

The Black-White Wage Gap Among Young Women in 1990 vs. 2011: The Role of Selection and Educational Attainment*

James Albrecht, Georgetown University

Aico van Vuuren, Free University of Amsterdam (VU)

Susan Vroman, Georgetown University

This version – February 2015

Abstract

In this paper, we compare the black-white median log wage gap among women aged 26-31 in 1990 and 2011. Two stylized facts emerge. First, the pattern of selection in the two years is similar – the gaps observed among women employed in 1990 and 2011 substantially understate the gaps that would have been observed had all 26-31 year-old women been working in those years. Second, both the median log wage gap observed in the data and the selection-corrected gap increased substantially between the two years, a fact that can be mostly attributed to changes in the distributions of educational attainment among young black and white women.

*We thank the editor, Helena Skyt Nielsen, and two anonymous referees for their helpful comments.

1 Introduction

Wage gaps between men and women and wage gaps between blacks and whites are central issues in labor economics. When estimating wage gaps, selection into employment is a key concern. If we want to estimate the gender log wage gap, it matters which men and which women are employed and receiving wages. For example, if all men work but a disproportionate number of well-educated, potentially high-earning women stay at home to care for their children, the estimated gender log wage gap will be higher than the true gap that would have been observed had all women been working. Similar selection issues are important for estimating the true racial log wage gap.

Selection into employment is based on a comparison between what an individual can get in the market and what he or she can get outside the market. If an individual's market wage exceeds his or her reservation wage (opportunity cost of working), then that individual works; otherwise, the individual stays out of the market. When we look at changes in log wage gaps between two periods, it is important to take into account how selection into employment has changed over time. That is, we need to consider both how the distributions of market wages for the two groups have changed over time and how the distributions of reservation wages for the two groups have changed.

In this paper, we examine how the median log wage gap between young black and young white women has changed over time. It is well known that the log wage gap between young black and young white men in the U.S. understates the true log wage gap, i.e., the observed racial log wage gap among young men is smaller than the gap that we would see if all young

men – both black and white – were employed.¹ In the case of young women, however, this was not well known before Neal (2004).² Neal (2004) used data from the National Longitudinal Survey of Youth, 1979 (NLSY79) to show that in 1990, even though the employment rates of young (aged 25-33) black and young white women were quite similar, the difference between their median log wages was substantially less than it would have been had all black and white women in that age group been employed. The median log wage gap uncorrected for selection was about 18 log wage points; after controlling for selection, it was about 25 log wage points. Selection into employment across the distribution was quite different for these two groups of women. In particular, black women with relatively little education, typically single mothers receiving government aid, were underrepresented among the employed while at the same time white college graduates were less likely to work than were black college graduates because the white college graduates were more likely to stay at home to raise children with support from high-income husbands. To address the question of how the median log wage gap between young black and young white women has changed over time, we use data from the National Longitudinal Survey of Youth, 1997 (NLSY97) to estimate the raw and the selection-corrected median log wage gap between young (aged 26-31) black and white women in 2011.³ A key question for our

¹There is an extensive literature on how the estimated mean log wage gap between black and white men is affected by differential selection into employment. Two representative papers are Chandra (2000) and Juhn (2003).

²Indeed, Chandra (2003, footnote 1), based on data from 1972 to 1998, states that "the selective-withdrawal hypothesis appears to be nonexistent for women."

³We are interested in looking at the change over 20 years. Since 2010 was a year with a particularly weak labor market, we chose to use 2011 when the labor market had improved somewhat. It is also the most recent year of data available at the time of writing.

analysis is how the patterns of selection into employment have changed for these women between 1990 and 2011.

Two factors can potentially change selection into employment. First, the distributions of market wages available to young black and young white women may have changed differentially over time. The argument given in Mulligan and Rubinstein (2008) suggests that this may well have been the case. They look at the effect of selection on the change in the mean gender wage gap among full-time full-year prime-age workers from the 1970's to the 1990's. They link the increased wage inequality among women and the greater wage equality between the average man and woman between these two periods. They argue that increased wage inequality within genders reflects "a shift in the demand for human capital in favor of those with relatively large amounts of it. In response, women with less human capital may drop out of the workforce, and those with more human capital may enter." (p. 1062) This change in the selection of women into full-time employment, they argue further, is an important factor in the narrowing of the gender gap in wages between the late 1970's and the late 1990's. A similar argument may apply to changes in the log wage gap between young black and young white women. Since young black women have typically completed fewer years of education than their young white counterparts, an increased skill premium may have been a force drawing more highly educated women (more often than not, white) into employment while driving less educated women (disproportionately black) out of employment.

