

RACIAL LABOR MARKET GAPS:  
THE ROLE OF ABILITIES AND SCHOOLING CHOICES

Web Supplement

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Table A1. Testing Normality and Racial Differences in Factors' Distributions

Hypothesis <sup>(a)</sup>	Cognitive	Noncognitive	Uncertainty
Blacks=White	0.00	0.00	0.00
Black=Normal Distribution	0.00	0.00	0.00
White=Normal Distribution	0.00	0.00	0.00

Note: The tests are implemented using 20,000 simulated observations for each factor. The simulation uses the estimates from the model. (a) The p-values presented in this table correspond to the p-values from Kolmogorov-Smirnov Tests. The results are identical if  $\chi^2$  tests are used instead. In the case of the normality tests, the results are also identical if a test relying on the comparison of skewness and kurtosis is used instead.

Table A2. Racial Differences in Factor Loadings  
by Model Component

Equation	Cognitive Ability	Noncognitive Ability	Uncertainty
A. Schooling Choices			
High School Dropouts	0.91	0.05	-
High School Graduates	0.61	0.10	-
Some College	0.09	0.11	-
B. High School Dropouts			
Wages - Ages 23-27	0.29	0.40	0.00
Wages - Ages 28-32	0.60	0.06	0.00
Wages - Ages 33-37	0.66	0.13	0.00
Hours Worked - Ages 23-27	0.87	0.68	-
Hours Worked - Ages 28-32	0.08	0.84	0.12
Hours Worked - Ages 33-37	0.03	0.17	0.00
C. High School Graduates			
Wages - Ages 23-27	0.03	0.21	0.00
Wages - Ages 28-32	0.02	0.95	0.00
Wages - Ages 33-37	0.00	0.04	0.00
Hours Worked - Ages 23-27	0.30	0.83	0.00
Hours Worked - Ages 28-32	0.11	0.03	0.14
Hours Worked - Ages 33-37	0.20	0.00	0.01
D. Some College			
Wages - Ages 23-27	0.87	0.08	0.00
Wages - Ages 28-32	0.65	0.05	0.00
Wages - Ages 33-37	0.74	0.72	0.00
Hours Worked - Ages 23-27	0.24	0.35	0.00
Hours Worked - Ages 28-32	0.15	0.00	0.00
Hours Worked - Ages 33-37	0.80	0.60	0.00
E. College Graduates			
Wages - Ages 23-27	0.87	0.00	0.00
Wages - Ages 28-32	0.59	0.00	0.00
Wages - Ages 33-37	0.21	0.00	0.00
Hours Worked - Ages 23-27	0.01	0.02	0.00
Hours Worked - Ages 28-32	0.04	0.54	0.00
Hours Worked - Ages 33-37	0.13	0.63	0.00
E. Incarceration			
Ages 14-22	0.93	0.04	-
Ages 23-27	0.69	0.00	-
Ages 28-32	0.62	0.00	-
Ages 33-37	0.67	0.00	-

Note: Each number in this table represents the p-value associated with the statistical test for no racial differences in the factor loadings. Specifically, if  $\alpha^B$  and  $\alpha^W$  denote the estimated loadings for blacks and whites, respectively, then the table presents the p-value associated with the test  $H_0: \alpha^B = \alpha^W$  versus  $H_1: \alpha^B \neq \alpha^W$ .

