The Labor Earnings Distribution during World War II

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1 Introduction

There is widespread agreement that the distribution of earnings changed during World War II. Piketty and Saez (2003) find using tax records that the share of income going to the top 10 percent of earners fell from 44% in 1940 to 32% in 1945. The headline finding of Goldin and Margo (1992) is that in the decade spanning the war, the gap between the 90th and 10th percentile of labor earnings fell dramatically. Kopczuk et al. (2010) document a similar pattern for this period using data from the Social Security Administration. There is much less agreement about what the drivers of the changes were, and how some of these measures evolved during the war itself.

The problem everyone faces in studying inequality during the war is one of data limitations. Besides data collected by the NICB for a handful of jobs and the (confidential) Social Security records, there are very few systematic sources that provide any information on earnings during this decade. It is not as if the federal government simply stopped collecting data on earnings during this period (though other data collection efforts were curtailed). On the contrary, the Bureau of Labor Statistics, in particular, was engaged in extensive data collection in support of the (National) War Labor Board (NWLB), an agency tasked with controlling wages during this period.[1] The NWLB carried out what came to be known as a "bracket" policy to set wages. That is, they specified by occupation, region, and industry (in some cases) a value of the "bracket" that acted as a soft maximum wage. It was soft in that people making more than the bracket were not required to

[1] Douty (1984) notes that leading up to the war, the BLS had been tasked with collecting data to support the implementation of the Fair Labor Standards Act of 1938.

take a pay cut down to the level of the bracket but simply could not receive any raises. Those earning initially less were allowed to receive raises up to the level of the bracket, but this was not required.

The brackets were not chosen at random, but instead set as a function of the earnings distribution for a given occupation-region group. That earnings distribution, in turn, was based on intensive data collection by the BLS and the NWLB itself. Under the assumption that these brackets encoded the distribution of earnings at the time they were set, we can use them to impute the earnings distribution in 1943, the year in which we have collected the brackets. To correctly recover the earnings distribution, the imputation procedure should depend on the exact way in which the brackets were set as a function of earnings. Based on narrative evidence, there were multiple potential methods for setting the brackets. One way was to set the bracket equal to 90% of the mean. The other was a bit more hazy in that brackets were set equal to the "first substantial cluster" of earnings. Adding to the complexity, these methods were not required by statute, with the NWLB retaining full discretion over how the brackets were set. Furthermore, there is no documentation for whether, for example, a certain bracket was set according to the 90% rule.

Clearly, such an imputation relies on an assumption that the brackets were set based on the underlying BLS wage distribution. Using a sample collected for the South (NWLB Region IV), we estimate the empirical relationship between the brackets and earnings that the NWLB would have based its decision on. We do find a strong positive linear relationship (in logs) between earnings and the bracket consistent with the narrative evidence though the elasticity is less than 1, which is what we would expect if brackets were set using the 90% rule. We extrapolate the relationship estimated for this single region to the whole country. From this estimated relationship, we impute earnings based on the brackets to recover what we call the imputed distribution of earnings in 1943. The validity of this procedure depends on the nature of the residuals. Do they simply represent random meaning independent of earnings variation in the brackets? If so, then this imputation procedure is a valid one.

The brackets were intended to impact earnings and presumably did so going forward from 1943 until the end of the war when the NWLB was dissolved. Our second set of calculations constructs what we call the simulated earnings distribution in 1945 that takes into account the hypothetical effects of the brackets. In the simulation, we assume that by the end of the war, all those earning less than the bracket received raises up to that level and those earning more received no further raises. We treat this simulation as an upper bound on what the compressing effects of the brackets could have been. For example, it is possible that not everyone initially earning less did end up earning an amount equal to the bracket.

With the imputed earnings distribution in 1943 and the hypothetical earnings distribution in 1945 in hand, we can examine changes in inequality relative to 1939, the year in which the income variable on the 1940 Census refers to. As one example, we find that the brackets would have had only moderate effects on the North-South earnings gap reducing it from about 1.4 in 1939 to

1.3 in 1945. On the other hand, we find much more dramatic compressing effects on the *within* (occupation-geography) components of inequality. For example, the log difference between the p90 and p10 of earnings for carpenters falls by 0.81. The difference between the magnitude of the within and between effects is a reflection of the method for setting the brackets, which was as a function of earnings by occupation and region. Such a process will, by construction, "lock-in" the existing inequality between groups while allowing for compression within such a group. This observation has important implications for the potential role of the NWLB in explaining the Great Compression by geography, skill, and along other observable dimensions (as compared to the Great Compression in residual wage variation).

We view this work as complementary to our earlier work on the effects of the NWLB on inequality (Vickers and Ziebarth, 2022). There are two major differences with this other work. First, that work was focused on the long-run effects of the brackets on the income distribution decades after the end of the war. In this paper, we are examining the nearly contemporaneous effects of the brackets. Second, whereas in the other paper the argument depended on isolating some plausibly exogenous variation in the brackets, here we are instead focused on the systematic (non-random) component of the brackets. This non-random component is what we use to recover the prevailing earnings distribution at the time the brackets were set. Also for this reason, we want to be careful about attributing the hypothetical distribution of earnings to the (causal) effects of the brackets. While the brackets were set as a function of the level of earnings, if the levels were correlated with pre-trends in the growth rates, then it is possible that changes between the 1945 hypothetical distribution and the 1939 distribution would have happened anyway.

Our work also contributes to the literature on the (long-run) consequences of WWII for economic inequality. One strand of this literature has examined the effects of the war on gender inequality. Extending the earlier work of Goldin (1991), Acemoglu et al. (2004) use state-level variation in mobilization rates to examine the effect of the war on women's wages in 1950. Using a similar identification strategy, Jaworski (2014) studies the war's broader demographic ramifications for women. Shatnawi and Fishback (2018) find a persistent effect on demand for female workers in manufacturing even after the war ends. Consistent with this work, Rose (2018) shows that changes in female employment during the war are really driven by changes in demand rather than changes in the supply due to the draft of working-age men. Other work has examined the effects of the war on racial discrimination and inequality. Collins (2001) studies the effect of non-discrimination policies in hiring by the federal government. Aizer et al. (2020) examines the effects of military spending contracts while Ferrara (2020) examines variation in the demand for Black labor. Our previous paper (Vickers and Ziebarth, 2022) and the third chapter from the dissertation by Rose (2009) examine the effects of the NWLB on the wage distribution.

2 History of the NWLB and the Bracket Policy

THIS SECTION IS MAINLY FROM OUR OTHER WORK (Vickers and Ziebarth, 2022). WE LEAVE IT HERE TO PROVIDE SOME CONTEXT FOR THIS WORK. IT WOULD BE SUBSTANTIALLY REVISED BEFORE THE CONFERENCE IF OUR PROPOSAL IS ACCEPTED.

The roots of the WWII NWLB can be traced back to World War I. The United States faced many of the same challenges then as in WWII. Indeed, the first coherent national labor policies in US history emerged from the dialogue between the federal government, labor, and industry as they fought over how to balance workers' rights with the emergency needs of WWI wartime production (McCartin, 1997). While, in the end, many involved in labor policy during WWII held negative views of the WWI policies that resulted in a rapid inflation during the war followed by a large deflation afterward, many aspects of the WWII NWLB were carried over from the earlier version. This included representation for industry and labor in policy decisions and the grievance process, as well as a bevy of "efficiency engineers," economists, statisticians, and labor activists, all working to marshal the manpower of the country. In addition, the WWI NWLB made three crucial decisions in labor disputes that would foreshadow the operation of the WWII NWLB: (1) imposed a wage structure on the town of Waynesboro, Pennsylvania, after an analysis of wages revealed that employers were not paying a "living wage"; (2) resolved a dispute over who had the right of job classification; and (3) ruled in favor of union security that prevented employees from being fired or threatened with military draft for organizing a labor union (McCartin, 1997, p.96-97).

The WWII NWLB itself was established by an executive order on January 12, 1942. It grew out of the Mediation Board of WWII, which was comprised of representatives of employers, unions, and the public. At the start, the jurisdiction of the NWLB was not clearly defined, and it lacked a guiding policy on wages. Its charge overlapped with other agencies, such as the National Labor Relations Board and the Treasury's Salary Stabilization Unit. Unlike the Mediation Board, the NWLB could make a "final determination" on labor disputes.

The first decision made by the NWLB came within a month of its inception in the Aluminum Company case of February 1942. In this case, it approved a wage increase of 7 cents per hour for Southern aluminum plants. The NWLB, with this decision, "clearly indicated that wage increases to substandard workers would in general be approved", but "warned highly-paid workers not to expect their wages to keep pace day by day with the rising cost of living" (McNatt, 1943). The NWLB took a number of factors into account when coming to its decision, among them "the trend in the differential over the preceding nine years, the cost of production, the type of work, the prevailing wage rate in the area for comparable work, the cost of living, and the ability of the company to pay" (Hachenburg, 1942, p. 341).

Subsequent decisions by the NWLB did little to clarify its general policy for settling labor disputes and instead added new complications. For example, in other cases it decided, the NWLB

considered "[p]revailing wages elsewhere in the industry as well as in the local area" (McNatt, 1943, p.3). An April 15, 1942 decision regarding the International Harvester Corporation included "a restatement of the substandard yardstick principle that all workers should receive wages high enough to enable them to maintain a health-and-decency standard of living" (McNatt, 1943, p. 4). But even this (somewhat clear) principle of how wage adjustments should be justified was qualified to require that these adjustments could not result in inflation.

