Relative earnings of black men to white men by region, industry

The earnings gap between black men and white men widened over the 1979–89 period; changes in workers' shares by industry had a noteworthy impact on earnings

Lisa Saunders

Black men earned less, on average, in 1989 ($14,182) than in 1979 ($14,619), while the average earnings of white men increased (from $20,564 to $21,361) according to data from the Census Bureau.[1] In addition, previous studies show that black men lost more ground relative to white men than did black women during the 1980's.[2] This article examines whether a shift in the distribution of black men and white men across regions could have significantly contributed to widening the earnings gap between the two groups, or whether within-region shifts in industry employment and earnings contributed to the earnings divergence.

Previous studies

Many studies have documented and analyzed the black-white earnings gap in the United States. William A. Darity, Jr. and Samuel L. Myers, Jr. found that the earnings gap between black and white heads of household widened by 5 percent between 1976 and 1985.[3] They also found, that if similarly endowed and situated family heads of households had been treated equally, the gap would have actually narrowed by 13 percent.

Another study, by Francine D. Blau and Andrea H. Beller, found that although relative hourly wages increased for black men, these gains were counterbalanced by decreased periods of annual work time.[4] Blau and Beller showed that an evening-out of earnings across work experience groups increased the wages of older black men relative to younger black men. This was accompanied by growth in earnings differentials between young black men and young white men with similar characteristics.

Lee Badgett and Rhonda M. Williams found that rising unemployment and declining access to high-wage manufacturing jobs during the 1980's had deleterious effects on the labor market status of black men.[5] Another study, by John Bound and Richard B. Freeman, found that the earnings gap between black men and white men grew most among young black men in manufacturing in the Midwest and New England.[6]

Trends in earnings and employment

Regional concentrations. During the 1979–89 period, most black men lived and worked in the South and in the Mid-Atlantic division. (See table 1.[7]) In 1989, 31.1 percent of black male workers worked in the South Atlantic division, while 17.2 percent worked in the Mid-Atlantic division, and 15.1 percent worked in the East North Central division. Relatively small shares of blacks worked in the New England, West North Central, and Mountain divisions. By comparison, 18 percent of the white men who worked, did so in the East North Central division, 16.6 percent worked in the South Atlantic division, and 15.1 percent

Lisa Saunders is assisstant professor, Department of Economics, University of Massachusetts.

worked in the Mid-Atlantic division. Smaller shares of white men worked in the New England, East South Central, and Mountain divisions.

The shares of both groups working in the East North Central and West South Central divisions declined between 1979 and 1989 (a decline of more than 10 percent in each division for black men, and for white men, a 9.3-percent decrease in the East North Central division and a 3.5-percent decrease in the West South Central division). Moreover, the share of white men working in the Mid-Atlantic division declined 12.1 percent, compared with a 2.8-percent increase for black male workers. Entry into, and exit from the labor force and migration between regions may have caused these changes in the shares of both groups. Because earnings differ by region, changes in the shares of workers in each region might have contributed to the decline in black-white relative earnings.[8]

In 1989, black men's earnings were below their U.S. average in all three divisions of the South and in the West North Central and Mountain divisions. Their earnings declined in six of the nine divisions and declined relative to the earnings of white men in all nine divisions. Earnings for white men were below average in the West North Central, East South Central, West South Central, and Mountain divisions. However, their earnings increased or remained constant in seven of the nine divisions. Black-to-white men's relative earnings declined 7.1 percent over the 1979–89 period.

Table 1 suggests that there were specific earnings trends that contributed to the decline in the black-white earnings ratio. Black men's real earnings declined or were constant in all but one of the divisions where they were concentrated (the South Atlantic), while white men's real earnings increased or were constant in all of the divisions where they were concentrated. Clearly, each group's average earnings levels in each region are important to relative earnings.

Industry concentrations. Black men were concentrated in transportation, manufacturing, retail, and professional services in 1979 and 1989. Table 2 shows that in 1989, 62 percent of black men worked in these industries. Over the period, the share of black men working in manufacturing industries declined as the share of black men in retail, transportation, and professional services increased.