Table A3. Standardized Loadings  
by Test Scores and Attitude Scales

Test	Cognitive Ability		Noncognitive Ability	
	Blacks	Whites	Blacks	Whites
A. Arithmetic Reasoning				
Less than 10th Grade	<b>0.30</b>	<b>0.50</b>	-	-
10th or 11th Grade	<b>0.52</b>	<b>0.69</b>	-	-
High School Graduates	<b>0.56</b>	<b>0.79</b>	-	-
Some post-secondary Education	<b>0.71</b>	<b>0.68</b>	-	-
B. Word Knowledge				
Less than 10th Grade	<b>0.62</b>	<b>0.71</b>	-	-
10th or 11th Grade	<b>0.79</b>	<b>0.58</b>	-	-
High School Graduates	<b>0.74</b>	<b>0.56</b>	-	-
Some post-secondary Education	<b>0.57</b>	<b>0.32</b>	-	-
C. Paragraph Comprehension				
Less than 10th Grade	<b>0.46</b>	<b>0.67</b>	-	-
10th or 11th Grade	<b>0.83</b>	<b>0.71</b>	-	-
High School Graduates	<b>0.80</b>	<b>0.60</b>	-	-
Some post-secondary Education	<b>0.54</b>	<b>0.36</b>	-	-
D. Numerical Operations				
Less than 10th Grade	<b>0.63</b>	<b>0.49</b>	-	-
10th or 11th Grade	<b>0.63</b>	<b>0.57</b>	-	-
High School Graduates	<b>0.68</b>	<b>0.58</b>	-	-
Some post-secondary Education	<b>0.49</b>	<b>0.40</b>	-	-
E. Math Knowledge				
Less than 10th Grade	<b>0.19</b>	<b>0.35</b>	-	-
10th or 11th Grade	<b>0.51</b>	<b>0.70</b>	-	-
High School Graduates	<b>0.50</b>	<b>0.73</b>	-	-
Some post-secondary Education	<b>0.82</b>	<b>0.72</b>	-	-
F. Coding Speed				
Less than 10th Grade <sup>(†)</sup>	<b>0.41</b>	<b>0.41</b>	-	-
10th or 11th Grade	<b>0.46</b>	<b>0.49</b>	-	-
High School Graduates	<b>0.52</b>	<b>0.54</b>	-	-
Some post-secondary Education	<b>0.47</b>	<b>0.41</b>	-	-
G. Rotter Locus of Control				
Less than 10th Grade <sup>(†)</sup>	-	-	<b>0.35</b>	<b>0.24</b>
10th or 11th Grade	-	-	<b>0.12</b>	<b>0.10</b>
High School Graduates	-	-	0.08	0.11
Some post-secondary Education	-	-	-0.10	0.12
H. Rosenberg Self-Esteem Scale				
Less than 10th Grade	-	-	-0.07	0.05
10th or 11th Grade	-	-	0.03	0.02
High School Graduates	-	-	0.02	0.10
Some post-secondary Education	-	-	0.04	0.11

Note: This table presents the standardized estimates from the Model. Since the model is estimated using Bayesian methods, they represent the mean estimates. The bold numbers represent significant estimates (at 95%). (†): The loading in this equation is normalized to one so the number is simply the standard deviations of the unobserved ability for blacks and whites, respectively. The normalization is necessary for the identification of the model.

Table A4. Racial Differences in Factor Loadings  
by Test Scores and Attitude Scales

Test		Cognitive Ability	Noncognitive Ability
A. Arithmetic Reasoning			
	Less than 10th Grade	0.02	-
	10th or 11th Grade	0.07	-
	High School Graduates	0.03	-
	Some post-secondary Education	0.80	-
B. Word Knowledge			
	Less than 10th Grade	0.52	-
	10th or 11th Grade	0.04	-
	High School Graduates	0.08	-
	Some post-secondary Education	0.01	-
C. Paragraph Comprehension			
	Less than 10th Grade	0.07	-
	10th or 11th Grade	0.25	-
	High School Graduates	0.06	-
	Some post-secondary Education	0.04	-
D. Numerical Operations			
	Less than 10th Grade	0.22	-
	10th or 11th Grade	0.50	-
	High School Graduates	0.32	-
	Some post-secondary Education	0.34	-
E. Math Knowledge			
	Less than 10th Grade	0.03	-
	10th or 11th Grade	0.05	-
	High School Graduates	0.02	-
	Some post-secondary Education	0.37	-
F. Coding Speed			
	Less than 10th Grade	-	-
	10th or 11th Grade	0.77	-
	High School Graduates	0.88	-
	Some post-secondary Education	0.50	-
G. Rotter Locus of Control			
	Less than 10th Grade	-	-
	10th or 11th Grade	-	0.99
	High School Graduates	-	0.65
	Some post-secondary Education	-	0.35
H. Rosenberg Self-Esteem Scale			
	Less than 10th Grade	-	0.04
	10th or 11th Grade	-	0.92
	High School Graduates	-	0.32
	Some post-secondary Education	-	0.60

Note: Each number in this table represents the p-value associated with the statistical test for no racial differences in the factor loadings. Specifically, if  $\alpha^B$  and  $\alpha^W$  denote the estimated loadings for blacks and whites, respectively, then the table presents the p-value associated with the test  $H_0: \alpha^B = \alpha^W$  versus  $H_1: \alpha^B \neq \alpha^W$ .