Some clarity finally came in the critical "Little Steel" case, decided on July 16, 1942. This case, a consolidation of cases involving four steel companies, established an explicit wage-stabilization formula. Based on a measured 15% increase in the cost of living from Jan 1, 1941 to May 1, 1942, it was decided that "if any group of workers averaged less than a 15 per cent increase in hourly wage rates during or immediately preceding or following this period, their established peace-time standards have been broken. If any group of workers averaged a 15 per cent wage increase or more, their established peace-time standards have been preserved." This, as what it came to be known as, "Little Steel" formula seemed to make it clear that only workers who could show that they experienced a less than 15% raise over this period would have a wage increase approved. On the other hand, while workers who had received a greater than 15% raise did not have to take a pay cut, any subsequent requests for further raises would not be approved. This formula provided a quantitative and straightforward basis for NWLB decisions in the second half of 1942.

Even with the Little Steel formula, the NWLB gave itself wiggle room in making its decisions, explicitly stating: "Any claims for wage adjustments for the groups whose peace-time standards have been preserved can only be considered in terms of the inequalities or of the sub-standard conditions specifically referred to in the President's message of April 27, 1942." Indeed, Hachenburg (1942, p. 345) notes that the "Board had very carefully refrained from stating that the 15% rule was the only one by which a given group of employees could be granted increases. Rather, the rule was so phrased that the rise in the cost of living was to be considered as a factor only to the extent of 15%." This worked in both ways in allowing the NWLB to approve raises for those who earnings had grown more than 15% and to block raises for those who had not experienced such a raise. For example, in the Lever Brothers case, a wage increase of below 15% was denied on the grounds that the firm was already paying above market wages and the fear that approving an increase would risk sparking a further round of wage increases.

How common deviations from the "Little Steel" formula were is not altogether clear. On one side, writing in February of 1943, McNatt (1943, p. 7) noted that "[s]ince the Little Steel decision last July, the Board has uniformly attempted to apply this cost-of-living substandard inequality formula in deciding wage questions." Concurring in this assessment, Record (1944a, p. 100) viewed the implications of the Little Steel formula as implying that "wages were to be stabilized at September levels except in rare and unusual cases where nonapproval of adjustments would work discriminatory hardship on employers and/or employees, or directly frustrate the war effort." On the other hand, Derber (1944, p. 574) argued that deviations from 15% were "unavoidable":

"The Little Steel formula was intended to set a terminal point for general wage increases and, as present efforts of the unions to break it indicate, it has, to a considerable extent, accomplished that purpose. But as Congress and the President under stood, no effort at stabilization could ignore gross inequities between jobs or substandard or obsolete wage structures without substantial injury to the war effort."

Until this point, the NWLB had only been involved in handling wage *disputes* between employees and employers. An executive order on October 3, 1942 drastically increased the jurisdiction of the NWLB to cover not just disputes but the vast majority of *voluntary* wage adjustments in private businesses. Workers exempt included "those in establishments with eight or fewer employees (except certain classes removed from exemption from time to time), those employed by State and local Governments, and those employed by non-profit organizations." The NWLB itself estimated in March 1944 that of 38 million total civilian non-agricultural employees excluding domestic servants, about 32 million were covered by executive order, and of these 7 million were exempt by general order (United States Department of Labor, 1949, p. 538).[2]

With this increase in the reach of the NWLB along with the implementation of the "Little Steel" formula, eight (and later twelve) regional offices were set up to adjudicate an anticipated flood of voluntary applications for adjustments. These regional offices had limited authority originally, but by early 1943, they gained a measure of authority over both voluntary adjustments and disputed cases (Record, 1944a, p. 101). Hachenburg (1942, p. 354) noted that "In effectuating its new policy, the Board permit[ed] the Regional Directors to correct maladjustments within the 15% rule in specifically designated industries. The Board, however, will itself consider all claims based on inequalities or gross inequities, and substandards, after the claim has been approved by the Regional Director." Further powers were granted to the regional directors to make decisions (subject to review) "if not more than 15% of the working force is involved, if no more than five cents is being given to any one employee and if the company does not use the increase to obtain relief from its price ceiling."

Even with the Little Steel formula in place, a substantial rise in prices and wages forced Roosevelt to sign Executive Order 9328, also known as the "hold the line" order, in April 1943. The implementation of the "hold the line" order was through what came to be known as a "bracket policy" based on a May 12 directive. It authorized the NWLB to establish "by occupational groups and labor market areas, the wage-rate brackets embracing all those various rates found to be sound and tested going rates," and furthermore that "except in rare and unusual cases [. . .], the

[2] An group of additional exemptions were "employees subject to the Commissioner of Internal Revenue (i.e., employees with salaries over $5,000 per year and non-unionized executives, administrators, and professional workers with salaries under $5,000 per year)" (United States Department of Labor, 1949, p. 538). Exemptions from the jurisdiction of the board included those subject to the National Railway Labor Panel, as well as federal employees with salaries fixed by law. An additional group of employees were theoretically covered by the NWLB but exempted by general orders. Agricultural workers making under $2400 a year were covered separately by the Department of Agriculture (National War Labor Board, 1944, p. XLVI).

minimum of the going rates within the brackets" would be the end point of any wage adjustments.[3] Wages above the bracket "could not be changed on the basis of gross inter-plant inequities." As a consequence, wages above the bracket were frozen in place.[4]

The bracket policy remained in place until the end of the war in August 1945. The NWLB continued operations for a time under new executive orders that "freed from the necessity of governmental approval all voluntary wage adjustments which employers indicated would not require price increases or which did not involve increased costs to the government" (Witte, 1952). The NWLB was formally ended on December 21, 1945, with a successor agency, the National Wage Stabilization Board, taking its place. In operation for fourteen months, the new agency's approval was required for "wage increases which employers were not willing to say they would not use as a basis for price increases" (Witte, 1952). Evidently it was not as demanding when approving wage increases as the NWLB, as wages in manufacturing increased twice as much in its period of existence as during the whole existence of the NWLB, which lasted more than twice as long. This lead Witte (1952) to conclude that "[the National Wage Stabilization Board] seems to have had little influence upon the trend of wage rates".

At least statutorily, the NWLB had "great" enforcement mechanisms available to ensure compliance with the bracket policy (Vatter, 1985). It had the power to punish unions that went on strike by revoking concessions. As a last resort, non-compliance could result in referral to the president. This was not an idle threat. Forty-six cases were referred to the president, and, in forty of these cases, the non-compliant plant was seized (United States Department of Labor, 1949, p. 427, volume 1). The NWLB could also request the War Department to blacklist firms or cancel contracts. Additionally, wages paid in violation of NWLB orders could be disallowed as a tax deduction for the firm. At the same time, it is hard to see how illegal wage increases which were mutually agreed upon would even come to the NWLB's attention. Rockoff (1984), in a broader history of wage and price controls, highlights the ways in which people attempted to evade these sorts of controls in WWII through the black market. Clinard (1952) claims that the black market at this time was so extensive as to raise "serious questions [...] as to the moral fiber of the American people."

[3]The NWLB in certain cases also established minimum wages. In the Appendix, we show that the hypothetical effects of these were much smaller than the those of the brackets and, for that reason, we ignore the minimum wages in our empirical analysis.

[4]In theory, a "bracket maximum" could be established as well, but this was largely irrelevant as equity adjustment were limited to raises up to the minimum bracket, above which raises were not permitted, and therefore "the bracket minimum was of primary significance and in many instances bracket maxima were not established. Bracket maxima were of significance only in 'rare and unusual' cases" (United States Department of Labor, 1949, p. 230, volume 1). An additional complication was that the bracket minimum, the primary policy instrument, could be expressed either as a single rate or a range, for companies which had variation within an occupation. In this case, "the weighted average rate for an occupation was compared with the single rate" (United States Department of Labor, 1949, p. 236, volume 1). That is, if a plant currently had a range of 60 to 70 cents and the single rate (minimum) bracket was 85 with a range of 80 to 90, the plant could increase its range to 80 to 90. Because the weighted average to be compared to in this case was the single rate, we have used the single rate as our measure of the level of the bracket.

2.1 The Goals and Successes (?) of the NWLB

The overarching goal of the NWLB was to aid the war effort, broadly defined. One way in which the NWLB hoped to help was, unsurprisingly, through "wage stabilization" (United States Department of Labor, 1949, p. 178, volume 1), which, in concert with the controls on the prices of goods, was meant to help control inflation. In a speech in April 1945, George W. Taylor, the chairman of the NWLB, gave another important goal of the NWLB: "To help control the movement of manpower into war production" (United States Department of Labor, 1949, p. 182, Volume 1). Taylor in his speech gave the following example: "The production program in one area called for 2500 skilled employees of a certain trade [...] Employers started bidding for them [...] But there were still just 1500 skilled workers available. As a result of the bidding—they were made more mobile, more volatile, and less productive." This was why the "stabilization of wages [...] was essential to conserve the available manpower supply and assure maximum production."[5]

The "stabilization" goals of the NWLB were not necessarily identical to the price stabilization goals of the Office of Price Administration. In principle, a wage adjustment could be used as the basis for a price adjustment, and so Executive Order 9250 required prior approval of the Director of Economic Stabilization in cases in which a firm stated this would be the case (United States Department of Labor, 1949, p. 561). It is difficult to determine to what degree the NWLB wage increases passed through to price increases. Only 0.4% of NWLB cases were reviewed for "direct" price increase implications, and as such, "in view of the insignificant number of cases involved it is obvious that the general effect on prices of wage adjustments directly involving price relief was inconsequential" (United States Department of Labor, 1949, p. 563). However, if wage increase would later be the basis for a price adjustment, that would not be included in this statistic. Milner (2021) provides a case study of the interplay of these forces in the New York City garment industry during the war.[6]

We want to emphasize that it was never the explicit goal of the NWLB to reduce inequality. Instead, reducing inequality was only important to the extent that it caused "increas[ing] productivity[,] improved employee morale, stabilized employment, and reduction of work stoppage" (Derber, 1944).[7] Success was always measured relative to the aims of the war effort, while, for us, the "success" of the NWLB is defined by whether the NWLB actually influenced the distribution

[5]Now the control of (civilian) manpower was ostensibly under the purview of the War Manpower Commission (WMC), and, hence, the NWLB should have only played a supporting role, similar to the role it played in conjunction with price controls to limit inflation. However, Rockoff (1984) suggests that the policies of the WMC were not particularly important in affecting the allocation of labor. For example, in the case of a looming labor shortage in nonferrous mining, the WMC paid the transportation costs for workers and their families to relocate to the areas around the mines.

