention on the wage gains of Black women during the 1940s. Much like the period of World War I, the 1940s led to a substantial decline in Black women's employment in service and agricultural jobs. This shift out of low-paying occupations and sectors into the formal sector was not a mere continuation of pre-existing trends. Bailey and Collins (2006) find large wage gains for Black women relative to white women during this decade, which did not revert to pre-war levels after the end of World War II. They conclude that these economic advances built the foundation for later political and social progress, a goal that had not been achieved via participation in World War I.

4.2 Black Men's Labor Market Gains - Success at Home, Abroad, North, and South

Just as for Black women, Black men made substantial gains during the 1940s. While labor force participation rates were historically higher among men than women, the main dimension for Black men's economic progress was what types of jobs they could access, and thus what kind of wages they could earn. To give an impression of the magnitude of Black men's wartime gains, fewer than 15 percent of Black males were employed in semi-skilled occupations in 1940. By 1950, this number had risen to 26 percent and to well over 45 percent by 1970. Unlike the decade of World War I. While the Great Migration continued to send Black workers to the northern as well as the western cities,[22] this trend change occurred both outside and within the South (Ferrara, 2022).[23] Over one million Black men entered semi-skilled employment during the war years, the majority of whom maintained their jobs after the end of the war (Wolfbein, 1947). The occupational upgrading of Black workers was accompanied by a corresponding increase in wages, an empirical fact that was first documented by Maloney (1994) and Margo (1995),[24] as well as increased home ownership rates (Boustan and Margo, 2013), educational attainment (Turner and Bound, 2003), and economic mobility (Collins, 2000). The rate of skilled employment among Black men only began to rise later after the 1960s.

On the home front, Black workers achieved occupational success by increasingly moving from agricultural jobs to employment in industry due to the high demand by wartime producers (Wolfbein, 1947). The share of Black men employed in agriculture declined from 39 percent in 1940 to 24.7 percent in 1950 according to the census. Over the same time period, the employment share in durable and non-durable manufacturing increased from 15.3 to a little over 26 percent. Other sectors that saw increases, although nowhere near as pronounced as in manufacturing, were transportation, retail, and public administration. The manufacturing sector employed the bulk of semi-skilled workers at the time, which

[22] For additional work on the Great Migration, see Collins (2021), Derenoncourt (2022), Bazzi et al. (2023a), Bazzi et al. (2023b), among others.

[23] In the South, occupational upskilling was driven by non-durables manufacturing in the cities but also in the booming oil sector (e.g. Ferrara and Testa, 2023).

[24] The average semi-skilled job paid more than one and a half times that of the average low-skilled occupation in 1940.

relates to the associated increase in Black semi-skilled employment. A prominent example of a very stark change in Black employment is the aircraft industry, where Black men had been barred from any type of work other than low-skilled employment prior to the war. Entry of the U.S. into the conflict, the resulting labor shortages induced by the draft, and the labor demand by the wartime industry opened employment opportunities that had not been available to them before, meaning that economic necessity brought down racial barriers to employment in these much higher-paying jobs (see Weaver, 1945). A reason for why Black workers were more readily available during the war years was the slow drafting of Black men into the military, which lagged behind considerably until the final phase of the war (Flynn, 1984). Meanwhile, the draft-induced lack of white workers created significant labor shortages. This lead to policies, such as the Bracero Program (see Clemens et al., 2018), that were designed to attract foreign laborers for the agricultural sector to ensure food production and food security during the war.

A recent study by Aizer et al. (2020) highlights the importance of such wartime labor shortages in reducing discrimination against Black workers, thus lowering the barriers to entry into better-paying employment. In particular, they leverage information from the allocation of government war production contracts. These contracts stipulated anti-discrimination rules that had to be followed by firms that were awarded with such contracts, in line with Roosevelt's policy according to which the country's economic and military potential could only be achieved with reduced racial discrimination,[25] leading to the establishment of the Fair Employment Practice Committee which has been studied by Collins (2001). Aizer et al. (2020) find that the allocation of war production contracts led to a rise in Black workers' earnings and a corresponding decline in the Black-white wage gap as they find no effects for white workers. This wage gain was achieved via occupational upgrading and had positive spillover effects on the next generation of Black children, who saw increased educational attainment. Labor shortages are also a central theme in a study by Ferrara (2022), which finds that counties with higher World War II casualty rates among white soldiers, who were semi-skilled workers at the start of the war, experienced increased occupational upgrading of Black men into these occupations. In addition, places with higher casualty rates among whites saw a subsequent increase in the number of businesses that did not discriminate against Black Americans (Cook et al., 2022).

