Sources of the Gender Wage Gap in the United States, 1983-2013

Extended Abstract

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After declining rapidly in the 1980s and to a lesser extent in the 1990s, the gender gap in wages in the United States remains at nearly the same level as it was 15 years ago. In accounting for these trends in the gender wage gap, scholars typically focus on trends in the segregation of men and women into labor market positions, which sorts men and women into differentially rewarded positions, and trends in the wages associated with labor market positions, which can generate change in the gender wage gap even in the face of constant levels of segregation. In the former vein, for example, England (2005) links the comparatively rapid decline in the gender gap in wages in the 1980s to the decline in occupational segregation and, similarly, the stalled convergence in the gender wage gap in the 2000s to the glacial pace of occupational integration in this decade. In the latter vein, Cha and Weeden (2014) argued that the rising hourly pay associated with “overwork” (defined as 50 or more hours per week), coupled with persistent gender gaps in who works long hours, exacerbated the gender gap in wages in the 1990s and early 2000s. These two basic approaches are combined in standard wage decompositions that tease out how changes in the distribution of men and women across the focal job situation (e.g., work hours) and changes in the wage returns to those focal job situations contributed to trends in the gender gap in wages (e.g., Weeden & Cha 2015; Goldin 2014; (Mandel, Semyonov 2014; Cha, Weeden 2014; Antonczyk et al. 2010; Blau et al. 2013; Blau 2012).

In this paper, we propose and implement a complementary approach to assessing trends in the gender gap in wages. We assume, firstly, that men and women are unevenly distributed across positions located in a multidimensional inequality space that is defined by wage-relevant demographic attributes (e.g., race), “human capital” attributes (e.g., education), and job situations (e.g., occupation, work hours, public or private sector). We use non-parametric matching to identify men and women who are in shared positions and men and women who are in gender-specific positions, calculate the share of each of the four group’s share of the overall labor force, and estimate the mean wages of each group. Using repeated cross-sectional data from the United States from 1983-2013, we decompose the overall gender gap in wages in each year into four components: 1) gender-specific pay in shared positions, which we model as composition-adjusted wage differences of employees in shared positions; 2) gender differences in the employment structure, modeled as composition effects
between men in shared positions and women in shared positions; 3) wage differences between men in shared positions and men in gender-specific positions; and 4) wage differences between women in shared positions and men in gender-specific positions.

This approach allows us to answer important, and heretofore unanswered, descriptive questions about convergence and divergence in the gender gap in wages and its sources. To what extent was the observed decline in the gender gap in the 1980s driven by declining pay differences between men and women who hold identical positions in the labor market, as is often assumed? To what extent was it instead driven by changes in wage polarization within genders? Did the slowdown in convergence in the 1990s and 2000s reflect stagnation in the wage gap among workers in shared positions, or was it generated by offsetting trends among men and women who share common positions in the labor market and among men and women who work in gender-specific positions?

Our approach complements strategies that are commonly used to assess trends in the gender gap in wages. First, it highlights that a substantial proportion of the labor force does not, in fact, share labor market positions with members of the opposite sex. This observation is by no means new within the gender inequality literature: some 30 years ago, for example, Baron and Bielby argued that “work done by both men and women is often done in distinct organizational settings” (Baron and Bielby 1986, p. 787). However, the sparse overlap between men and women in the labor market tends to be understated when scholars focus on only one dimension of segregation, such as occupational segregation or industry segregation. Moreover, it is often glossed over in standard wage equations or decomposition techniques based on them (e.g., Juhn et al. 1993), where the goal is to identify the partial association of one variable with wages after conditioning on other variables. In this context, it’s common to claim that a worker of one gender is “observationally similar” to another on the wage-relevant covariates, without acknowledging that the true overlap between men and women in the labor market positions they hold may be only modest. Our approach, by contrast, explicitly acknowledges that many workers may fall outside the area of common support.