[6]Even when further price increases were prevented, evasion in the form of reclassification of dresses by adding unnecessary trimming, as well as ongoing degradation of quality, continued to undermine the goals of the OPM.

[7]This might be why, in our view, the brackets were set independent of race or gender. However, observers at the time such as Record (1944a, p. 109) understood that "though admirable in themselves as sound and fair labor policies, [eliminating sex and race disparities in wages we]re not always mutually coextensive with the interests of economic stabilization."

of wages during the war. The problem is that direct evidence on what happened to earnings during the war is limited, and, hence, our ability to identity the contemporaneous effects of the NWLB is limited. Vatter (1985) notes that the most notable changes in the income distribution were between 1941 and 1944, after which the income distribution by quintile stabilized. Based upon wage data collected by the Bureau of Labor Statistics during the war years, between January 1941 to October 1942, when the NWLB was granted power to set wages, manufacturing wages increased by seventeen percent, as opposed to fourteen percent from October 1942 until the end of the war. Manufacturing wage rates rose "only" 10.6 percent following the "hold the line" order until the end of the war (Douty, 1950). This is suggestive evidence that the NWLB moderated the rate of wage inflation through the bracket policy.

One indirect reason for believing that the NWLB did affect earnings, at least during the war, is simply the fact that the similar program during war of controlling prices was considered a "success." Galbraith (1952), who was actually an administrator of the Office of Price Administration tasked with implementing these controls, claimed they were not substantially evaded and kept prices lower than they would have been otherwise. Evans (1982) agrees with this conclusion and offers a counterfactual in which prices would have been 30% higher without them. Rockoff (1981) points to the limited number of enforcement cases as evidence for adherence to the controls.[8]

2.2 The Bracket Setting Process

Given this history, it should not be surprising that the process by which brackets were determined was not totally straightforward or formulaic. Record (1944b, p. 576) claimed that "[t]he bracket minimum [...wa]s usually set, not at the midpoint or weighted average of rates being paid for a particular job in a particular locality, but 10 per cent below the weighted average, or at the first significant cluster of going rates." Under what circumstances which of these two options was to be used was left unclear, as well as what constituted a "significant cluster" of wages. One memo from NWLB Region X, which covered California and cited by Rose (2009), stated that "In an analysis of 160 brackets set, the California regional board found 97 had been set by the cluster method and 17 by the ten percent method; in 4 cases, the cluster method and the 10% method generated identical results. This leaves 50 of 160 brackets which were set with some other criteria in mind." The NWLB itself conducted an investigation into whether or not the method of bracket determination, cluster versus the 10 percent below rule, affected the level of brackets as part of its Termination Report. The analysis was restricted to Region III (in Philadelphia) and found that administrators in this region used the cluster method, though "not exclusively" (United States Department of Labor, 1949, p. 1176, volume 2). The analysis found "wide difference in individual occupations between the bracket rates set by the 10 percent method and the actual rates set",

[8]This could also be interpreted as evidence that violators of the price controls faced minimal risk of being investigated.

but these differences "largely balance themselves" (United States Department of Labor, 1949, p. 1177, volume 2) meaning brackets were not systematically higher or lower under one or the other method.

Besides the variation in the methodology used in setting the bracket, simple geographic divisions played a major role in the bracket a worker was subject to. The 12 NWLB regions were divided into so-called zones, which was the geographic level at which the bracket varied. The general approach to setting up zones was based on the underlying spatial dispersion of wages within an industry: "In certain industries the wage structure was such that uniform rates were established for an area covering a number of contiguous localities or even an entire region"(United States Department of Labor, 1949, p. 231, volume 1). In fact, the NWLB used a concept of "labor market area" (United States Department of Labor, 1949):

> [Such an] area encompassed by a particular bracket rate was normally a single locality but no hard and fast rules were applied with regard to geographical coverage. In determining the appropriate geographical area for a bracket determination, consideration was given to the labor market areas established by the Bureau of Labor Statistics and the War Manpower Commission. In general, the geographical coverage of a set of brackets represented an economic unit within which there was competition for labor. In certain industries the wage structure was such that uniform rates were established for an area covering a number of contiguous localities or even an entire region.

Because of this lack of a hard and fast rule on how to define the boundaries of such an area, regions differed in how detailed the definitions of local labor market areas were. For example in Region IV, county borders were used as boundaries, while in Region I, borders were sometimes defined at the level of a town. In other cases, the records do not specify precisely the boundaries of a geographic areas. For example, in Region V covering Kentucky, Ohio, and West Virginia, brackets were only assigned to broad areas such as "Louisville", without reference to what area is exactly covered by the bracket. We note as well that geographic areas could potentially be industry and occupation specific.

To get a sense of this geographic variation, Figure 1 maps the brackets for stenographers.[9] There is variation in the bracket between groups of states as a function of the NWLB region, denoted by the thick black lines, in which a state is located. For example, the difference in the brackets between Louisiana and Mississippi is (at least partly) explained by the fact that Mississippi is in Region IV and Louisiana in Region VIII. At a finer level, there is also between state variation within a NWLB region. For example, the value of the bracket in Nebraska differs from the value in Iowa even though both are located in Region VII. Finally, at the finest level, there is even between county within state variation, most prominently in Region IV that covers many of the southern states.

[9]This is a cross-industry occupation so there is no variation in the bracket by industry.

3 Data

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3.1 Brackets

We collect primary source records of the brackets set by the NWLB at the occupation-industry-geography level.[10] Unfortunately, some brackets from particular regions have to our knowledge not survived. For example, we have not been able to locate the brackets from Region VI, headquartered in Chicago. Consequently, this region is not included in our analysis.

In order to develop the bracket system, the Bureau of Labor Statistics (BLS) first conducted a large-scale survey of employers "to provide information on prevailing rates in key occupations in leading industries in all important labor market areas" (United States Department of Labor, 1949, p. 797, volume 1). To carry out this survey, occupations were defined based on the 1939 *Dictionary of Occupational Titles* and sometimes subdivided into grades. The classification of jobs into standardized categories was made by field representatives of the BLS, consulting with labor managers and foremen. For "key jobs" in covered industries and areas, the form provided a weighted average rate and a range of rates at establishments. To give some example of the detail present, for male electricians in the cotton goods industry in Danville, Virginia, there is information on average wages for both unionized and nonunionized establishments, the number of firms and workers in each of these, as well as ranges for three "representative" firms.

While the NWLB had broad authority over almost all wages in the private economy, the number of occupations explicitly assigned a bracket was relatively small. As United States Department of Labor (1949) stated, "wage rate brackets were established for [only] key occupations in an industry in a labor market area." The rationale behind this was that since, in the NWLB's view, the wage structure within plants was based on a set of "key" jobs, the NWLB only needed to control the wages for these occupations to control the entire distribution of wages. "In selecting the key occupations the intention was to select job classifications which reflected the entire spread of wages common to the industry and which represented the peg points on the basis of which rates for other related occupations were normally set" (United States Department of Labor, 1949, p. 231, volume 1). In the view of the Region XII director, this policy of only setting brackets for key jobs actually increased the ability of the NWLB to stabilize the wage structure: "This limiting of brackets to key jobs was not only an economy of time, but it resulted in preserving intra-plant relationships more accurately than would have been the case if brackets had been set for practically

[10] These records are located all across the country at the regional branches of the National Archives as well as in the College Park annex of the main National Archives.

all jobs" (United States Department of Labor, 1949, p. 98, volume 3). Critically, the NWLB felt that these key occupations could be "clearly and precisely defined."

The clarity of the occupational classification also minimized one potential method of evading the brackets through reclassifying people into higher-paying occupations while keeping their actual duties unchanged. While we have no information on the amount of reclassification of workers into different occupations that took place, the NWLB was aware of the potential for this and issued specific instructions capping the amount of reclassification allowed: "Reclassifications and job re-evaluations [are] not to exceed an average increase for all employees in the plant or plants covered by the order or authorization of 1 cent per hour or 1%" (United States Department of Labor, 1949, p. 193, volume 1). In a February 1945 policy statement, the NWLB reiterated its intention that job reclassifications at plants not be a subterfuge for general wage increases: "The Board will not approve a job evaluation program which provides a general wage increase to all employees [...] to assure that wage-rate alignment is accomplished within the prevailing wage levels, the job evaluation must be based upon anchor points which are the wage rates being paid in key occupations in the plant in which substantial numbers of workers are employed. [...] As a result of these Board policies, the overall evaluation program may result in decreases as well as increases in job rates" (United States Department of Labor, 1949, p. 689, volume 2).