Table A.5. Black-White Gap in Hourly Wages under Different Assumptions  
Sample of 23-27 year old Males

		H.S. Dropouts	H. S. Graduates	Some College	College Graduates	Overall
<b>A. Outcomes for Whites</b>						
	Hourly Wages	2.33	2.44	2.48	2.54	2.46
	% in each Schooling Level	0.17	0.35	0.20	0.28	-
<b>B. Outcomes for Blacks</b>						
	Hourly Wages	2.16	2.20	2.35	2.45	2.25
	% in each Schooling Level	0.29	0.37	0.21	0.13	-
	<b>Actual Gap</b>	<b>-0.24</b>	<b>0.03</b>	<b>0.01</b>	<b>0.41</b>	<b>0.20</b>
<b>C. Blacks with Whites' Characteristics</b>						
<i>C.1 Observables and Unobservables</i>						
	Hourly Wages	2.17	2.34	2.36	2.31	2.32
	% in each Schooling Level	0.11	0.23	0.33	0.34	-
	<b>Gap</b>	<b>0.17</b>	<b>0.32</b>	<b>-0.28</b>	<b>-0.07</b>	<b>0.14</b>
<i>C.2 Observables</i>						
	Hourly Wages	2.15	2.22	2.35	2.43	2.27
	% in each Schooling Level	0.24	0.33	0.25	0.18	-
	<b>Gap</b>	<b>-0.11</b>	<b>0.12</b>	<b>-0.10</b>	<b>0.27</b>	<b>0.18</b>
<i>C.3 Unobservables</i>						
	Hourly Wages	2.18	2.33	2.36	2.32	2.32
	% in each Schooling Level	0.15	0.29	0.30	0.26	-
	<b>Gap</b>	<b>0.08</b>	<b>0.17</b>	<b>-0.22</b>	<b>0.11</b>	<b>0.14</b>
<i>C.4 Cognitive Ability</i>						
	Hourly Wages	2.17	2.33	2.34	2.47	2.35
	% in each Schooling Level	0.15	0.28	0.29	0.28	-
	<b>Gap</b>	<b>0.07</b>	<b>0.19</b>	<b>-0.19</b>	<b>0.03</b>	<b>0.11</b>
<i>C.5 Noncognitive Ability</i>						
	Annual Earnings	2.16	2.21	2.36	2.30	2.24
	Hourly Wages	0.29	0.38	0.21	0.11	-
	<b>Gap</b>	<b>-0.24</b>	<b>0.01</b>	<b>-0.01</b>	<b>0.46</b>	<b>0.22</b>
<i>C.6 Uncertainty</i>						
	Hourly Wages	2.15	2.21	2.36	2.46	2.25
	% in each Schooling Level	0.29	0.37	0.21	0.13	-
	<b>Gap</b>	<b>-0.23</b>	<b>0.03</b>	<b>0.01</b>	<b>0.40</b>	<b>0.20</b>

Note: The numbers in this table present the mean (log) hourly wages (by schooling level and overall), the distribution of schooling decisions, and the racial gaps in hourly wages. Panels A and B show these numbers for blacks and whites as predicted by the model. For example, for blacks (panel B), the row "hourly wages" presents the means of  $Y_s^B(a, X_a^B, \mathbf{f}^B, \theta^B)$  for individuals selecting the respective schooling level  $s$ , whereas the row "% in each schooling level" presents the distribution of schooling  $D_s^B(Z_s^B, \mathbf{f}^B)$  in the black population. For "hourly wages" the last column (Overall) presents the average of log hourly wages in the population which is computed using  $Y^B(a, X_a^B, Z^B, \mathbf{f}^B, \theta^B)$  where

$$Y^B(a, X_a^B, Z^B, \mathbf{f}^B, \theta^B) = \sum_{s=1}^S D_s^B(Z_s^B, \mathbf{f}^B) Y_s^B(a, X_a^B, \mathbf{f}^B, \theta^B).$$