In 1989; 58.9 percent of white men worked in the same four industries, but they were less likely to work in transportation. They were more likely to work in mining, construction, and finance. The share of white men working in manufacturing and transportation declined, as their numbers increased in retail, business, and professional services. Census figures show that within regions,

Table 1. **Share of workers and annual earnings by region, 1979 and 1989**

Region	Black men						White men						Black-white relative earnings		
	Share			Average earnings			Share			Average earnings					
	1979	1989	Percent change	1979	1989	Percent change	1979	1989	Percent change	1979	1989	Percent change	1979	1989	Percent change
U.S. earnings	...	...	...	$14,619	$14,182	-3.08	...	...	...	$20,564	$21,361	3.73	0.711	0.664	-7.08
Northeast:															
New England	0.019	0.024	22.52	15,546	16,067	3.25	0.058	0.063	6.99	19,917	22,634	12.01	.781	.710	-9.05
Mid Atlantic	.167	.172	2.82	15,134	15,218	.55	.170	.151	-12.41	21,285	23,272	8.54	.711	.654	-8.03
North Central:															
East North Central	.168	.151	-10.94	16,993	15,306	-11.02	.196	.180	-9.26	21,876	21,969	.42	.777	.697	-10.31
West North Central	.028	.029	6.01	15,443	13,561	-13.88	.072	.081	10.40	17,058	18,532	7.95	.905	.732	-19.17
South:															
South Atlantic	.301	.311	3.20	13,160	13,729	4.15	.149	.166	10.53	19,886	21,392	7.04	.662	.642	-3.02
East South Atlantic	.087	.090	3.48	11,489	11,475	-.12	.054	.058	6.88	17,901	18,425	2.85	.642	.623	-2.97
West South Central	.135	.122	-10.38	13,919	12,268	-13.46	.102	.098	-3.48	20,253	19,695	-2.84	.687	.623	-9.36
West:															
Mountain	.012	.013	14.51	16,567	14,098	-17.52	.055	.057	4.13	19,849	18,899	-5.02	.835	.746	-10.63
Pacific	.084	.086	2.37	17,714	17,012	-4.13	.143	.146	1.52	22,146	22,877	3.20	.800	.744	-7.03

NOTE: For 1979 and 1989, average real annual earnings are mean wage and salary income in 1982–84 dollars.

SOURCE: Authors calculations, U.S. Bureau of Census, Public Use Microdata Samples for 1979 and 1989.

the distribution of male workers in each industry deviated very little from their industry distribution at the national level. Within-region entry into and exit from the labor force, migration, and industrial restructuring would cause changes in the share of each group working in each industry. Because earnings differ by industry, changes in the shares of each group (within regions and overall) working in each industry might have contributed to the decline in the black-white earnings ratio.

Despite similar trends in industry employment between black men and white men, the trends in earnings for the two groups differed in a significant way. Black men's average earnings declined in 2 of the 3 industries where their numbers increased most. Their earnings declined 10.1 percent in retail and 2.5 percent in business. By contrast, white men's earnings increased in the industries where their numbers increased most. Their earnings increased 19.4 percent in professional services, 15.9 percent in finance, 8.5 percent in entertainment, and 2.5 percent in business. The shares of black men and white men working in industries that paid higher earnings declined as their numbers increased in lower paying industries. Yet, white men's earnings increased relative to black men's earnings in these lower paying industries. Average earnings levels in each industry are important to relative earnings.

Data and findings

To analyze the contributions to the decline in black-white relative earnings a decomposition model is used. This model estimates contributions to the decline in black-white relative earnings that were made by changes in the regional distribution of workers and by changes within regions in the distribution of employment and earnings by industry. These estimates are generated by comparing the actual change in relative earnings from 1979 to 1989 to what the change in relative earnings would have been, had the distribution of workers, employment, and earnings remained as they had been in 1979. (See appendix.)

Data. Regional data on wages and salaries, labor force participation, and industry employment (covering 1979 and 1989) from the 1980 (1 percent) and 1990 (5 percent) samples of the U.S. Bureau of the Census *Public Use Microdata Sample* were used for the decompositions. The shares of black men and white men working in each region and the share of them working in each industry (within each region) are the shares of respondents who said they were labor force participants in their respective regions and industries at the time of the census.[9] Average earnings are the annual salary and wage earnings that they reported for 1979 and 1989. They were recomputed, using regional indices, as (real) 1982–84 average earnings.

Findings. The results of the decompositions are reported in table 3. The rows in table 3 show the black-white earnings' ratio, calculated using the overall Census figures and the three ratios estimated in the decompositions. The columns show ratios for 1979 and 1989, the percentage change over the period, and the estimated contribution each factor made to the decline in the earnings ratio.