Brackets were also in principle defined by industry, meaning two people doing the same job in the same area might face a different bracket depending on the industries they worked in. Like the case for occupations, not all industries were explicitly assigned brackets. There is no documentary evidence to suggest these unlisted industries were not subject to the NWLB, so the question is how workers in such industries were treated. At the same time, there is no discussion as to why these industries were not listed in the brackets, unlike the missing occupations case where the NWLB is explicit about only creating brackets for "key" occupations and the reasons for that decision. The closest "precedent" we have for how unlisted industries would have been treated comes from a discussion of "isolated plants" for which there was not explicit bracket coverage either. The termination report of the NWLB (United States Department of Labor, 1949, p. 689, volume 2) states:

> A second approach involves the comparison of jobs in the subject plant with bracket rates for similar jobs in other industries in the same labor market area. In most instances, specific comparison may be possible only with reference to common labor and maintenance job classifications. Bracket comparisons involving these jobs, however, may provide an adequate basis for processing the case. In the use of this method, great caution must be exercised. Attention should be given to any marked historical differentials that have existed between wages in the subject plant and wages for comparable work in plants in other industries in the labor market area. For example, a comparison involving job classifications in the fertilizer industry and in the basic steel industry

that failed to recognize the long standing differences in rates between these industries would not be valid in terms of wage stabilization.

While there are a number of caveats here, we interpret this to broadly mean that the brackets for listed industries were applied to non-listed industries. This does not really answer the question of what to do when an occupation in an unlisted industry is listed in two separate industries (in the same geography). Because of this issue, we focus on "the case of occupations common to a number of industries, for example, clerical positions, [for which] cross-industry brackets rates were sometimes established. Thus, one rate was usually set for typists in all industries in one area" (United States Department of Labor, 1949). This allows us to sidestep the issue of unlisted industries at the cost of looking at a more limited set of occupations.

3.2 Earnings

The earnings data comes from two sources. The first is that federal Population Census in 1940. Our key dependent variable is total wage and salary income, which we will also refer to as labor earnings or income. The Census also asks about a person's occupation and weeks worked. These employment related variables all refer to the year before the Census was taken, e.g. 1939 for the 1940 Census of Population. The occupation is critical for linking to the bracket records and the second for defining our working sample. While the original census forms recorded occupations and industries as raw strings, we use the recoded version of these variables into the `occ1950` and `ind1950` classifications. This makes matching occupations to the NWLB records easier. The cost is the relative coarseness of the 1950 classification.

The other source of earnings data comes from surveys done by the BLS. These were done contemporaneously with the setting of the brackets, and the data was used as an input into that process. Exactly how the BLS did these surveys is not exactly clear. For example, we do not know how they chose which employers to survey. We use a sample of these surveys collected in the middle of 1943 covering a few hundred office occupations in the South. We plan to collect more of these records for different parts of the country and for other occupations.

The BLS records themselves are detailed, but stored in a disorganized way that makes collection difficult. One complication is that the records are stored at various regional archives. The records themselves are not consistently formatted either. There are generally two sets of forms. One, at the establishment-occupation level, tabulates the average and range of pay, often recording whether this is for male or female workers, unionization status, or establishment size. These are summarized in another set of forms, which collect for a given labor market and occupation, the average wage, often but not always broken into males and females. We have so far collected the latter forms for "Office Occupations". These are subdivided into manufacturing and non-manufacturing establishments. Other occupations are organized based on SIC industry codes, to varying degrees of fineness.

3.3 Sample Construction

In constructing our working sample, we apply the sample restrictions imposed by Goldin and Margo (1992), only keeping men, ages 18-65, who worked at least 40 weeks last year (the year the labor earnings variable refers to). Individuals in this group have traditionally been in the labor force so any effects of the brackets over time will not be due to changes in the composition of those employed. If we had included women, for example, this would create a potential concern that changes in the effects of the brackets over time could be due to changes in the composition of women in the work force as the overall rate of women's labor force participation increases. Also following Goldin and Margo, we require that individuals "earn[], on average, more than one-half the minimum wage [in that year] on a full-time basis." In the 1940 Census with a minimum wage of \$0.30 / hour, this works out to requiring individuals to have average weekly earnings greater than \$6.

The rest of our sample restrictions are due to the limitations of the bracket data. We already mentioned that the archival records of the brackets for some regions are missing and the issues of occupations, industries, and regions that were not explicitly listed in the records. The other issue is that the occupational classification used by the NWLB does not line up exactly with that in the Census.[11] Because of these differences in classification, we focus on two particular groups of occupations: white-collar and clerical jobs as well as jobs in the metal trades industries. These groups of occupations have a number of useful features. The first is that occupations are listed in the bracket records in the same way as in Census data allowing for straightforward linking. Second, the group of white-collar occupations was a cross-industry classification, meaning we do not need to worry about differences in the brackets by industry. This is not the case for metal trades occupations. However, it seems likely that the level of a bracket for the occupation in that industry was informative about how that occupation would be handled in other industries, so we have chosen to take these brackets as applying across industries in a given region. Finally, it was fairly common for these occupations to be explicitly mentioned in the bracket records. For the 10 white collar occupations, five (bookkeepers; messengers and office boys; office machine operators; stenographers, typists, and secretaries; and clerical and kindred workers (n.e.c.)) have a bracket mentioned in the NWLB records for at least 1600 counties. Other occupations such as draftsmen were recorded in relatively few brackets.

[11] Rose (2009) uses BLS surveys collected around the time in his study of the NWLB. One feature of that source relative to the Census is that it used the same occupational and industry classification system as the NWLB. This makes it straightforward to link the BLS and NWLB records. The drawback is that the BLS reports covered a limited set of occupations.

4 Imputing the Earnings Distribution in 1943

To study the earnings distribution in 1943, we impute an individual's earnings based on the bracket for the occupation-region that individual was in. The obvious question is why we think that the distribution of the brackets actually reflects the distribution of earnings. We have already provided narrative evidence that the brackets were not simply picked at random. At the same time, the narrative evidence also did not reveal a totally deterministic, easy to understand process for determining the brackets. So our first exercise is to provide some quantitative evidence on this link between the brackets and earnings.

Using the BLS sample matched to the brackets, we calculate the "predicted" value of the bracket as 90% of the average wage in a given occupation and WLB zone, and compare this predicted to the actual bracket. Deviations between these the actual and predicted cannot be due to, for example, noise introduced by aggregating occupations or regions. The occupational categories in the BLS data are exactly the same as the categories in the brackets data. What could drive deviations is the slight time gap between when these data were collected in the middle of 1943 and when the bracket was actually set at the end of 1943. However, we would expect this to be minor.

Figure 2 plots the relationship between the (log) actual and (log) predicted bracket. There is a clear positive relationship between the two though the elasticity is less than the "theoretical" value of 1. Furthermore, except for a handful, the value of the actual bracket was greater than the predicted one. That is consistent with a general increase in earnings between the time when these earnings were collected and the time when the earnings used to set the brackets were collected. As a point of comparison, Rose (2009) finds that, for a sample of occupations from California, the brackets were usually between the zeroth and twentieth percentile of the 1943 hourly earnings distribution.

Even though it appears the NWLB was not following the 90% rule exactly, what actually matters for being able to recover the wage distribution from the bracket distribution is the existence of a stable relationship between the two. On this point, the data clearly support such a relationship with the bracket alone explaining about 80% of the variation in earnings. Therefore, we use the fitted linear relationship between earnings and brackets from this sample to predict earnings based on the brackets for all other occupations and regions not in this sample. Under this imputation approach, the distribution of earnings is a simple affine transformation of the distribution of the brackets. Even with this rather straightforward transformation, we think this is still an interesting exercise and will explore more complicated imputation processes in future work.

One limitation of this approach is that we only have a single observation on earnings per occupation-region cell that we interpret as the a random draw from the earnings distribution for that cell. As a consequence, at best, we are only able to recover the between occupation-region distribution of earnings. This imputation approach will not allow us to recover the within

distribution. We plan to address this limitation by collecting some additional data from the NWLB that has some information on the within distribution of earnings. With this additional information, we can understand not just how the bracket is related to the mean but other percentiles of the earnings distribution.

Besides assuming that the relationship for this set occupations applies more broadly, the imputation approach also assumes that any prediction errors are random. This would be true if the NWLB "made mistakes" when attempting to apply the 90% rule. In this case, accurately measuring the income distribution using the brackets requires filtering out this idiosyncratic component of the brackets that is not driven by earnings. This imputation approach would not work if the actual relationship between the wage and the bracket was not actually linear.

5 Simulating the Earnings Distribution in 1945

We construct simulated or hypothetical distribution of earnings in 1945 taking into account the potential effects of the brackets. Recall that the brackets did not require anything to immediately happen. They simply limited any further wage increases for those earnings more than the bracket. Our hypothetical assumes that by the end of the war, all those initially earning less than the bracket were earning whatever the bracket specified and nothing had changed for those initially earning more than the bracket. In other words, we assume that, by the end of the war in 1945, the brackets were binding for everyone even those initially earning (much) less.