Second, the distributions of reservation wages among young black and young white women may have changed differentially over time. Neal (2004) speculates that precisely this may have happened in the 1990's: "...welfare reforms and rising real wages among men may have affected the selection

patterns of black and white women in different ways.” (p. S22) Regarding welfare reform, the pattern of selection into employment for young women by race in 1990 was driven to a considerable extent by government aid programs, and there have been substantial changes in those programs since that time. As a result of welfare reform, more transfers now go to workers and fewer to nonworkers, and more transfers go to married couples and fewer to single mothers (Moffitt and Scholz 2010). By reducing the reservation wages of single, less educated women, welfare reform may have moved substantial numbers of low-wage young women into employment. To the extent that these low-wage young women are disproportionately black, welfare reform has generated a change in the pattern of selection into employment over time. A woman’s reservation wage can also depend on the earnings of her spouse or partner. As documented by, for example, Autor, Katz and Kearney (2008), there has been a persistent increase in male earnings inequality since 1980, and most of this increased inequality is attributable to changes within the upper deciles of the male earnings distribution. To the extent that young white women are more likely than young black women to be married to men with high earnings and to the extent that the highest of these male earnings have increased substantially over time, trends in male wages may have changed the pattern of selection into employment between the two groups of women over time.

Given these changes, and other developments in the labor market since 1990, we ask how the observed and the selection-corrected median log wage gaps between young black and young white women have changed over time. We use data from the 2011 wave of the National Longitudinal Survey of Youth, 1997 (NLSY97) to address these questions. Our sample consists of young women aged 26 to 31. We estimate the raw median log wage

gap between the young black and young white women for 2011 and also reestimate the median regressions for 1990 from Neal (2004) using our age group. We adjust for selection for both 2011 and 1990 using the same approach as in Neal’s paper. The selection adjustment primarily entails imputing wages for low-educated women who had government aid in the survey year and the four previous years and had no market work or spousal support in those years. Wages are also imputed for high-educated women who did not participate and who had husbands with high earnings. The latter adjustment in fact makes little difference.

We find that the raw (with no controls other than race and with no correction for selection) median log wage gap between young black and young white women in 2011 is considerably larger than the raw gap in 1990. When we add in marginally attached women, i.e., those who didn’t report a wage in the survey year but did report a wage in one of the previous four years, the estimated gap at the median increases in both years but is still much larger in 2011. When we adjust for selection by imputing wages to the nonemployed, the median log wage gap rises further in both years. Again, the gap is much larger in 2011. In short, (i) both the raw and the selection-corrected median log wage gaps are higher in 2011 than in 1990 and (ii) the effect of selection into employment on the median log wage gap between young black and young white women is essentially the same in 2011 as it was in 1990; namely, correcting for selection raises the median log wage gap.

When we add controls for education and potential experience, a very different picture emerges.⁴ These controls have only a small effect on the

⁴As a robustness check, we use two alternative controls for education: (i) years of education completed and (ii) dummies for (a) high school or less, (b) some college, and (c) college or more.

median log wage gap among those who were employed in 1990.⁵ However, in 2011, when we control for education and potential experience, the median log wage gap among the employed falls substantially. This is due to the large increase in the fraction of college graduates among young white women as well as to the fact that the employment rate increased for these women while it fell for young black college graduates. Once we control for education and potential experience, the estimated median log wage gap is much lower in 2011 than in 1990 even though the gap is much higher in the raw data. There is no evidence of selection in the 2011 data, other than what is explained by education and potential experience.

In the next section, we discuss the data. In Section 3, we present the median regressions and the median log wage gaps without correcting for selection for 1990 and 2011. In Section 4, we present the median log wage gaps after correcting for selection using three different wage imputations. In the final section, we conclude.