Second, by estimating separate wage trends for men and women who are in gender-specific and shared labor market positions, we allow broader economic or social trends to affect the wages of these four groups in different ways. Consider, for example, financialization and the emergence of a “shareholder” economy, which some scholars argue has raised the relative pay of professionals and managers in the financial sector. According to the logic of this argument, in the absence of within-occupation pay discrimination, financialization will increase the relative wages of both men and women who work in identical occupations within the financial services industry. However, because many of the positions that benefitted from financialization are gender-specific, such that no women hold them, the mean wages of men in these gender-specific positions will increase whereas the mean wages of women in gender-specific positions will not (assuming no other changes in the labor market).
This would contribute to the overall gender wage gap, but because of a growing within-gender wage gaps (i.e., wage polarization) and not because of a growing gap in wages among men and women in shared positions. Although we will not attempt in this paper to make predictions about the many external forces that may generate heterogeneity in the wage trends in and outside of shared positions, our method allows for such heterogeneity. In the process, it also acknowledges that the overall gender wage gap is as much tied to within-gender wage differentials as it is to between-gender wage gaps (see also Bernhardt et al. 1995).

Defining and using positions to explain the gender wage gap

A core feature of our analysis is that it differentiates between men and women in shared positions and men and women in gender-specific positions. This leads to the obvious question, “how are the positions defined?”

We define shared positions by demographic attributes (race, ethnicity, marital status, and metropolitan residence); wage-relevant “human capital” (education, age, and potential experience); and labor market attributes (occupation, industry, work hours, and union status). Our choice of these covariates is driven by prior research on gender segregation in labor markets and on the gender gap in wages. So, for example, a large body of research shows that occupational segregation remains substantial and accounts for a large share of the gender gap in wages (e.g., Blau et al 2013). Other scholarship argues that industrial segregation is conceptually and empirically distinct from occupational segregation (Weeden & Sorensen 2004), and that industries also predict wages.\(^1\) Still other scholarship shows that even within occupations and industries, men and women are unevenly distributed across jobs that are part-time, jobs that are full-time, and jobs where more-than-full-time work hours are expected (Cha & Weeden 2014). Similarly, wages differ in urban and non-urban labor markets, for unionized and non-unionized labor (e.g., Western & Rosenfeld 2011), and so forth.

The selection and definition of covariates to define positions will, of course, affect the proportion and composition of men and women who are in shared positions. Generally speaking, the more covariates that are used to define shared positions, and the greater the level of detail differentiated by categories of these covariates, the lower the proportion of men and women we will observe who work in shared positions, and the more similar they are likely to be on unmeasured predictors of wages. This is, of course, analogous to the situation in gender segregation research, where analysts choose one type of labor market position (e.g., occupation) and one level of aggregation of the categories of those positions and assume that this captures the major dividing lines in the labor market. As in these analyses, we realize that other reasonable choices could have been

\(^1\) The distinction between public and private sector employment is nested within our industry categories.
made, but defend ours on the grounds that our main interest lies in trends, not in the absolute proportion of men and women who are in shared positions.

Note that we are not making assumptions about the underlying functional form of the relationship between these covariates, nor are we assuming a particular causal model that generates an association between the covariates and wages. Take, for example, marital status. Marital status varies by race and ethnicity. It may be endogenous to employment situation, insofar as job market success predicts success or failure in “marriage markets.” It may also predict employment situation, insofar as an individual workers’ choices about job situation are affected by marital status and joint decision-making processes among couples, and their opportunities in the labor market are affected by marital status and the signal it sends to potential employers (see, e.g., Correll et al 2007). And, marital status has known associations with wages that differ for men and women: there is a marital wage penalty for women, and a marital wage premium for men (Waldfogel 1997).

Within this paper we do not assume that all these properties are independent from each other. We claim that a nontrivial share of both sexes within the labor market have properties embedded in special combinations of covariates. Common statistical techniques assume that every property can be used like a brick to build a counterfactual employee. This construction requires that analysts make assumptions about the functional form of the relationship between the covariates and wages. Our paper takes a different path: We identify subsamples of men and women who share values on all of the attributes that define labor market position, and subsamples of men and women who do not. In the case of men and women in shared positions, there may also be within-position compositional differences, and they may receive different wage returns even where there are no compositional effects. We are interested in the contribution of these differentials on the overall gender wage gap, but without imposing a particular functional form on the relationship between the attributes that constitute the multidimensional space of labor markets.

Data

We use data from the Merged Outgoing Rotation Groups (MORG) of the Current Population Survey (CPS) from 1983 to 2013. Our analytic sample is limited to non-institutionalized civilian workers of age 18 to 64 years. Self-employed workers are excluded from the MORG wage series.