The numbers for the row "Gap" on the other hand, come from the following decomposition of the overall racial gap in hourly wages

$$E(Y^W(a, X_a^W, Z^W, \mathbf{f}^W, \theta^W) - Y^B(a, X_a^B, Z^B, \mathbf{f}^B, \theta^B)) = \sum_{s=1}^S \left( \begin{array}{l} E(Y_s^W(a, X_a^W, \mathbf{f}^W, \theta^W) | D_s^B(Z_s^B, \mathbf{f}^B) = 1) \\ \times \Pr(D_s^B(Z_s^B, \mathbf{f}^B) = 1) \\ - E(Y_s^B(a, X_a^B, \mathbf{f}^B, \theta^B) | D_s^B(Z_s^B, \mathbf{f}^B) = 1) \\ \times \Pr(D_s^B(Z_s^B, \mathbf{f}^B) = 1) \end{array} \right)$$

so, each column represents a term in the summation with the last column (Overall) presenting the total sum (or the gap). Panel C presents analogous results but after modifying different components of  $Y^B(a, X_a^B, Z^B, \mathbf{f}^B, \theta^B)$ . In particular, Panel C.1 presents the results when blacks are assumed to have the same distributions of observables and unobservables as whites, i.e. it presents the results for  $Y_s^B(a, X_a^W, \mathbf{f}^W, \theta^W)$ ,  $D_s^B(Z_s^W, \mathbf{f}^W)$ , and  $Y^B(a, X_a^W, Z^W, \mathbf{f}^W, \theta^W)$ . Panel C.2 assumes that only the observables are equalized across races. Panel C.3. assumes that all of the distributions of the unobserved components of the models are equalized across races. Finally, for C.4 to C.6 the results come from the change in each unobserved component of the model. The results for whites (Panel A) are always used to compute the gaps.

Table A6. Black-White Gap in Hourly Wages under Different Assumptions  
Sample of 33-37 year old Males

	H.S. Dropouts	H. S. Graduates	Some College	College Graduates	Overall
<b>A. Outcomes for Whites</b>					
Hourly Wages	2.42	2.64	2.78	3.09	2.76
% in each Schooling Level	0.17	0.35	0.20	0.28	-
<b>B. Outcomes for Blacks</b>					
Hourly Wages	2.24	2.31	2.57	2.88	2.41
% in each Schooling Level	0.29	0.37	0.21	0.13	-
<b>Actual Gap</b>	<b>-0.24</b>	<b>0.06</b>	<b>0.02</b>	<b>0.51</b>	<b>0.34</b>
<b>C. Blacks with Whites' Characteristics</b>					
<i>C.1 Observables and Unobservables</i>					
Hourly Wages	2.26	2.46	2.63	2.71	2.58
% in each Schooling Level	0.11	0.23	0.33	0.34	-
<b>Gap</b>	<b>0.17</b>	<b>0.36</b>	<b>-0.31</b>	<b>-0.05</b>	<b>0.18</b>
<i>C.2 Observables</i>					
Hourly Wages	2.20	2.32	2.61	2.91	2.47
% in each Schooling Level	0.24	0.33	0.25	0.18	-
<b>Gap</b>	<b>-0.10</b>	<b>0.16</b>	<b>-0.11</b>	<b>0.34</b>	<b>0.29</b>
<i>C.3 Unobservables</i>					
Hourly Wages	2.30	2.47	2.58	2.68	2.53
% in each Schooling Level	0.15	0.29	0.30	0.26	-
<b>Gap</b>	<b>0.08</b>	<b>0.20</b>	<b>-0.23</b>	<b>0.18</b>	<b>0.23</b>
<i>C.4 Cognitive Ability</i>					
Hourly Wages	2.27	2.47	2.56	2.92	2.59
% in each Schooling Level	0.15	0.28	0.29	0.28	-
<b>Gap</b>	<b>0.07</b>	<b>0.23</b>	<b>-0.19</b>	<b>0.06</b>	<b>0.17</b>
<i>C.5 Noncognitive Ability</i>					
Hourly Wages	2.25	2.31	2.57	2.62	2.38
% in each Schooling Level	0.29	0.38	0.21	0.11	-
<b>Gap</b>	<b>-0.25</b>	<b>0.04</b>	<b>0.00</b>	<b>0.58</b>	<b>0.38</b>
<i>C.6 Uncertainty</i>					
Hourly Wages	2.25	2.31	2.57	2.62	2.38
% in each Schooling Level	0.29	0.37	0.21	0.13	-
<b>Gap</b>	<b>-0.25</b>	<b>0.06</b>	<b>0.02</b>	<b>0.54</b>	<b>0.37</b>