2 Data

The NLSY79 and NLSY97 are panels designed to track the transition of young people from school to work. The NLSY79 was designed to be representative of the US population aged 14 - 21 as of the start of 1979 while the NLSY97 was designed to be representative of the US population aged 12 - 16 at the end of 1996. There has been considerable discussion about the representativeness of the NLSY97 and about the comparability of the two

⁵Similarly, among 25-33 year-olds, Neal (2004) found that the uncorrected log wage gap decreased slightly when controlling for age and education, but the difference was statistically insignificant.

panels. Questions have been raised about the response rate to the NLSY97 – fewer families reported children in the 12 - 16 age range than expected. In addition, the attrition rate was substantially higher in the NLSY97 than in the NLSY79.⁶ See Altonji et al. (2012) for a clear and detailed discussion of these and other issues surrounding the two panels. Although the representativeness of the NLSY97 and the comparability of the NLSY79 and NLSY97 are important issues, what matters for our analysis is whether these problems affect young black and white women differently, and there is no strong evidence that this is the case. The fact that the labor market was weak in 2011 is also an issue, but again what matters for our analysis is whether the soft labor market affected the two groups of women differently. Unemployment rates rose for both young black and young white women, but rose proportionately more for the young white women.⁷

We follow the procedures described in the Appendix to Neal (2004) to construct the datasets used in our analysis. Since the women in the sample that we use from the NLSY97 are aged 26 - 31 in 2011, we have reconstructed the sample for 1990 for this age group. Our results for 1990 using women in this age range line up quite well with Neal's (2004) results.

⁶There are also questions about the comparability of the aptitude tests administered in the two surveys. The respondents in the NLSY97 took these tests at a much younger age than did their NLSY79 counterparts, and the test format changed from pencil and paper in the NLSY79 to computerized in the NLSY97.

⁷The unemployment rate for the young black women in our datasets increased from 9.1% to 10.7% between 1990 and 2011. The corresponding unemployment rates for young white women were 2.9% in 1990 and 3.9% in 2011. It is worth noting, however, that the unemployment rate among the young white college graduates fell from 1.7% to 1.1% between 1990 and 2011, while the corresponding rates for the young black college graduates in our data increased from 4.3% to 9.1%.

Table 1: Descriptive Statistics						
	<u>1990</u>			<u>2011</u>		
	All	Black	White	All	Black	White
Total number of observations	2890	1042	1848	2172	916	1256
Percent		0.38	0.62		0.41	0.59
<i>Age at date of interview</i>						
26 years old	0.17	0.17	0.17	0.04	0.03	0.04
27 years old	0.17	0.17	0.17	0.20	0.20	0.21
28 years old	0.17	0.19	0.16	0.20	0.21	0.19
29 years old	0.18	0.17	0.19	0.20	0.19	0.21
30 years old	0.17	0.16	0.18	0.22	0.20	0.23
31 years old	0.14	0.15	0.13	0.14	0.17	0.13
<i>Married</i>	0.53	0.33	0.64	0.51	0.31	0.65
<i>Highest Degree Obtained</i>						
High school or less	0.57	0.60	0.54	0.35	0.43	0.30
Some College	0.23	0.26	0.21	0.26	0.32	0.21
College +	0.21	0.13	0.25	0.39	0.25	0.49
<i>Age of youngest child</i>						
5 years old or younger	0.45	0.47	0.44	0.38	0.39	0.36
Between 5 and 11 years old	0.18	0.24	0.14	0.20	0.28	0.15
Between 11 and 18 years old	0.02	0.03	0.01	0.03	0.05	0.01

Table 2: Employment Rates by Race and Education				
	High School or less	Some College	College+	All levels
1990				
Black	0.70	0.87	0.94	0.77
	(630)	(274)	(138)	(1042)
White	0.76	0.86	0.89	0.81
	(1005)	(381)	(462)	(1848)
2011				
Black	0.59	0.80	0.85	0.72
	(394)	(291)	(231)	(916)
White	0.64	0.82	0.92	0.82
	(371)	(267)	(626)	(1264)

Table 1 presents some basic descriptive statistics for the 1990 and 2011 samples. The only striking change between 1990 and 2011 is the increase in educational attainment. The percentage of young black and young white women with a college degree or more essentially doubled between 1990 and 2011, although the change for young white women started from a much higher base. The fraction of married women barely changed over this time period, and this result holds even if we look at the black and white women separately. Similarly, there is little change in the fraction of women whose youngest child is between ages 5 - 11 and between ages 11-18. There is a drop in the fraction of both black and white women with a youngest child of age 5 or less.