Variables

Our outcome variable is hourly wages. Hourly wages for hourly workers are as reported in the MORG; hourly wages for non-hourly workers are calculated by dividing their weekly wages by an edited measure of the number of hours usually worked per week at the main job. We adjust for inflation using the Bureau of Economic Analysis’s gross domestic product deflator with the basis year 2009. Wages that are top-coded in the CPS to preserve confidentiality are multiplied by 1.4, and wages that are less
than $1 and more than $300 per hour are assumed to be outliers and these cases excluded from the analyses (Card, DiNardo 2002). We use the natural logarithm of hourly wages in our descriptive analyses and in the parametric decomposition of the sources of the wage gap among employees in shared positions. In the non-parametric decomposition, we analyze the gap between the (raw) average wages of women relative to men, where this gap is expressed as the departure from unity.

The variables that we use to define positions include a mix of categorical and continuous variables. However, our matching procedure requires that all variables are categorical. Moreover, in some cases, we needed to aggregate categories because of the “dimensionality” problem in matching: each additional covariate or category of a covariate multiplies the number of cells, making perfect matches less likely and reducing the number of matches from which robust average wages can be calculated. In discretizing the continuous variables, we retained as much detail as we could and, where possible, relied on prior analyses to identify salient categories. Specifically, we measure age in four categories (16-25; 26-35; 36-50; 51-65), race in four categories (non-Hispanic white, non-Hispanic black, Hispanic, and other), marital status with two categories (ever married, never married), education with five categories indicating the highest degree attained (less than high school; high school/GED; some college; baccalaureate degree, advanced degree), metropolitan residence in two categories, union member in two categories, work hours in three categories (less than 35, between 35 and 49, and fifty or more), and potential years of work experience in four categories (0-8; 8.5-15; 15.5-25; 25.5+), where the latter are created from the standard proxy of age minus years of education minus 6.

Matching on industry and occupation introduces the further complexity that the CPS uses different industry and occupation schemes depending on the year of the survey. We recode industry into an 18-category scheme, using a harmonized set of codes developed by Western and Rosenfeld (2011). We exclude cases with unclassified industry. Given the centrality of occupation in sociological analyses of labor market segregation, and the convention of retaining as much detail as possible in the occupational classification scheme, we used a slightly different strategy that eliminates the need to harmonize schemes across all years. Specifically, we reconciled the 1980 and 1990 CPS occupations schemes with each other and, similarly, the 2000 and 2010 CPS occupation schemes with each other through backcoding; in both cases, the changes in the two schemes are fairly trivial. We did not, however, reconcile the 1980/90 scheme with the 2000/10 scheme, because the changes across these two schemes are quite substantial. Instead, we simply allow for a break in the data series between 2002, the last year that the 1990 COC was used, and 2003, the first year that the 2000 COC was used. Finally, because some of the smaller occupations contained insufficient cases to generate robust estimates of wages, we aggregate three-digit codes that contained fewer than 1,000 observations in

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2 The authors kindly provided us the STATA code for the harmonization.
every year to new two digit codes, using published two-digit schemes provided by the Census Bureau to decide which occupations could be combined.³

Methods
The Matching Technique
We use a non-parametric matching technique proposed by Ñopo (2008). This technique is quite straightforward: it parses cases into cells defined by the combination of all covariates. The number of observations within each cell differs, as does the share of men and women in each cell. If a cell contains only women or only men (i.e., each has 100% share), it is by definition a gender-specific labor market position. We can then identify the proportion of men and women in the labor market who are in gender-specific positions and, similarly, the proportions of men and women who are in shared positions. As is true of any type of segregation research, these proportions will depend on how narrowly or coarsely we have defined labor market positions; for our purposes, the absolute proportions are less critical than how these proportions change over time.

To estimate the contribution of within-gender wage polarization and between-gender wage and composition effects within shared positions, we construct a data set with synthetic male cases where there is a match (see also Nopo 2008). Specifically, we first select a woman from the sample without replacement. Next, we identify all the men in the sample who have the same value on every covariate as this focal woman. (If no such men exist in the sample, the woman is marked as unmatched and by definition is in a gender-specific position.) We then construct a synthetic male observation for this cell that has the average wage of all men identified as matches with the identical configuration of characteristics as the focal woman. We repeat these three steps for all of the women in the original sample. Men and women who are matched form the subset of the sample in shared positions; men and women who are unmatched are, by definition, in gender-specific positions and outside the common support. The synthetic male “respondents” are used to estimate wage differentials and weights for the composition adjustment (see below), but are not permanently added to the data set.