Note: The numbers in this table present the mean (log) hourly wages (by schooling level and overall), the distribution of schooling decisions, and the racial gaps in hourly wages. Panels A and B show these numbers for blacks and whites as predicted by the model. For example, for blacks (panel B), the row "hourly wages" presents the means of  $Y_s^B(a, X_a^B, \mathbf{f}^B, \theta^B)$  for individuals selecting the respective schooling level  $s$ , whereas the row "% in each schooling level" presents the distribution of schooling  $D_s^B(Z_s^B, \mathbf{f}^B)$  in the black population. For "hourly wages" the last column (Overall) presents the average of log hourly wages in the population which is computed using  $Y^B(a, X_a^B, Z^B, \mathbf{f}^B, \theta^B)$  where

$$Y^B(a, X_a^B, Z^B, \mathbf{f}^B, \theta^B) = \sum_{s=1}^S D_s^B(Z_s^B, \mathbf{f}^B) Y_s^B(a, X_a^B, \mathbf{f}^B, \theta^B).$$

The numbers for the row "Gap" on the other hand, come from the following decomposition of the overall racial gap in hourly wages

$$E(Y^W(a, X_a^W, Z^W, \mathbf{f}^W, \theta^W) - Y^B(a, X_a^B, Z^B, \mathbf{f}^B, \theta^B)) = \sum_{s=1}^S \left( \begin{array}{l} E(Y_s^W(a, X_a^W, \mathbf{f}^W, \theta^W) | D_s^B(Z_s^W, \mathbf{f}^W) = 1) \\ \times \Pr(D_s^B(Z_s^W, \mathbf{f}^W) = 1) \\ - E(Y_s^B(a, X_a^B, \mathbf{f}^B, \theta^B) | D_s^B(Z_s^B, \mathbf{f}^B) = 1) \\ \times \Pr(D_s^B(Z_s^B, \mathbf{f}^B) = 1) \end{array} \right)$$

so, each column represents a term in the summation with the last column (Overall) presenting the total sum (or the gap). Panel C presents analogous results but after modifying different components of  $Y^B(a, X_a^B, Z^B, \mathbf{f}^B, \theta^B)$ . In particular, Panel C.1 presents the results when blacks are assumed to have the same distributions of observables and unobservables as whites, i.e. it presents the results for  $Y_s^B(a, X_a^W, \mathbf{f}^W, \theta^W)$ ,  $D_s^B(Z_s^W, \mathbf{f}^W)$ , and  $Y^B(a, X_a^W, Z^W, \mathbf{f}^W, \theta^W)$ . Panel C.2 assumes that only the observables are equalized across races. Panel C.3. assumes that all of the distributions of the unobserved components of the models are equalized across races. Finally, for C.4 to C.6 the results come from the change in each unobserved component of the model. The results for whites (Panel A) are always used to compute the gaps.

Table A7. Black-White Gap in Annual Earnings under Different Assumptions  
Sample of 23-27 year old Males