Table 2 shows the fraction of women aged 26 to 31 who worked in the year prior to the survey by race and educational attainment. The total number of

women in each category is given in parentheses. There is a reduction in the employment rates of young black women across all levels of education and among young white women except for those with a college degree or more. This general decline in employment rates reflects the weak state of the labor market in 2011. Note, however, that there was a slight increase in the overall employment rate among young white women between 1990 and 2011, which reflects both the higher employment rate among the highly educated young white women and the increased educational attainment among white women in general. Thus, in 2011, there was a substantial gap in employment rates between young black and white women; in 1990, this gap was much smaller.

Table 3 gives log wages by race and educational attainment for the young women in the two years. Looking at the last column, the median log wage gap increased from 17 to 25 log wage points between 1990 and 2011, while the overall mean log wage gap increased somewhat less rising from 17 to 20 log wage points over the 21-year period. Looking at education levels separately, the mean log wage gap decreased substantially for those with the lowest education, was unchanged for the intermediate group, and fell slightly for the highest education group. The increase in the overall log wage gap thus reflects a change in the educational composition of the sample.

Table 3: Wage Rates by Race and Education					
	HS or less	Some College	College+	All levels	All levels
	Mean	Mean	Mean	Mean	Median
1990					
Black	1.74	1.99	2.27	1.90	1.91
	(0.44)	(0.44)	(0.38)	(0.47)	(0.69)
White	1.89	2.10	2.40	2.08	2.08
	(0.48)	(0.51)	(0.47)	(0.53)	(0.53)
	-0.16	-0.11	-0.13	-0.17	-0.17
2011					
Black	2.36	2.46	2.81	2.53	2.45
	(0.44)	(0.40)	(0.44)	(0.46)	(0.49)
White	2.42	2.57	2.92	2.73	2.71
	(0.49)	(0.49)	(0.51)	(0.55)	(0.51)
	-0.07	-0.11	-0.11	-0.20	-0.25

Table 4: Receipt of Government Aid and Spousal Income by Race and Employment Status						
	Years of	Years of	Fraction w/	Fraction	Years of	No of
	Gov't Aid	Spousal Income	5 yrs of aid	w/ 5yrs of	School	Obs
1990				Spousal Income		
Black Women						
employed	0.99	1.42	0.09	0.12	13.06	810
	(1.64)	(1.86)			(1.93)	
nonemployed	3.58	0.63	0.50	0.05	11.52	232
	(1.99)	(1.38)			(1.97)	
White Women						
employed	0.30	2.51	0.01	0.30	13.42	1501
	(0.91)	(2.07)			(2.28)	
nonemployed	1.09	3.00	0.12	0.39	12.37	347
	(1.79)	(2.03)			(2.29)	
2011						
Black Women						
employed	1.76	1.35	0.35	0.09	13.92	663
	(1.90)	(1.74)			(2.61)	
nonemployed	3.02	1.33	0.30	0.12	12.20	253
	(1.97)	(1.78)			(2.52)	
White Women						
employed	0.48	2.76	0.03	0.30	15.12	1031
	(1.16)	(1.97)			(2.64)	
nonemployed	1.79	3.15	0.18	0.41	12.78	225
	(1.99)	(1.98)			(2.78)	

Table 4 reports years of government aid and spousal support for both employed and nonemployed young women. As explained in the Introduction, these variables are the basis for the selection correction discussed in Section 4. Government aid comprises Aid to Families with Dependent Children (AFDC), Food Stamps, and Supplemental Security Income (SSI) in 1990 and Temporary Assistance for Needy Families (TANF), Food Stamps, and SSI in 2011. Years of government aid and of spousal income refer to the years 1986 - 1990 and 2007 - 2011, respectively. Among young black women, dependence on government aid, as measured by years of aid received, went down among those who were not employed, while receipt of aid increased among the employed. This reflects the change in the welfare programs from AFDC to TANF and the increase of participation in Food Stamps.⁸ This is further evidenced by the increase in the fraction of employed young black women with 5 years of government support, namely, from 9 percent to 35 percent. The fraction of nonemployed young black women with 5 years of government support fell from 50 percent to 30 percent from 1990 to 2011. Among young white women, the fraction receiving five years of government aid went up for both the employed (from 1 percent to 3 percent) and the nonemployed (from 12 percent to 18 percent) with a larger increase for those who were not employed. Overall, the fraction of these women receiving 5 years of government support was considerably less than for young black women. Years of spousal income increased for nonemployed young black women, but fell slightly among the employed. Similarly, the fraction of employed young black women with 5 years of spousal income fell from 12 percent to 9 percent, while the fraction of nonemployed young black women

⁸Participation in Food Stamps across the entire population more than doubled between 1990 and 2011 from about 20 million to over 40 million.

with 5 years of spousal income rose from 5 percent to 12 percent. For young white women, years of spousal income increased whether employed or not. The fraction of employed young white women with 5 years of spousal income was steady at 30 percent while the fraction of nonemployed young white women with 5 years of spousal income rose from 39 to 41 percent. Overall, the fraction of young white women with 5 years of spousal support was considerably higher than for young black women.