The difference between the counterfactual mean wage of men and the observed mean wage of women cannot, by definition, be due to compositional differences on the matched covariates. Instead, it must be due to unobserved factors, including gender differences in the wage returns to one of the matched characteristics (e.g., marital status, potential work experience), gender differences in unobserved factors, or discrimination that affects female or male wages directly rather than by affecting the distribution of women or men on the observed covariates (e.g., the occupations in which men or women are found) or by creating gender-specific wage returns to a matching characteristic.

³ If an occupation has more than 1000 observations in at least one year, we do not aggregate it with other occupations.
The decomposition of the gender wage gap

The decomposition extends the commonly used Oaxaca-Blinder decomposition (OB), with two new expressions. The overall gap (Δ) consists additively of four components:

1) Composition-adjusted wage differences between genders in shared positions (Δ0);
2) Differences in the average wage of men and women due to composition within shared positions (ΔX);
3) Wage differences between men in gender-specific positions and men in shared positions (ΔM);
4) Wage differences between women in shared positions and women in gender-specific positions (ΔF).

In a hypothetical world in which all women within the shared positions were paid the same wages for every characteristic as the average man within the same configuration of characteristics, the first component would be zero. Similarly, the second component would be zero if men and women within the common support had the same composition of characteristics. These two components correspond to what are often called the “unexplained” and “explained” portions of the OB decomposition, respectively.

The third and fourth components are not part of the standard OB decomposition. They identify within-gender wage gaps that contribute to the overall between-gender gap. The third component would be zero if there are no men who are in male-only positions or if men in male-only positions are paid the same, on average, as men in shared positions. Analogously, the fourth component would be zero if there are no women in gender-specific positions or if these women are paid the same, on average, as women in shared positions. Because these two components are calculated from the wages of employees who, by definition, do not have the same distribution of (non-gender) characteristics, we cannot estimate whether these within-gender wage differences are due to differences in wage returns to particular characteristics, or to differences in composition.

Note that the coefficients in the OB decomposition do not refer to the wage difference itself, but to the contribution of each difference to the overall gender wage gap. If men in gender-specific positions earn less than men in shared positions, the average wages of all men will be driven down by the men in the gender-specific positions and thereby reduce the overall gender wage gap. However, if women in gender-specific positions earn less than women in shared positions, the average wage difference underlying the coefficient ΔF (see Component 4, above) will be positive, and it will exacerbate the gender wage gap. The time dimension complicates this further: if average wages for men in gender-specific positions decline relative to the average wages of men in shared positions, the overall gender gap in wages will be attenuated; this shift is thus a positive contribution to the decline in the gender gap in wages. Similarly, if the average wages for women in gender-specific positions...
decrease relative to the average wages of women in shared positions, it will exacerbate the gender gap in wages, i.e., have a negative contribution.

**Descriptive results**

The left-hand panel of Figure 1 shows the percentage of the labor force in each of the four groups (men in shared positions, women in shared positions, men in gender-specific positions, and women in gender-specific positions) in each year of our CPS series. The right-hand panel shows the inflation adjusted average logged wages of each group over the same time period.

![Figure 1: Shares of the labor force and average logged hourly wages of men and women in shared and gender specific positions, 1983 to 2013.](image)

Of the four groups, the largest is men in gender-specific positions (see left-hand panel of Figure 1). This group’s share of the labor force declined substantially in the 1980s and 1990s, from 35% in 1983 to 30% in 2002, and has been essentially stable ever since. The second largest group, at least until very recently, was women in gender-specific positions, which constituted 25% and 26% of the labor force between 1983 and 2002 before declining to 24% in 2013.