We want to be careful to emphasize that these exercises should not be interpreted casually. We are not attempting to isolate some exogenous variation in the brackets, but rather we are focused on the systematic variation in the brackets across a number of dimensions including occupation and region. If somehow the brackets were correlated with not just the level of wages but also trends in wages absent the bracket, then some of the changes we attribute to the brackets would have potentially happened on their own. At the same time, it might be argued that this hypothetical provides an upper bounded for the effects of the brackets. This is because (1) individuals earning less than the bracket may never have made it up to that level by the end of the war and (2) those earning initially more perhaps were able to negotiate a raise through legal or illegal means.

We focus on the effects on the differences in percentiles as the measures of inequality where we put the lower percentile first and the higher percentile second so that an increase in this difference represents a decline in inequality. Let p_0 and q_0 be the lower and upper percentiles of the inequality measure before the bracket and p_1 and q_1 after the bracket is imposed. There are three cases for the value of the bracket $\bar{w}$ to consider: (1) $\bar{w} < p_0$; (2) $p_0 \leq \bar{w} < q_0$; and (3) $\bar{w} \geq q_1$. In the first case, there will be no change in inequality: $(q_1 - p_1) - (q_0 - p_0) = 0$. In the second case, $p_1 = F^{-1}(\bar{w})$ where F is the CDF of earnings before the bracket and $q_1 = q_0$. Hence, $(q_1 - p_1) - (q_0 - p_0) = p_0 - F^{-1}(\bar{w})$. Finally, for the third case, there will be no inequality post bracket so $(q_1 - p_1) - (q_0 - p_0) = -(q_0 - p_0)$.

This shows what happens to inequality *within* a particular occupation-region cell. However, what these within changes mean for inequality overall is not so simple since the change in inequality of the unconditional distribution is not a simple weighted average of the changes of the conditional distributions. First, the overall change in inequality also depends on between group changes in inequality due to the brackets. If we had instead focused on the variance as the measure of inequality, then it would be straightforward to decompose the change in the unconditional variance into change in the between and within components. There is not an exact decomposition like that for the case of differences in percentiles. On the other hand, the problem with using the variance as our measure of inequality is that there is no simple expression for the effects of the bracket on the within variances.

An additional difficulty in moving from the within inequality changes to the overall inequality change is the need to aggregate within changes according to employment with a group. We do not know what the distribution of employment was in 1943,[12] and, so for right now, we implicitly assume that the distribution of employment in 1945 is the same as the distribution in 1940. This is obviously wrong. The bias introduced by these incorrect weights depends on the correlation between the difference between the bracket and 1940 earnings and the change in employment. Or more concretely, are (relatively) high values for the brackets a sign of high labor demand and, hence, high employment or low labor supply and, hence, low employment? This correlation is something that we could estimate using our limited BLS sample, and, in future work, we are planning to make adjustments to the weights based on this correlation.

6 Preliminary Results

Our first set of results in Figure 3 compares the earnings distributions for white-collar and metal trades occupations in 1939, 1943 (imputed), and 1945 (simulated). Recall that the 1943 distribution is an affine transformation of the distribution of the brackets since we are using a linear model to impute earnings from the brackets. Relative to the 1939 distribution, the 1943 distribution is much more compressed with a much thinner right tail. The fact that the 1945 distribution has a much thicker left tail is due to the piling up of individuals at the levels of the bracket.

Figure 4 shows the distribution of within occupation-county changes in inequality as measured by the p10-p90 difference. Recall that by putting the smaller percentile first, increases in this difference imply a *decrease* in inequality. Also recall that the occupation-county level is, in most cases, the level at which the brackets vary. One can think of the previous figure, which were the unconditional distributions, as aggregating in a (non-linear) way all of these conditional or within changes in inequality. The modal cell potentially experienced a decline in inequality of about 50

[12]The BLS data examined above reports employment so it would be possible in theory to use these data for weights. The problem is we have it for such a narrow set of occupations, and we instead choose to rely on the employment distribution from the 1940 Census.

log points, a substantial reduction. We note that there is a substantial mass of cells that would have experienced no change in inequality. This means that the bracket was set below the 10th percentile of the earnings distribution in these cases.

We next examine in Figure 5 geographic variation in these hypothetical inequality changes for electricians. To be clear, this figure does not have anything to say about whether the brackets reduced regional differences in earnings. We do that separate calculation later. Instead, this figure shows that the brackets had the most "compressive" effects in the South, at least, for electricians. This is due to the brackets being set relatively higher in the distribution in the South than in the North. By the bracket being set higher, we mean as a percentile of the earnings distribution not in the sense of relative to the average earnings. Even if two regions have the same average level of earnings and, hence, the same value for the bracket, that same value would have very different compressive effects as a function of differences in the left tail of the earnings distribution across the regions.

Table 1 shows hypothetical changes in inequality within occupations. These hypotheticals impose both the brackets and the NWLB minimum wage. There is substantial variation in the effects of the brackets on within occupation inequality. Roughly speaking, the effects are smaller for the white-collar occupations (the first 7 occupations listed in the table) relative to the metal trades occupations (the remaining occupations in the table). These effects are mainly driven by decreases in inequality at the bottom of the distribution. This is partly mechanical since there is no effect on the bracket for those initially earnings more than the bracket. Like our earlier discussion of the regional variation in these effects for electricians, differences in effects need not be evidence of systematic deviations in the bracket setting process, but rather differences across occupations in the earnings distribution. Table 2 shows changes in inequality within occupations but only taking into account the hypothetical effects of the brackets excluding the effects of the minimum wage. The vast majority of inequality changes are quite similar to the previous scenario. We conclude from this that the minimum wage is not that important relative to the brackets in driving changes in inequality.

Table 3 shows changes in inequality within states. Variation across states will be due to geographic variation in where the brackets are set in the earnings distribution independent of occupation as well as differences across geography in the occupational mix. As we just showed, there is substantial variation across occupations in the hypothetical effects of the brackets. We find, broadly speaking, the biggest hypothetical declines in inequality in Southern states, which is consistent with the differences in occupational mixes between these two regions of the country. Table 4 shows changes in inequality within states but only taking into account the hypothetical effects of the brackets. Like the previous calculations for occupations, we do not observe large differences between this hypothetical only imposing the bracket and the previous one imposing both the bracket and the minimum wage.

Until now, we have focused on the effects of the brackets on the within component of inequality.

We now turn to the effects on one between component: differences in average earnings by educational attainment. Figure 6 shows the hypothetical effects of the brackets on the ratio of college graduate to high school graduate earnings relative to its value in 1940. We plot as a function of years of experience the overall skill premium in the full 1939 sample (Overall) as well as for our sample of occupations (Matched). For one year of experience, this ratio of is about 1.7 in the overall sample and just over 1.4 in the matched sample. The premium falls as years of experience increases with the earnings premium in the matched sample of about 10% for 8 years of experience. However, the hypothetical skill premium imposing the brackets is not much smaller than the skill premium in 1939 for the matched sample. This is particularly true for greater years of experience where the premium is practically nil. The small effects reflect the fact that the brackets were set at occupational (and regional) level as a function of the mean. Hence, to the extent that occupations are segmented by educational attainment, the brackets should not affect this between inequality component.

We can do a similar calculation for the North-South earnings differential. For similar reasons to the skill premium case, we find that the hypothetical effects of the brackets were moderate. Workers in the North earned about 40% than those in the South in 1939. After taking into account the hypothetical effects of the brackets, this premium is about 30%. So the brackets do potentially reduce these regional differences, but the effects do not seem large relative to the decline in this premium during the postwar period. These results and those for the skill premium show that whatever the effects of the bracket were on inequality, those effects were driven by the *within* component, be it occupation or region, rather than the between component. This should not be surprised given that the brackets were set as a function of the average occupation-region wage. Such a procedure will "lock in" the existing differences in earnings between occupation-region groups while compressing the within component.