3 Median Regressions

Table 5 presents the results of simple median log wage regressions for women aged 26 - 31. The regressions presented in the first three columns use data only for those women who reported a wage in the survey year. This includes 78% of the black women and 81% of the white women in the 1990 sample and 72% of the black women and 81% of the white women in the 2011 sample. The regressions reported in columns 4 - 6 add in women who did not report a wage in the survey year, but did for at least one of the preceding four years. We assign wages to these women based on the wage reported in the closest year prior to the survey year. This second set of regressions includes 90% of the black women and 95% of the white women in the 1990 sample and 93% of the black women and 96% of the white women in the 2011 sample. The first and fourth columns show the estimated coefficient on a black dummy from a median regression with no other covariates, while the second and fifth columns show results from a median regression that controls for race, dummies for years of potential experience, and years of

education.⁹ Columns 3 and 6 also control for race, potential experience and education but with education represented by a set of dummy variables.

In column 1 with only a control for race, the median log wage gap rose from 0.174 to 0.254 between 1990 and 2011. The gaps reported in these simple median regressions are the raw log wage gaps at the median for the two years that were reported in Table 3. After controlling for potential experience and education in column 2, however, the estimated median log wage gap falls from 0.167 to 0.131. Similar results are shown in column 3. Note that controlling for potential experience and education has a small negative effect on the median log wage gap in 1990, but it has a substantial negative effect in 2011. This latter effect reflects the large increase in the fraction of employed white women with college degrees.

Expanding the sample by adding the marginally attached women causes the median log wage gap to rise when we don't control for human capital variables; the median log wage gap rises from 0.200 to 0.283 between 1990 and 2011.¹⁰ After controlling for education and potential experience in column 5, the median log wage gap is 0.172 in 1990 and 0.140 in 2011. Again, the results presented in column 6 are similar.

⁹Note that the estimated coefficient on education is lower in 2011 than in 1990. At first glance, this seems inconsistent with the idea that the skill premium may have increased over this period. However, increased college enrollment has likely decreased the average quality of college graduates, which in turn would decrease the measured skill premium. See Carneiro and Lee (2011).

¹⁰The results for 1990 are consistent with what Neal (2004) found when he expanded the sample for women 25 to 33 to include those with wages in any of the five years centered on 1990.

Table 5: Median Log Wage Regressions						
	Working			Working in		
	in year			at least one		
				of last 5 yrs.		
1990						
Black	-0.174	-0.167	-0.158	-0.200	-0.172	-0.147
	(0.026)	(0.026)	(0.021)	(0.029)	(0.021)	(0.020)
Schooling	–	0.112			0.119	
		(0.010)			(0.008)	
Some college			0.223			0.219
			(0.028)			(0.027)
College +			0.511			0.547
			(0.039)			(0.038)
Number of observations	2311	2311	2311	2694	2694	2694
2011						
Black	-0.254	-0.131	-0.108	-0.283	-0.140	-0.131
	(0.029)	(0.033)	(0.028)	(0.034)	(0.021)	(0.028)
Schooling	–	0.096		–	0.101	
		(0.012)			(0.008)	
Some college			0.137			0.151
			(0.045)			(0.046)
College +			0.513			0.525
			(0.061)			(0.062)
Number of observations	1694	1694	1694	2053	2053	2053