Together, workers in gender-specific positions decreased from approximately 61% of the labor force in 1983 to 55% by 2002, the break in our data series where the occupation classification scheme shifts (see above). Between 2003 and 2013, it declined from about 56% to 54%. In 2013, the most recent year of our data, less than half of workers shared a labor market position with anyone of the opposite gender, even with the relatively modest number dimensions and somewhat aggregate categories that we use to define positions. Although many commentators have noted the slowdown in occupational integration since the 1990s (England 2005), our results suggest that once one considers segregation across multiple dimensions, the slowdown is even more pronounced.
The declining share of workers in gender-specific positions, especially in the first period of our data, implies a corresponding increase in the percentage of the workforce in shared positions. As Figure 2 shows, most of this increase was concentrated among women in shared positions. Although men in shared positions increased their share of the labor force from 19% in 1983 to nearly 22% in 1990, this share leveled off entirely, and as of 2013, it was still just under 22%. Women in shared positions showed similar growth in the 1980s, but, unlike men, continued to increase their share of the labor force thereafter. By 2013, women in shared positions constituted 25% of the labor force, slightly exceeding the percentage of the labor force who are women in gender-specific positions. Taken together, these results suggest that the share of workers in gender-specific positions was stable throughout the 2000s and early 2010s, but the share of women (but not men) in shared positions increased. This apparent paradox is attributable to changes in the marginal distribution, i.e., in (all) women’s share of the labor force.

The right-hand side of Figure 1 graphs the average logged hourly wages each of the four groups, in inflation-adjusted dollars. It shows that change in hourly wages can be grouped into three periods. In the first period, between 1983 and the mid-1990s, the average inflation-adjusted wages of women (in both shared and gender-specific positions) grew while the wages of men stalled or declined. In the second period, between the mid-1990s and 2002, all groups experienced wage increases, albeit with differences in the timing and slope of the increase. In the third period, post-2003, average wages stagnated for all four groups. These results largely confirm known patterns of wage changes in the US, and in particular the stagnation of male wages.

More germane to our analyses are the comparisons between and within groups. Although men and women in shared positions have (by definition) identical observed positions, they do not have comparable average pay: in all years of the CPS series, men in shared positions had higher average wages than women in shared positions. However, Figure 1 also shows that in relative terms, the wage gap between men and women in shared positions declined, especially during the first and third periods. Within-gender wage inequalities, by contrast, increased substantially. That is, with the exception of the first period (1983 to the mid-1990s), men in shared positions earned higher wages than men in gender-specific positions and, similarly, women in shared positions earned higher wages than women in gender-specific positions. In the first period, men’s wage polarization was driven primarily by the decline in the average wages of men in gender-specific positions; in the second period (mid-1990s through the early 2000s), it was driven by the steeper increase in the average wages of men in shared positions. Women’s wage polarization, by contrast, was driven by a steeper increase in the average wages of women in shared positions in both of the first two periods. After 2002, women in gender-specific positions had slightly greater wage growth than women in shared position, but the
difference is modest and for both groups, and wage trajectories in the 2000s were notably flatter than in earlier years.

These descriptive results imply that the closing of the overall gender wage gap in the 1980s and early 1990s was driven by changes in the average wages of two groups: men in gender-specific positions, and women in shared positions. Men in gender-specific positions declined as a proportion of the labor force, and their average wages fell. Women in shared positions grew as a percentage of the labor force, and saw a steeper increase in their average wage than any other group. Between the mid-1990s and the early 2000s, within-gender wage polarization dominated, but with countervailing effects on the gender gap in wages. Rising shares of women in shared positions and sharply rising average wages for this group contributed to convergence in the overall gender gap in wages; stagnant shares of men in the common support and steep wage growth for this group worked against convergence. After 2002, the growing share of (higher-paid) women in shared positions, the falling share of (lower-paid) women in gender-specific positions, and the falling share of (higher-paid) men in shared positions led to some convergence in the overall gender gap in wages, but as we noted, these trends were quite modest compared to trends in earlier years of the data.

**Results of the decomposition**

Figure 2 presents the core findings the decomposition of trends in the overall gender wage gap into within-gender wage polarization and between-gender composition and wage return effects. For reference, we have plotted the raw gender wage gap with a solid line. The long-dashed line plots the estimated coefficients of differences in wage returns between genders in shared positions, adjusting for composition effects; this can be interpreted as the contribution of gender-specific wage returns to the attributes used in the match, unobserved covariates, or “pure” discrimination. The thick solid line represents the contribution of composition effects for employees in shared positions to the gender wage gap. The contributions of within-gender wage inequality are indicated by the dotted line for men and by the short-dashed line for women. Upward sloping lines contribute to a closing of the gender wage gap over time.