The effect of war-related spending by the government on local economic development is somewhat debated (Fishback and Cullen, 2013) and researchers detected no statistically significant impact on the industrialization of the South specifically (Jaworski, 2017). Yet Garin and Rothbaum (2022) find a lasting and large impact on high-wage manufacturing employment in the counties that received very large government contracts of a million dollars or more. Using newly digitized plant-level information, they show that the allocation of such contracts increased employment and wages, and led to improvements in local economic development. These gains were persistent as men who had found jobs in the treated locations still had higher earnings in the late 1970s and 1990. In addition, these gains were passed on to the next generation with the children of workers in treated locations obtaining higher levels of education and earnings. In line with the results in Aizer et al. (2020), they document a significant narrowing of the racial wage gap. Earlier work by Collins (2000) using data from the Palmer survey had also found positive wage and employment effects for Black workers, especially in war-related industries. Interestingly, he did not find a bonus on either dimension for veterans.

The war may have been a watershed event for Black workers at home, but the employment effects of service in the war for Black men were mixed. This is despite their many achievements on the battlefield

[25] Notice that his treatment of Mexican-born workers during the Great Depression and Japanese-born individuals during the war has been subject to criticism.

(see Qian and Tabellini, 2020) as well as outside of battle, where they changed racial attitudes of people in their host nations by their mere presence (Schindler and Westcott, 2021). There was not much of a veteran bonus in the labor market for those who returned. Instead, labor market gains beyond what had been achieved during the war years needed to be earned by virtue of increased education. The G.I. Bill provided such opportunities but was largely ineffective in the South due to the continued resistance by institutions of higher education to desegregate (Turner and Bound, 2003). However, there were gains in other dimensions. The ongoing migration of Black Southerners to the rest of the country has been shown to significantly affect support for civil rights-related legislation and pro-civil rights activism (Calderon et al., 2022).

Overall, the war brought down significant labor market barriers that had previously prevented Black men and women from entering certain occupations or industries that promised substantially better pay. The 1940s in particular saw much progress for African Americans in terms of their economic, social, and political outcomes, much of which can be attributed to the war. Market forces, government policies, and the particular conditions during the war that led employers, coworkers, and customers to rethink their priors about Black Americans contributed to these changes. Unfortunately, much of this progress has been partially or entirely reversed starting from the early 1970s (Smith and Welch, 1989) and the median Black-white earnings gap today, after having declined between 1940 to 1970, is as wide as it was in 1950 (Bayer and Charles, 2018).

5 Conclusion

The two World Wars disturbed the previous labor market equilibria, that disadvantaged both Black and white women, as well as Black men in terms of employment, entry into certain occupations and industries, paths to seniority, and equal wages. Even though not all inequalities could be removed, these groups made significant progress during World War II, whereas the first World War only provided temporary changes for the most part. This chapter has highlighted the potential of the two World Wars for empirical research but also the challenges associated with studying the wartime economies. The duration of each conflict and the salience of the contributions of each group in the war effort at home and abroad were important determinants of the longevity of the labor market gains made during each war, which can rationalize the difference in outcomes between World War I and II. Another notable feature of the literature so far is that World War II has received much more attention than World War I, not just because of better quality data available to researchers in the later conflict but also because of the concurrent shocks that accompanied the first World War, including the Spanish flu, the Great Migration, and the end of the Age of Mass Migration, among others. Another imbalance that emerges is that especially Black women remain an understudied group in the literature. However, this is also true for other groups, including Hispanic and Native American men and women. Ideally, this chapter provides a helpful guide and introduction to those wishing to study the labor market effects of the two World Wars in the United States, and that it inspires future research to shed more light on the groups who have not yet received but who would most definitely deserve it.

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