4 Controlling for Sample Selection

We next control for sample selection using Neal’s imputation method. Since he was using median regression, Neal (2004) assigned arbitrarily low wages to women who did not report a wage in any year during the period 1988 - 1992 and who would likely have earned less than the median (Group A) and arbitrarily high wages to women who did not report a wage for this period but would have likely earned more than the median (Group B). In particular, he used the following criteria to define Group A: (i) no wage reported for the period 1988 - 1992, (ii) no post-secondary education, (iii) government aid in every year from 1988 - 1992, and (iv) no spousal support over the period 1988 - 1992. Group B consisted of women who met the following criteria: (i) no wage reported for the period 1988 - 1992, (ii) at least a high school education, and (iii) substantial support from their spouse. Neal (2004) used two definitions of “substantial spousal support.” The first required a woman to have a spouse with *average* earnings over the period 1988 - 1992 at the 90th percentile or above in the earnings distribution of men aged 25 - 35 of the race of the woman; the second definition was the same, except that the 75th percentile was used as the cutoff. Neal (2004) considered three different imputation rules. The first assigned \$1 to all women in Group A. The second assigned \$1 to all women in Group A and \$30 to all women in Group B using the 90th percentile definition of substantial spousal support. The third assigned \$1 to all women in Group A and \$30 to all women in Group B using the 75th percentile definition of substantial spousal support. A median regression holding age constant was then run including these imputed wages. This regression included observed or imputed wages for 97% of the black women and 95% of the white women

in the sample. The estimated coefficient on the black dummy in the median regression rose (in absolute value) from 0.21 to 0.26. Most of the increase (from 0.21 to 0.25) came from imputing wages to the women in Group A, mostly black women. A second set of median regressions, this time controlling for education and potential experience, was also run. The basic message from this second set of results is similar; correcting for selection leads to an increase in the median log wage gap.

We estimate median log wage regressions for 1990 and 2011 for women aged 26 - 31 using essentially the same three imputations. Since we do not have data from 2012 or 2013, we use the years 1986 - 1990 and 2007 - 2011 to implement the criteria used to define Groups A and B. When we add all the imputed wages, 96% of the black women and 97% of the white women are included in the 1990 regressions and 95% of the black women and 97% of the white women are included in the 2011 regressions.

The results are shown in Table 6. The median regressions are quite similar across the three imputations. This reflects the fact that when adjusting for selection, almost all of the action comes from adding Group A since there are relatively few women in Group B. Including the wage imputations increases the raw median log wage gaps significantly in both years. Comparing column 1 in Table 5 with column 7 in Table 6, the median log wage gap rose from 0.174 to 0.256 in 1990 and from 0.254 to 0.312 in 2011. That is, after we account for the marginally attached and for the nonparticipants with imputed wages, there is a larger gap between young white and young black women in 2011 than there was in 1990. The major factor responsible for the increased log wage gap is education. Young black women with a high school degree or less were less likely to be employed than were their white counterparts in both 1990 and 2011. Young black women with a college

Table 6: Median Log Wage Regressions after Wage Imputations									
	Rule 1			Rule 2			Rule 3		
1990									
Black	-0.248	-0.187	-0.172	-0.249	-0.189	-0.173	-0.256	-0.195	-0.176
	(0.0231)	(0.025)	(0.018)	(0.034)	(0.025)	(0.020)	(0.034)	(0.022)	(0.021)
Schooling	-	0.123	-	-	0.124	-	-	0.125	
		(0.009)			(0.009)			(0.008)	
Some college	-	-	0.274	-	-	0.277	-	-	0.280
			(0.024)			(0.026)			(0.028)
College +	-	-	0.556	-	-	0.563	-	-	0.563
			(0.034)			(0.037)			(0.039)
Number of observations	2772	2772	2772	2782	2782	2782	2792	2792	2792
2011									
Black	-0.312	-0.140	-0.131	-0.312	-0.141	-0.131	-0.314	-0.143	-0.135
	(0.036)	(0.018)	(0.025)	(0.036)	(0.018)	(0.027)	(0.035)	(0.019)	(0.026)
Schooling	-	0.105	-	-	0.106	-	-	0.106	
		(0.007)			(0.007)			(0.007)	
Some college	-	-	0.180	-	-	0.180	-	-	0.183
			(0.040)			(0.044)			(0.042)
College +	-	-	0.558	-	-	0.558	-	-	0.566
			(0.054)			(0.060)			(0.057)
Number observations	2082	2082	2082	2085	2085	2085	2092	2092	2092

degree or more were more likely to be employed than were their white counterparts in 1990 but less likely to be employed than college-educated white women in 2011. When we control for potential experience and education, adjusting for selection leads to an increase in the estimated median log wage gap in 1990 but has less effect on the gap in 2011. Once we control for poten-