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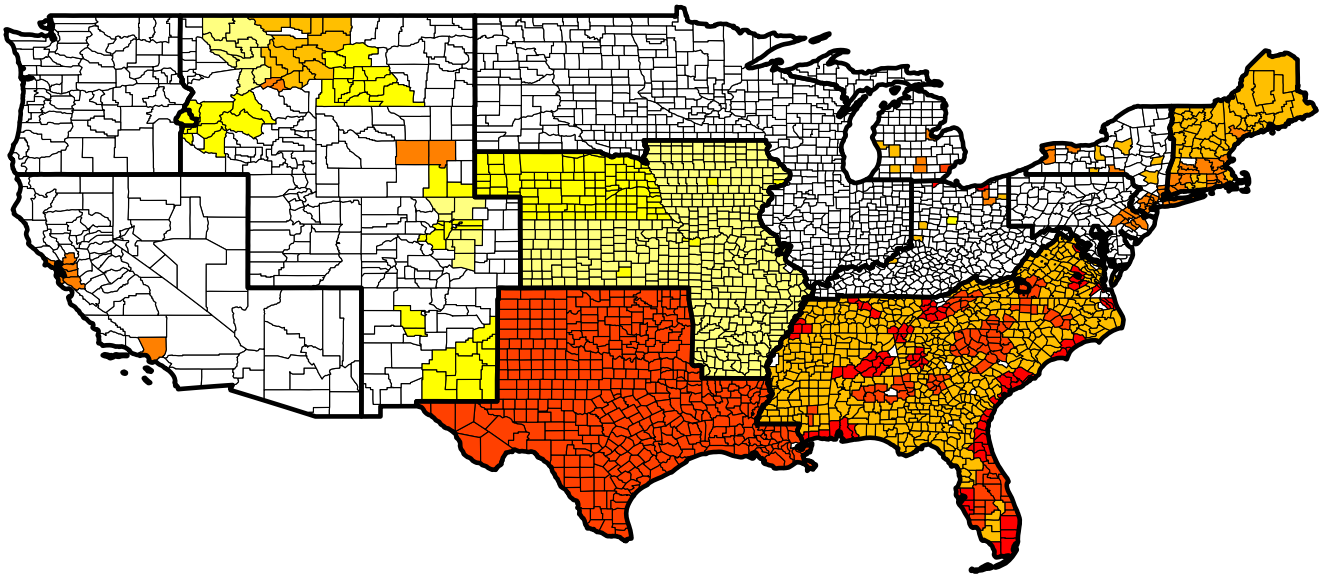
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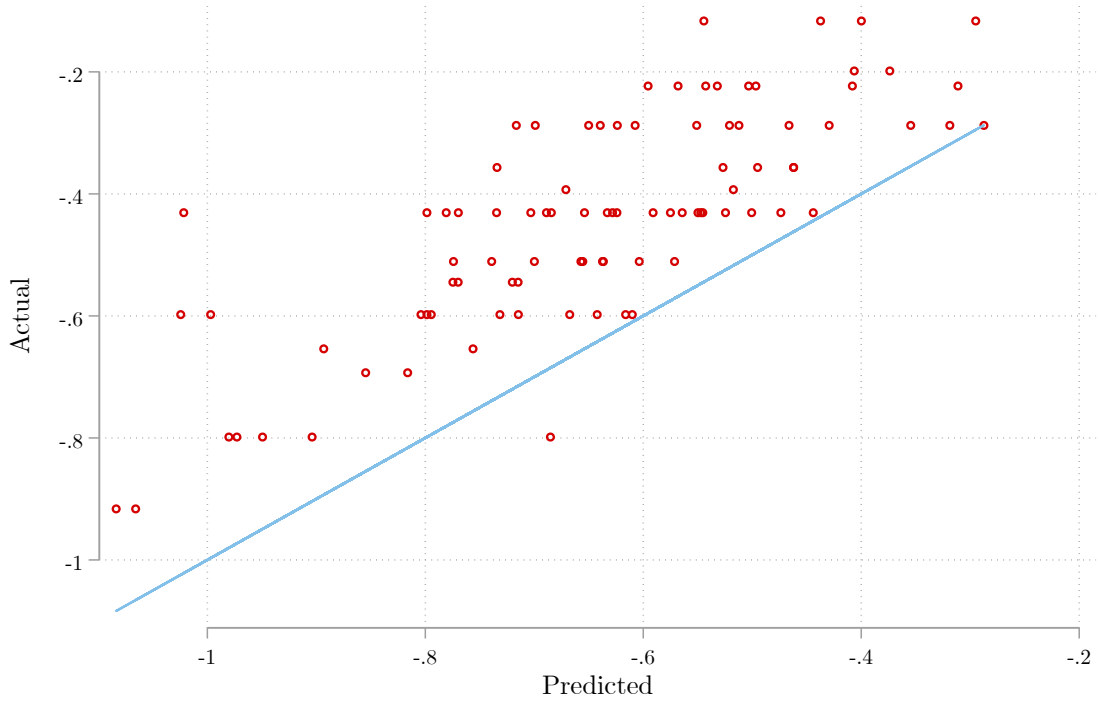
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Figure 1: Brackets for Stenographers



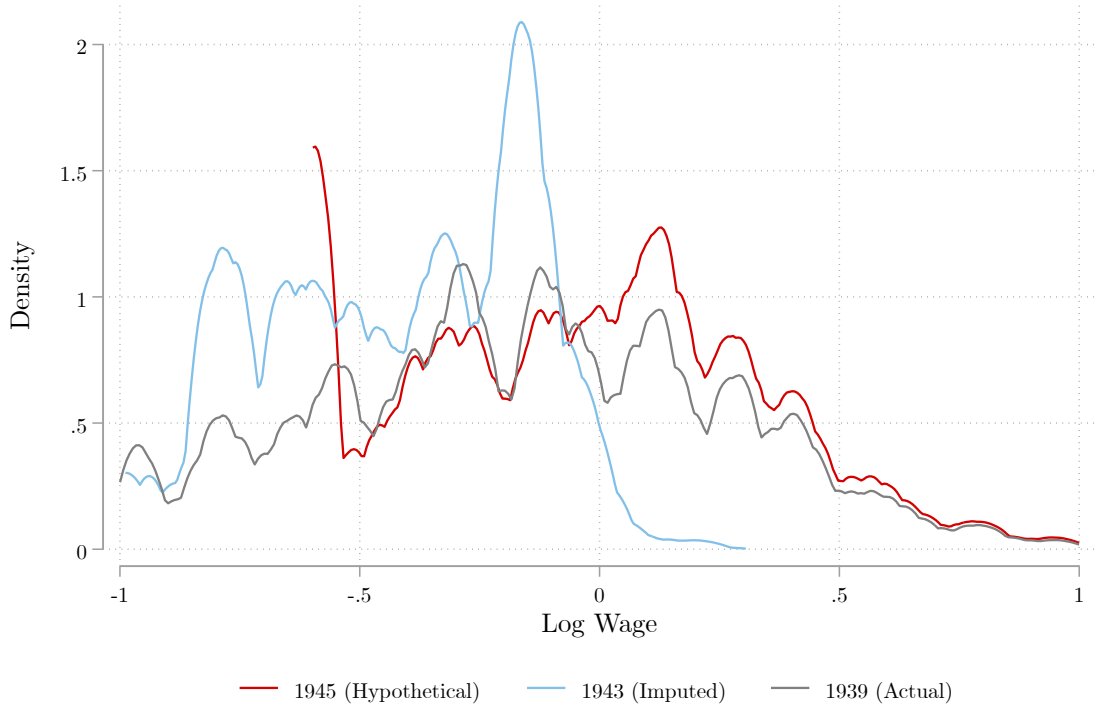
Notes: Darker values represent higher values for the bracket. Region I, which covers the northeast, defines brackets at the town-level. So a shaded county in that region means that the county includes a city with a bracket assigned. For the other regions, brackets are assigned at the county-level. The thick black lines represent borders of NWLB regions. Counties are unshaded either because (1) the county is not listed in the brackets; (2) the county had no stenographers in the 1940 Census; or (3) the brackets for a region are missing or have not been collected.

Figure 2: Actual vs. Predicted Brackets



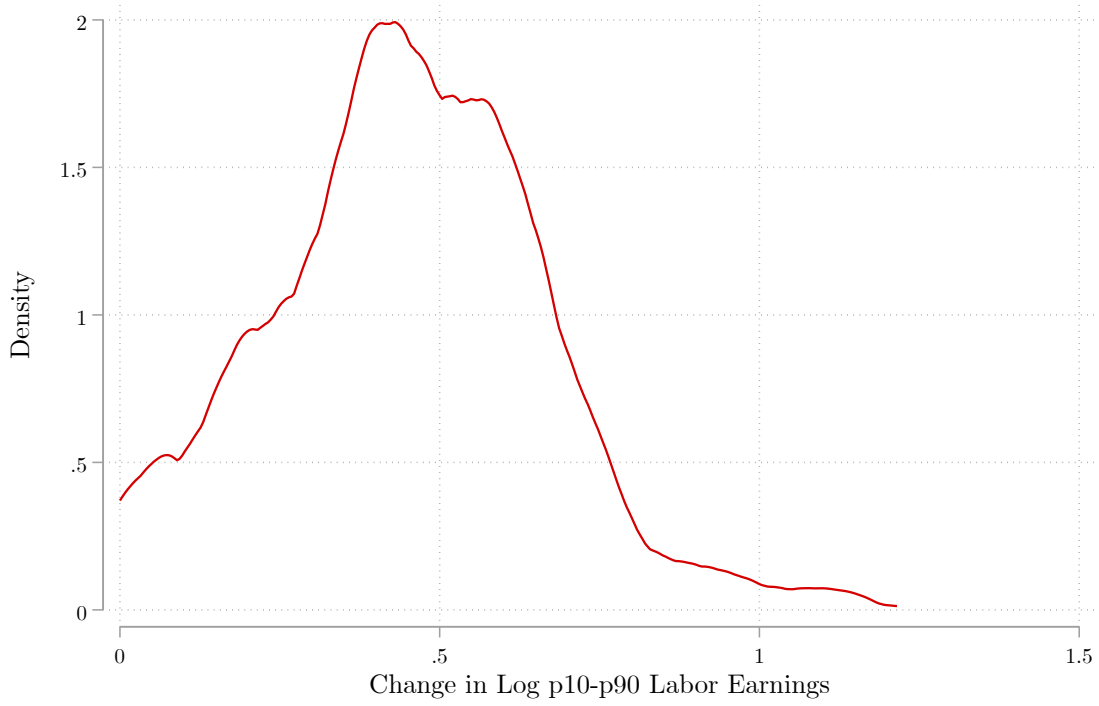
Notes: The predicted bracket is 90% of mean earnings. The 1943 hourly earnings variable is calculated using reported labor income and weeks worked in 1939 assuming a 40-hour workweek. Earnings in 1943 are adjusted for growth in production worker compensation between 1940 and 1943. The data are for a sample of office work occupations in the South collected by the BLS in the middle of 1943.