	H.S. Dropouts	H. S. Graduates	Some College	College Graduates	Overall
<b>A. Outcomes for Whites</b>					
Annual Earnings	9.71	9.98	9.95	9.79	9.88
% in each Schooling Level	0.17	0.35	0.20	0.28	-
<b>B. Outcomes for Blacks</b>					
Annual Earnings	9.29	9.50	9.54	9.63	9.46
% in each Schooling Level	0.29	0.37	0.21	0.13	-
<b>Actual Gap</b>	<b>-1.07</b>	<b>-0.06</b>	<b>0.00</b>	<b>1.54</b>	<b>0.41</b>
<b>C. Blacks with Whites' Characteristics</b>					
<i>C.1 Observables and Unobservables</i>					
Annual Earnings	9.22	9.61	9.42	9.34	9.41
% in each Schooling Level	0.11	0.23	0.33	0.34	-
<b>Gap</b>	<b>0.67</b>	<b>1.31</b>	<b>-1.11</b>	<b>-0.41</b>	<b>0.46</b>
<i>C.2 Observables</i>					
Annual Earnings	9.19	9.46	9.51	9.53	9.42
% in each Schooling Level	0.24	0.33	0.25	0.18	-
<b>Gap</b>	<b>-0.50</b>	<b>0.38</b>	<b>-0.44</b>	<b>1.01</b>	<b>0.45</b>
<i>C.3 Unobservables</i>					
Annual Earnings	9.37	9.66	9.46	9.42	9.50
% in each Schooling Level	0.15	0.29	0.30	0.26	-
<b>Gap</b>	0.28	0.65	-0.87	0.32	0.38
<i>C.4 Cognitive Ability</i>					
Annual Earnings	9.32	9.68	9.39	9.70	9.55
% in each Schooling Level	0.15	0.28	0.29	0.28	-
<b>Gap</b>	<b>0.25</b>	<b>0.76</b>	<b>-0.76</b>	<b>0.07</b>	<b>0.33</b>
<i>C.5 Noncognitive Ability</i>					
Annual Earnings	9.35	9.50	9.58	9.35	9.46
% in each Schooling Level	0.29	0.38	0.21	0.11	-
<b>Gap</b>	<b>-1.08</b>	<b>-0.15</b>	<b>-0.07</b>	<b>1.72</b>	<b>0.42</b>
<i>C.6 Uncertainty</i>					
Annual Earnings	9.29	9.51	9.55	9.64	9.47
% in each Schooling Level	0.29	0.37	0.21	0.13	-
<b>Gap</b>	<b>-1.07</b>	<b>-0.07</b>	<b>0.00</b>	<b>1.54</b>	<b>0.40</b>

Note: The numbers in this table present the mean (log) annual earnings (by schooling level and overall), the distribution of schooling decisions, and the racial gaps in annual earnings. Let  $\mathcal{E}_s^R(a, X_a^R, Q_a^R, \mathbf{f}^R, \theta^R)$  denote the log annual earnings given characteristics  $(X_a^R, Q_a^R, \mathbf{f}^R, \theta^R)$ , race  $R$ , schooling level  $s$  and age  $a$ . Formally,  $\mathcal{E}_s^R(a, X_a^R, \mathbf{f}^R, \theta^R) = Y_s^R(a, X_a^R, \mathbf{f}^R, \theta^R) + H_s^R(a, Q_a^R, \mathbf{f}^R, \theta^R)$ , where  $Y_s^R(a, X_a^R, \mathbf{f}^R, \theta^R)$  and  $H_s^R(a, Q_a^R, \mathbf{f}^R, \theta^R)$  represent the associated log hourly wage and log annual hours worked, respectively. Panels A and B show these numbers for blacks and whites as predicted by the model. For example, for blacks (panel B) the row “annual earnings” presents the means of  $\mathcal{E}_s^B(a, X_a^B, Q_a^B, \mathbf{f}^B, \theta^B)$  for individuals selecting the respective schooling level  $s$ , whereas the row “% in each schooling level” presents the distribution of schooling  $D_s^B(Z_s^B, \mathbf{f}^B)$ . The last column (Overall) presents the average log annual earning in the population. This is computed using  $\mathcal{E}^B(a, X_a^B, Q_a^B, Z^B, \mathbf{f}^B, \theta^B)$  where

$$\mathcal{E}^B(a, X_a^B, Q_a^B, Z^B, \mathbf{f}^B, \theta^B) = \sum_{s=1}^S D_s^B(Z_s^B, \mathbf{f}^B) \mathcal{E}_s^B(a, X_a^B, Q_a^B, \mathbf{f}^B, \theta^B).$$