tial experience and education, the median log wage gap in 1990 goes from 0.167 (Table 5, column 2) to 0.195 (Table 6, column 8) when we impute wages to the women in Groups A and B. The corresponding estimates for 2011 are 0.131 and 0.143. That is, once we control for potential experience and education, there appears to only a small effect of correcting for selection in 2011, whereas in 1990 correcting for selection has a stronger effect on the median log wage gap. In short, when we do not control for potential experience and education, we find that the median log wage gap among those who actually worked increased substantially between 1990 to 2011 (Table 5) as did the median log wage gap that we would have expected to see if all women had been working (Table 6). Once we control for potential experience and education (Table 5), we find a lower median log wage gap in both years, and we find that this “unexplained gap” decreased between 1990 and 2011. When we control for selection on top of controlling for potential experience and education (Table 6), we find that the median log wage gap increases in both years but that the effect is much stronger for 2011.

5 Conclusion

In this paper, we have examined how the median log wage gap between young black and young white women changed between 1990 and 2011. We take two stylized facts away from our analysis. First, the pattern of selection documented in Neal (2004) for 1990 is essentially unchanged in the 2011 data. In both years, the median log wage gap that we observe among the women who were actually receiving a wage is substantially less than the gap we estimate once we control for selection. That is, the pattern of selection into employment among young black women is substantially more positive

than is the corresponding pattern among young white women. Young women with low market wages are less likely to be employed than are those with higher market wages, low market wages are associated with low levels of education, and the distribution of educational attainment among young black women is considerably less favorable than the corresponding distribution among young white women. This was true in 1990; it is still the case in 2011. The fact that nonmarket opportunities, specifically, recourse to government aid, worsened for the nonemployed between 1990 and 2011 does not seem to have pushed young women with low market wages (disproportionately black) into employment. This may imply that differential changes in the distribution of reservation wages between young black and young white women did not play much role in the pattern of selection over time, but to some extent, it may also reflect the weaker labor market conditions in 2011 than in 1990.

Second, the median log wage gap between young black and young white women increased substantially between 1990 and 2011. This holds both for women who reported a wage in the survey year and after correcting for selection. The major factor behind this increase in black-white young female inequality appears to be the change in the distribution of education by race between the two years. In 1990, approximately 1/8 of the young black women and 1/4 of the young white women had a college degree or more; in 2011, approximately 1/4 of the young black women and 1/2 of the young white women had a B.A. or more. Once we control for education and potential experience, the median log wage gap between young black and young white women fell between 1990 and 2011, both among women who actually worked and after correcting for selection. The fact that the median log wage gap increased over time and that it can be (more than)

accounted for by differential increases in educational attainment between young black and young white women is consistent with the Mulligan and Rubinstein (2008) argument that an increase in the skill premium affects both the pattern of selection into employment and wage inequality.

References

- [1] Altonji, Joseph, Prashant Bharadwaj and Fabian Lange (2012) “Changes in the Distribution of Characteristics for American Youth: Implications for Adult Outcomes,” *Journal of Labor Economics*, 30(4) 783-828.
- [2] Autor, David, Lawrence Katz and Melissa Kearney (2008) “Trends in U.S. Wage Inequality: Re-Assessing the Revisionists,” *Review of Economics and Statistics*, 90(2), 300-23.
- [3] Carneiro, Pedro and Sokbae Lee (2011), “Trends in Quality-Adjusted Skill Premia in the United States: 1960-2000,” *American Economic Review*, 101(6), 2309-49.
- [4] Chandra, Amitabh (2000) “Labor Market Dropouts and the Racial Wage Gap, 1940-1990,” *American Economic Review Papers and Proceedings*, 90(2), 333-38.
- [5] Juhn, Chinhui (2003) “Labor Market Dropouts and Trends in the Wages of Black and White Men,” *Industrial and Labor Relations Review*, 56(4), 643-62.
- [6] Moffitt, Robert and Karl Scholz (2010) “Trends in the Level and Distribution of Income Support,” in Jeffrey Brown, ed., *Tax Policy and the Economy*, NBER 2010.

- [7] Mulligan, Casey and Yona Rubinstein (2008) "Selection, Investment and Women's Relative Wages Over Time," *Quarterly Journal of Economics*, 123(3), 1061-1110.
- [8] Neal, Derek (2004) "The Measured Black-White Wage Gap among Women is Too Small," *Journal of Political Economy*, 112(1, pt.2), S1-S28.