Figure 3: Distributions of Earnings in 1939, 1943, and 1945



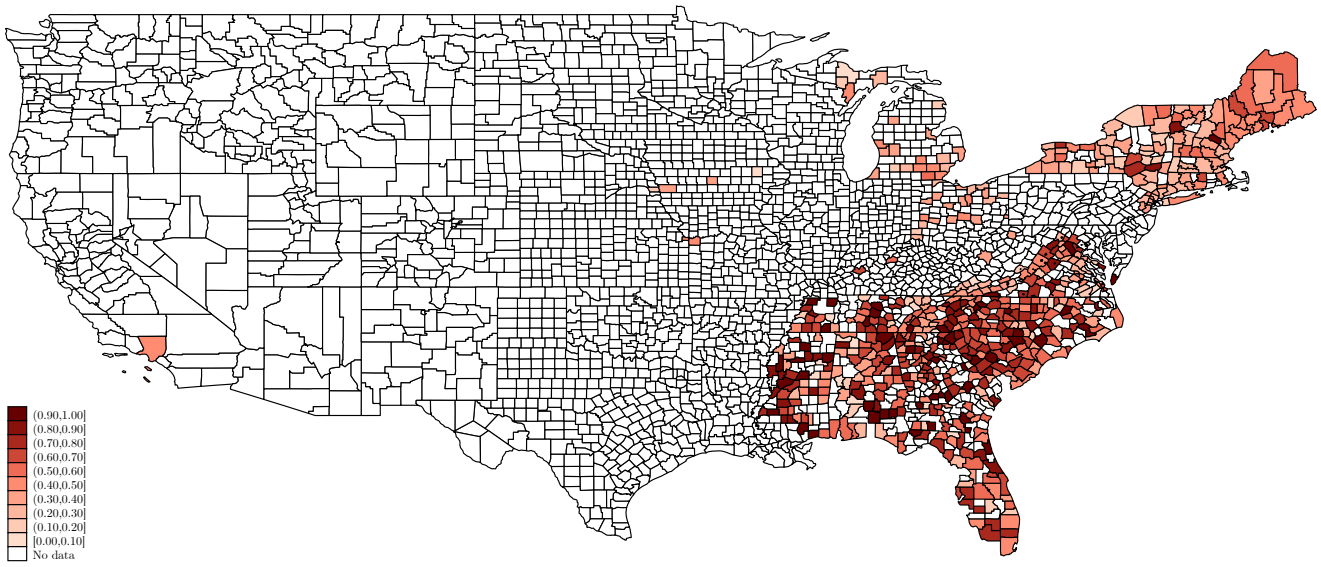
Notes: The actual distribution in 1939 is the distribution of earnings from the 1940 Census of Population. The imputed distribution in 1943 is based on imputing earnings from the brackets. The hypothetical distribution in 1945 is the hypothetical earnings applying the brackets (and NWLB minimum wage) to the 1939 earnings distribution. The 1943 hourly earnings variable is calculated using reported labor income and weeks worked in 1939 assuming a 40-hour workweek. Earnings in 1943 are adjusted for growth in production worker compensation between 1940 and 1943.

Figure 4: Hypothetical Changes in Within Occupation-County Inequality



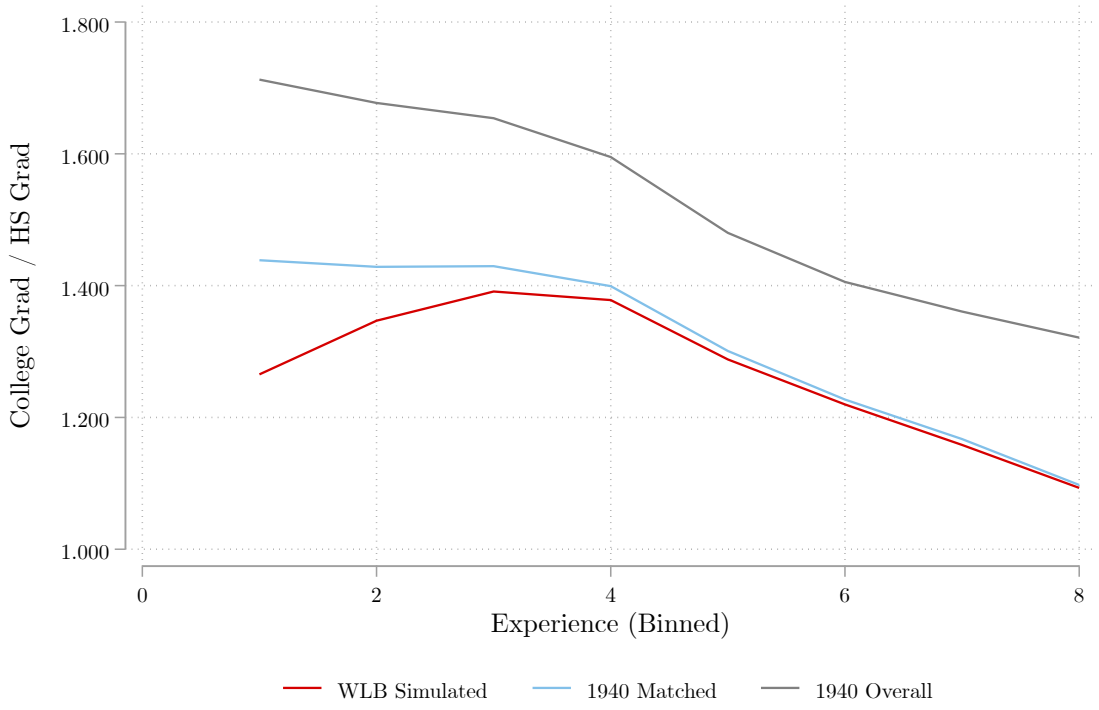
Notes: These changes in inequality are between the hypothetical distribution assuming the bracket and minimum wage are binding and the 1939 distribution. The 1943 hourly earnings variable is calculated using reported labor income and weeks worked in 1939 assuming a 40-hour workweek. Earnings in 1943 are adjusted for growth in production worker compensation between 1940 and 1943.

Figure 5: Geographic Variation in Changes in Within County Inequality: Electricians



Notes: In Region IV, geographic divisions for brackets are defined at the county-level. Counties were divided into "A", "B", "C", and "D" zones, with different brackets defined for each covered occupation for each zone. These changes in inequality are between the hypothetical distribution assuming the bracket and minimum wage are binding and the 1939 distribution. The 1943 hourly earnings variable is calculated using reported labor income and weeks worked in 1939 assuming a 40-hour workweek. Earnings in 1943 are adjusted for growth in production worker compensation between 1940 and 1943.

Figure 6: Hypothetical Effects on College-High School Skill Premium



Notes: The 1939 Overall is the skill premium in the full 1940 Census of Population. The 1939 Matched is the earnings skill premium from the 1940 Census of Population for white-collar and metal trades occupations. The WLB simulated is the hypothetical skill premium imposing the brackets and the minimum wage for white-collar and metal trades occupations. The 1943 hourly earnings variable is calculated using reported labor income and weeks worked in 1939 assuming a 40-hour workweek. Earnings in 1943 are adjusted for growth in production worker compensation between 1940 and 1943.

Table 1: Hypothetical Changes in Inequality from 1939 to 1945 by Occupation

	100× Change in Log...					
Occupation	p10-p90	p10-p50	p50-p90	p25-p75	p50-p75	p25-p50
Draftsmen	20.1	20.1	-0.0	14.3	0.0	14.3
Bookkeepers	14.9	14.5	0.5	1.9	0.5	1.4
Messengers and office boys	38.3	38.3	0.0	18.0	-0.0	18.0
Office machine operators	13.3	13.3	-0.0	3.9	-0.0	3.9
Stenographers, typists, and secretaries	36.3	36.3	0.0	17.0	-0.0	17.0
Telephone operators	13.1	13.1	-0.0	0.0	-0.0	-0.0
Clerical and kindred workers (n.e.c.)	19.8	15.7	4.1	5.1	4.1	1.0
Carpenters	81.2	63.4	17.8	42.4	17.8	24.5
Cranemen, derrickmen, and hoistmen	15.4	15.4	0.0	0.0	0.0	-0.0
Electricians	35.5	31.9	3.6	15.7	3.6	12.1
Machinists	38.0	33.6	4.4	21.5	3.5	17.9
Millwrights	28.6	27.6	1.0	13.8	1.0	12.8
Molders, metal	45.2	29.5	15.7	27.8	11.9	15.9
Painters, construction and maintenance	44.9	36.6	8.3	27.2	8.3	18.9
Pattern and model makers, except paper	21.5	16.3	5.2	13.5	5.2	8.2
Tool makers, and die makers and setters	34.7	32.1	2.6	10.6	0.4	10.2
Furnacemen, smeltermen and pourers	13.7	13.7	-0.0	12.8	-0.0	12.8
Heaters, metal	54.5	41.9	12.6	28.6	11.8	16.8
Oilers and greaser, except auto	15.1	15.1	0.0	3.1	0.0	3.1
Sawyers	19.5	19.5	-0.0	3.1	-3.4	6.5
Truck and tractor drivers	36.2	27.9	8.4	18.2	8.4	9.9
Welders and flame cutters	35.5	27.7	7.8	15.9	7.8	8.0
Elevator operators	18.7	18.7	-0.0	7.1	-0.0	7.1
Guards, watchmen, and doorkeepers	21.9	18.0	3.9	10.4	3.9	6.5
Housekeepers and stewards, except private household	12.1	12.1	0.0	-0.0	0.0	-0.0
Janitors and sextons	33.2	33.2	-0.0	12.4	-0.0	12.4
Practical nurses	76.9	36.2	40.7	50.5	38.0	12.6
Laborers (nec)	46.8	32.3	14.4	20.1	12.6	7.5

Notes: These changes in inequality are between the hypothetical distribution assuming the bracket and minimum wage are binding and the 1939 distribution. The 1943 hourly earnings variable is calculated using reported labor income and weeks worked in 1939 assuming a 40-hour workweek. Earnings in 1943 are adjusted for growth in production worker compensation between 1940 and 1943.