The row “Gap” on the other hand, presents the numbers associated with the following decomposition of the overall racial gap in earnings

$$E \left( \begin{array}{c} \mathcal{E}^W(a, X_a^W, Q_a^W, Z^W, \mathbf{f}^W, \theta^W) \\ -\mathcal{E}^B(a, X_a^B, Q_a^B, Z^B, \mathbf{f}^B, \theta^B) \end{array} \right) = \sum_{s=1}^S \left( \begin{array}{c} E(\mathcal{E}_s^W(a, X_a^W, Q_a^W, \mathbf{f}^W, \theta^W) | D_s^B(Z_s^W, \mathbf{f}^W) = 1) \\ \times \Pr(D_s^B(Z_s^W, \mathbf{f}^W) = 1) \\ -E(\mathcal{E}_s^B(a, X_a^B, Q_a^B, \mathbf{f}^B, \theta^B) | D_s^B(Z_s^B, \mathbf{f}^B) = 1) \\ \times \Pr(D_s^B(Z_s^B, \mathbf{f}^B) = 1). \end{array} \right)$$

so, each column represents a term in the summation with the last column (Overall) presenting the total sum (or the gap). Panel C presents analogous results but after modifying different components of  $\mathcal{E}^B(a, X_a^B, Q_a^B, \mathbf{f}^B, \theta^B)$ . In particular, Panel C.1 presents the results when blacks are assumed to have the same distributions of observables and unobservables as whites, i.e.  $\mathcal{E}_s^B(a, X_a^W, Q_a^W, \mathbf{f}^W, \theta^W)$ ,  $D_s^B(Z_s^W, \mathbf{f}^W)$ , and  $\mathcal{E}^B(a, X_a^W, Q_a^W, Z^W, \mathbf{f}^W, \theta^W)$ . Panel C.2 assumes that only the observables are equalized across races. Panel C.3. assumes that all of the distributions of unobserved components are equalized across races. Finally, for C.4 to C.6 the results come from the change in each individual unobserved component of the model. The results for whites (Panel A) are always used to compute the gap.



Table A8. Black-White Gap in Annual Earnings under Different Assumptions  
Sample of 33-37 year old Males

	H.S. Dropouts	H. S. Graduates	Some College	College Graduates	Overall
<b>A. Outcomes for Whites</b>					
Annual Earnings	9.94	10.30	10.40	10.81	10.40
% in each Schooling Level	0.17	0.35	0.20	0.28	
<b>B. Outcomes for Blacks</b>					
Annual Earnings	9.47	9.72	10.24	10.41	9.84
% in each Schooling Level	0.29	0.37	0.21	0.13	
<b>Actual Gap</b>	<b>-1.08</b>	<b>-0.03</b>	<b>-0.05</b>	<b>1.73</b>	<b>0.56</b>
<b>C. Blacks with Whites' Characteristics</b>					
<i>C.1 Observables and Unobservables</i>					
Annual Earnings	9.53	9.82	10.29	10.27	10.09
% in each Schooling Level	0.11	0.23	0.33	0.34	
<b>Gap</b>	<b>0.68</b>	<b>1.37</b>	<b>-1.30</b>	<b>-0.44</b>	<b>0.31</b>
<i>C.2 Observables</i>					
Annual Earnings	9.39	9.68	10.26	10.44	9.90
% in each Schooling Level	0.24	0.33	0.25	0.18	
<b>Gap</b>	<b>-0.50</b>	<b>0.42</b>	<b>-0.54</b>	<b>1.13</b>	<b>0.50</b>
<i>C.3 Unobservables</i>					
Annual Earnings	9.64	9.85	10.28	10.25	10.05
% in each Schooling Level	0.15	0.29	0.30	0.26	
<b>Gap</b>	0.28	0.71	-1.02	0.39	0.35
<i>C.4 Cognitive Ability</i>					
Annual Earnings	9.56	9.86	10.23	10.49	10.10
% in each Schooling Level	0.15	0.28	0.29	0.28	
<b>Gap</b>	<b>0.26</b>	<b>0.82</b>	<b>-0.91</b>	<b>0.14</b>	<b>0.30</b>
<i>C.5 Noncognitive Ability</i>					
Annual Earnings	9.53	9.65	10.24	10.16	9.80
% in each Schooling Level	0.29	0.38	0.21	0.11	
<b>Gap</b>	<b>-1.10</b>	<b>-0.10</b>	<b>-0.12</b>	<b>1.92</b>	<b>0.60</b>
<i>C.6 Uncertainty</i>					
Annual Earnings	9.47	9.72	10.26	10.42	9.84
% in each Schooling Level	0.29	0.37	0.21	0.13	
<b>Gap</b>	<b>-1.08</b>	<b>-0.03</b>	<b>-0.06</b>	<b>1.73</b>	<b>0.56</b>