The first noteworthy result in Figure 2 is that composition-adjusted wage differences between men and women in shared positions are the greatest source of the gender wage gap in each year (see Figure 2, long dashed line). There was no change in this component between 1983 and 1988, a brief period when these wage differences lessened and contributed to convergence in the gender gap in wages, then another decade of stagnation. Convergence resumed again, albeit weakly, between 2003 and 2011, when it contributed to the equally anemic decline in the gender wage gap. The overall trend in this component across the 30-year period is quite modest, declining from a coefficient of -0.18 log points to -0.15 log points. This slow convergence in composition-adjusted wages within the common
support contributed to the stalled convergence in the overall gender gap in wages in the 2000s, but cannot account for the convergence in the gender gap observed in the 1980s and 1990s.

Figure 2 reveals a nuanced picture about changes in the composition effects within shared positions, represented by the thick solid line. In the 1980s, composition effects within the common support helped to close the gap: not only did a greater share of women hold positions that were similar to men’s positions, but they also held well-paid positions. However, this inequality-reducing change in composition effects within shared positions was fairly short-lived: it stopped in the 1990s, resumed between 2000 and 2004, but has been stable since. This result is in line with research that shows that changes in labor market selectivity explain some of the decline in the gender wage gap, especially during the 80s.

The big story to emerge from Figure 2, however, is that the majority of change in the gender wage gap in the first two decades of our time series was not due to changes in wage differentials within the common support at all, but to within-gender wage polarization. Recall that in the 1980s, the share and wages of men in gender-specific positions fell, while the share and wage of men in shared positions rose (see Figure 1). As shown by the dotted line in Figure 2, this polarization in men’s wages was largely responsible for the change in the raw gender wage gap. At the beginning of our data series, the contribution of male wage polarization is negative, meaning that it exacerbated the gender gap in wages. By the mid-1980s, however, wage polarization among men began to compress the gender wage gap. By 2003, the estimated contribution of wage inequality between men in shared positions and men in gender-specific positions to the overall gender wage gap was 0.1 log points, or just under half its raw value. Put differently, without male wage polarization, the gender gap in wages would have been 50% more in 2003 than we observed, all else equal. After 2003, this inequality-reducing polarization tapered off, and had an overall inequality-suppressing effect (i.e., the dotted line remains above the 0 line), but with no apparent trend.

Figure 2 also shows that wage polarization among women affected the gender gap in wages, but in the opposite direction as male wage polarization. Although women, on average, saw wage gains, the wage gains for women in shared positions exceeded those for women in gender-specific positions, especially during the 1980s (see Figure 1). Because women in gender-specific positions
constitute a large share of the labor force, the gender gap in wages did not decline as much as it would have if these women's wages had kept up with the wages of women in shared positions. In the decomposition analysis, this emerges as a negative (inequality-exacerbating) contribution to the gender wage gap. This inequality-exacerbating effect increased between 1983 and the early 1990s (see Figure 2), largely offsetting the modest wage convergence between men and women in shared positions, and leveled off thereafter.

Conclusion

Taken together, the results of our matching and decomposition exercise shed new light on period-specific changes in the gender gap in wages and its sources. In the 1980s, labor market positions integrated, but this integration was not accompanied by a substantial equalization of pay between men and women who share positions in the labor market. Instead, convergence in the gender gap in wages occurred because of two factors: compositional shifts that drew more women into well-paid positions shared with men; and, especially, wage polarization among men. During this same time period, the polarization of wages among women partly offset these wage-equalizing trends. In the 1990s, male wage polarization continued to reduce the gender gap in wages, as did an emergent convergence in wages between men and women in shared positions. However, the inequality-exacerbating effects of women's wage polarization grew stronger as well, fully offsetting the wage-
equalizing effects of wage convergence between men and women in shared position. Indeed, only the wage polarization within men prevented an increase in the gender wage gap during the 90s and early 2000s. Finally, the modest decline in the gender gap in wages after 2003 was driven largely by wage equalization among men and women in the common support, prior to 2011, and by male wage polarization, in the most recent years of the data.

References


Juhn, Chinhui; Murphy, Kevin M.; Pierce, Brooks (1993): Wage inequality and the rise in returns to skill. In Journal of political Economy, pp. 410–442.