Table 2: Hypothetical Changes in Inequality from 1939 to 1945 by Occupation: Brackets Only

	100× Change in Log...					
Occupation	p10-p90	p10-p50	p50-p90	p25-p75	p50-p75	p25-p50
Draftsmen	20.1	20.1	-0.0	14.3	0.0	14.3
Bookkeepers	14.9	14.5	0.5	1.9	0.5	1.4
Messengers and office boys	20.3	20.3	0.0	11.5	-0.0	11.5
Office machine operators	13.3	13.3	-0.0	3.9	-0.0	3.9
Stenographers, typists, and secretaries	36.3	36.3	0.0	17.0	-0.0	17.0
Telephone operators	13.1	13.1	-0.0	0.0	-0.0	-0.0
Clerical and kindred workers (n.e.c.)	19.8	15.7	4.1	5.1	4.1	1.0
Carpenters	81.2	63.4	17.8	42.4	17.8	24.5
Cranemen, derrickmen, and hoistmen	15.4	15.4	0.0	0.0	0.0	-0.0
Electricians	35.5	31.9	3.6	15.7	3.6	12.1
Machinists	38.0	33.6	4.4	21.5	3.5	17.9
Millwrights	28.6	27.6	1.0	13.8	1.0	12.8
Molders, metal	45.2	29.5	15.7	27.8	11.9	15.9
Painters, construction and maintenance	44.9	36.6	8.3	27.2	8.3	18.9
Pattern and model makers, except paper	21.5	16.3	5.2	13.5	5.2	8.2
Tool makers, and die makers and setters	34.7	32.1	2.6	10.6	0.4	10.2
Furnacemen, smeltermen and pourers	13.7	13.7	-0.0	12.8	-0.0	12.8
Heaters, metal	54.5	41.9	12.6	28.6	11.8	16.8
Oilers and greaser, except auto	15.1	15.1	0.0	3.1	0.0	3.1
Sawyers	19.5	19.5	-0.0	3.1	-3.4	6.5
Truck and tractor drivers	36.2	27.9	8.4	18.2	8.4	9.9
Welders and flame cutters	35.5	27.7	7.8	15.9	7.8	8.0
Elevator operators	18.7	18.7	-0.0	7.1	-0.0	7.1
Guards, watchmen, and doorkeepers	8.2	5.1	3.1	9.9	3.1	6.8
Housekeepers and stewards, except private household	2.6	2.6	0.0	-0.0	0.0	-0.0
Janitors and sextons	33.2	33.2	-0.0	12.4	-0.0	12.4
Practical nurses	76.9	36.2	40.7	50.5	38.0	12.6
Laborers (nec)	26.7	12.3	14.4	10.5	12.6	-2.0

Notes: These changes in inequality are between the hypothetical distribution only imposing the bracket and the 1939 distribution. The 1943 hourly earnings variable is calculated using reported labor income and weeks worked in 1939 assuming a 40-hour workweek. Earnings in 1943 are adjusted for growth in production worker compensation between 1940 and 1943.

Table 3: Hypothetical Changes in Inequality from 1939 to 1945 by State

	100× Change in Log...					
State	p10-p90	p10-p50	p50-p90	p25-p75	p50-p75	p25-p50
AL	58.6	49.4	9.1	21.3	-5.8	27.1
AR	35.0	35.0	-0.0	6.8	-0.0	6.8
CA	24.2	21.2	3.0	7.0	1.0	6.0
CO	44.2	40.5	3.8	21.9	0.6	21.3
CT	19.8	12.4	7.4	2.3	3.4	-1.1
FL	52.2	39.8	12.4	16.3	-3.4	19.8
GA	62.2	46.5	15.7	9.5	-10.8	20.3
IA	19.7	16.5	3.2	8.5	3.2	5.3
ID	26.8	22.4	4.4	18.2	4.4	13.8
KS	14.5	11.3	3.1	4.2	2.8	1.4
KY	34.7	12.4	22.3	5.9	18.3	-12.3
LA	49.9	49.9	-0.0	12.4	0.0	12.4
MA	32.6	28.3	4.4	7.9	3.8	4.1
MD	12.4	5.3	7.1	2.7	5.9	-3.2
ME	33.0	25.0	8.0	10.5	8.0	2.5
MI	41.9	36.0	5.9	16.0	5.5	10.5
MO	18.2	12.3	6.0	8.2	5.7	2.5
MS	60.9	47.0	13.9	27.7	3.5	24.2
MT	23.1	23.1	-0.0	6.3	-0.0	6.3
NC	54.5	46.5	8.0	8.6	-15.8	24.5
NE	26.0	26.0	0.0	4.9	-1.6	6.5
NH	22.6	14.9	7.8	21.0	7.8	13.2
NJ	16.3	8.9	7.4	4.5	6.3	-1.8
NM	16.5	16.5	0.0	8.1	-0.0	8.1
NY	20.4	13.0	7.4	5.4	5.8	-0.4
OH	23.0	9.4	13.6	14.3	14.3	-0.0
OK	33.2	33.2	-0.0	1.1	0.0	1.1
OR	28.8	28.8	-0.0	-0.0	-0.0	0.0
PA	26.9	22.8	4.1	-2.5	1.6	-4.1
RI	26.7	26.7	0.0	3.9	-0.0	3.9
SC	56.8	42.5	14.3	8.6	-9.7	18.2
TN	50.7	38.3	12.4	6.5	-3.0	9.5
TX	40.1	40.1	-0.0	6.3	0.0	6.3
VA	41.1	33.1	8.0	11.1	1.1	10.0
VT	20.4	14.3	6.1	10.4	6.0	4.4
WA	31.2	31.2	0.0	0.0	-0.0	0.0
WV	46.0	38.0	8.0	7.7	3.3	4.4
WY	10.5	10.5	0.0	4.1	0.0	4.1

Notes: These changes in inequality are between the hypothetical distribution only imposing the bracket and the 1939 distribution. The 1943 hourly earnings variable is calculated using reported labor income and weeks worked in 1939 assuming a 40-hour workweek. Earnings in 1943 are adjusted for growth in production worker compensation between 1940 and 1943.

Table 4: Hypothetical Changes in Inequality from 1939 to 1945 by State: Bracket Only

	100× Change in Log...					
State	p10-p90	p10-p50	p50-p90	p25-p75	p50-p75	p25-p50
AL	38.5	29.4	9.1	11.8	-5.8	17.6
AR	21.4	21.4	-0.0	6.8	-0.0	6.8
CA	24.2	19.3	4.9	6.1	2.1	4.1
CO	44.2	40.5	3.8	21.9	0.6	21.3
CT	19.8	12.4	7.4	2.3	3.4	-1.1
FL	32.2	19.8	12.4	6.8	-3.4	10.2
GA	42.1	26.5	15.7	-8.5	-10.8	2.3
IA	19.7	16.5	3.2	8.5	3.2	5.3
ID	26.8	22.4	4.4	18.2	4.4	13.8
KS	14.5	11.3	3.1	4.2	2.8	1.4
KY	34.7	12.4	22.3	5.9	18.3	-12.3
LA	49.9	49.9	-0.0	12.4	0.0	12.4
MA	32.6	28.3	4.4	7.9	3.8	4.1
MD	12.4	5.3	7.1	2.7	5.9	-3.2
ME	33.0	25.0	8.0	10.5	8.0	2.5
MI	41.9	36.0	5.9	16.0	5.5	10.5
MO	18.2	12.3	6.0	8.2	5.7	2.5
MS	40.9	26.9	13.9	7.7	3.5	4.1
MT	23.1	23.1	-0.0	6.3	-0.0	6.3
NC	34.4	26.4	8.0	-9.4	-15.8	6.5
NE	26.0	26.0	0.0	4.9	-1.6	6.5
NH	22.6	14.9	7.8	21.0	7.8	13.2
NJ	16.3	8.9	7.4	4.5	6.3	-1.8
NM	16.5	16.5	0.0	8.1	-0.0	8.1
NY	20.4	13.0	7.4	5.4	5.8	-0.4
OH	23.0	9.4	13.6	14.3	14.3	-0.0
OK	33.2	33.2	-0.0	1.1	0.0	1.1
OR	28.8	28.8	-0.0	-0.0	-0.0	0.0
PA	26.9	22.8	4.1	-2.5	1.6	-4.1
RI	26.7	26.7	0.0	3.9	-0.0	3.9
SC	36.7	22.4	14.3	-11.5	-9.7	-1.8
TN	32.7	20.3	12.4	-3.0	-3.0	0.0
TX	40.1	40.1	-0.0	6.3	0.0	6.3
VA	21.0	13.0	8.0	7.4	1.1	6.3
VT	20.4	14.3	6.1	10.4	6.0	4.4
WA	31.2	31.2	0.0	0.0	-0.0	0.0
WV	46.0	38.0	8.0	7.7	3.3	4.4
WY	10.5	10.5	0.0	4.1	0.0	4.1

Notes: These changes in inequality are between the hypothetical distribution only imposing the bracket and the 1939 distribution. The 1943 hourly earnings variable is calculated using reported labor income and weeks worked in 1939 assuming a 40-hour workweek. Earnings in 1943 are adjusted for growth in production worker compensation between 1940 and 1943.