Note: The numbers in this table present the mean (log) annual earnings (by schooling level and overall), the distribution of schooling decisions, and the racial gaps in annual earnings. Let  $\mathcal{E}_s^R(a, X_s^R, Q_s^R, \mathbf{f}^R, \theta^R)$  denote the log annual earnings given characteristics  $(X_s^R, Q_s^R, \mathbf{f}^R, \theta^R)$ , race  $R$ , schooling level  $s$  and age  $a$ . Formally,  $\mathcal{E}_s^R(a, X_s^R, \mathbf{f}^R, \theta^R) = Y_s^R(a, X_s^R, \mathbf{f}^R, \theta^R) + H_s^R(a, Q_s^R, \mathbf{f}^R, \theta^R)$ , where  $Y_s^R(a, X_s^R, \mathbf{f}^R, \theta^R)$  and  $H_s^R(a, Q_s^R, \mathbf{f}^R, \theta^R)$  represent the associated log hourly wage and log annual hours worked, respectively. Panels A and B show these numbers for blacks and whites as predicted by the model. For example, for blacks (panel B) the row "annual earnings" presents the means of  $\mathcal{E}_s^B(a, X_s^B, Q_s^B, \mathbf{f}^B, \theta^B)$  for individuals selecting the respective schooling level  $s$ , whereas the row "% in each schooling level" presents the distribution of schooling  $D_s^B(Z_s^B, \mathbf{f}^B)$ . The last column (Overall) presents the average log annual earning in the population. This is computed using  $\mathcal{E}^B(a, X_a^B, Q_a^B, Z^B, \mathbf{f}^B, \theta^B)$  where

$$\mathcal{E}^B(a, X_a^B, Q_a^B, Z^B, \mathbf{f}^B, \theta^B) = \sum_{s=1}^S D_s^B(Z_s^B, \mathbf{f}^B) \mathcal{E}_s^B(a, X_s^B, Q_s^B, \mathbf{f}^B, \theta^B).$$

The row "Gap" on the other hand, presents the numbers associated with the following decomposition of the overall racial gap in earnings

$$E \left( \begin{array}{c} \mathcal{E}^W(a, X_a^W, Q_a^W, Z^W, \mathbf{f}^W, \theta^W) \\ -\mathcal{E}^B(a, X_a^B, Q_a^B, Z^B, \mathbf{f}^B, \theta^B) \end{array} \right) = \sum_{s=1}^S \left( \begin{array}{c} E(\mathcal{E}_s^W(a, X_s^W, Q_s^W, \mathbf{f}^W, \theta^W)) D_s^B(Z_s^W, \mathbf{f}^W = 1) \\ \times \Pr(D_s^B(Z_s^W, \mathbf{f}^W) = 1) \\ -E(\mathcal{E}_s^B(a, X_s^B, Q_s^B, \mathbf{f}^B, \theta^B)) D_s^B(Z_s^B, \mathbf{f}^B = 1) \\ \times \Pr(D_s^B(Z_s^B, \mathbf{f}^B) = 1) \end{array} \right)$$

so, each column represents a term in the summation with the last column (Overall) presenting the total sum (or the gap). Panel C presents analogous results but after modifying different components of  $\mathcal{E}^B(a, X_a^B, Q_a^B, Z^B, \theta^B)$ . In particular, Panel C.1 presents the results when blacks are assumed to have the same distributions of observables and unobservables as whites, i.e.  $\mathcal{E}^B(a, X_a^B, Q_a^B, \mathbf{f}^W, \theta^W)$ ,  $D_s^B(Z_s^W, \mathbf{f}^W)$ , and  $\mathcal{E}^B(a, X_a^B, Q_a^B, Z^W, \mathbf{f}^W, \theta^W)$ . Panel C.2 assumes that only the observables are equalized across races. Panel C.3. assumes that all of the distributions of unobserved components are equalized across races. Finally, for C.4 to C.6 the results come from the change in each individual unobserved component of the model. The results for whites (Panel A) are always used to compute the gap.