Table 2. **Share of workers employed and average annual earnings by industry, 1979 and 1989**

Industry	Black men						White men						Black-white relative earnings		
	Share			Average earnings			Share			Average earnings					
	1979	1989	Percent change	1979	1989	Percent change	1979	1989	Percent change	1979	1989	Percent change	1979	1989	Percent change
Agriculture[1]	0.039	0.037	–6.29	$16,150	$4,141	–2.90	0.045	0.041	–10.85	$13,715	$7,954	–72.43	1.18	0.52	–55.78
Mining	.005	.003	–58.02	19,867	17,851	–11.29	.015	.010	–46.26	26,306	25,401	–3.56	.76	.70	–6.95
Construction	.091	.088	–2.62	11,558	11,685	1.09	.106	.114	6.94	17,585	17,349	–1.36	.66	.67	2.48
Manufacturing	.289	.207	–39.36	16,510	16,870	2.14	.263	.217	–21.06	23,721	24,807	4.38	.70	.68	2.29
Transportation	.118	.123	4.20	18,725	18,262	–2.54	.092	.089	–2.81	24,918	24,332	–2.41	.75	.75	–.12
Wholesale	.040	.041	2.35	14,535	14,851	2.13	.055	.057	3.29	22,852	24,644	7.27	.64	.60	–5.25
Retail	.111	.151	26.56	9,779	8,858	–10.06	.139	.151	7.82	14,068	14,404	2.34	.70	.62	–11.27
Finance	.032	.039	18.04	14,275	16,816	15.11	.045	.052	14.23	25,785	30,663	15.91	.55	.55	.94
Business	.048	.065	26.07	10,817	10,557	–2.47	.048	.056	13.47	16,844	17,267	2.45	.64	.61	–4.80
Professional services	.025	.026	1.96	7,630	8,987	15.10	.015	.017	8.30	11,641	13,015	10.56	.66	.69	5.34
Entertainment	.011	.015	28.62	9,421	11,089	15.04	.011	.016	30.02	13,533	14,796	8.54	.70	.75	7.66
Professional	.125	.139	10.14	14,214	15,782	9.94	.114	.132	14.10	20,911	25,953	19.43	.68	.61	–10.54
Public administration	.066	.065	–1.76	17,292	20,032	13.68	.052	.048	–7.96	24,610	25,395	3.09	.70	.79	12.27

[1] Agriculture earnings for 1989 should be interpreted with caution. The 1-percent sample was problematic for this industry.
NOTE: For 1979 and 1989, average real earnings are in 1982–84 dollars.
SOURCE: Author's calculations, U.S. Bureau of Census, Public Use Microdata Samples for 1979 and 1989.

The overall census figures in the first row of table 3 show that weighted average relative earnings declined from 71.1 percent in 1979 to 66.4 percent in 1989. This 6.6-percent fall is only slightly larger than the 6.4-percent decline in relative earnings that Bound and Freeman find for 1973–89, using CPS data.

Row two shows that if the changes in the distribution of workers across regions is controlled for, the earnings ratio would decline from 71.1 percent to 66.1 percent from 1979 to 1989. Compared with the overall ratio, the regional measure declined slightly more. This suggests that the black-white earnings ratio would have fallen more than it did had the ratio of black men to white men in each region remained the same. Thus, changes in the shares of black men and white men who worked in each region did not contribute to the growing earnings gap. Quite the contrary, the changes counterbalanced that trend to a modest extent.[10]

The third row shows that by controlling industry employment, the earnings differences of black men to white men by industry declined from 71.1 percent in 1979 to 68.2 percent in 1989. This decline of 4.1 percent is lower than the 6.6-percent decline in the overall measure. This implies that the black-white earnings ratio would have fallen substantially less than it did, had the ratio of black men to white men working in each industry remained the same. Within-region changes in the shares of black men and white men who worked in each industry contributed nearly 40 percent of the decline in black-white relative earnings between 1979 and 1989. (This is consistent with the descriptive data in table 2 and the findings of Badgett and Williams and Bound and Freeman).

The last row in table 3 shows that differences in earnings would have declined from 71.1 percent in 1979 to 70 percent in 1989, had regional industry earnings remained the same. This decline is much lower than the decline in the overall measure. It indicates that within-region changes in black men and white men's average earnings in each industry contributed more than 76 percent of the decline in relative earnings.[11] Industry employment and average earnings measures are strong indicators that industrial restructuring and the 1979–80 recession affected black men disproportionately. Table 2 does show, after all, that total average earnings fell or were stagnant for black men employed in 9 of the 13 industry categories.

Table 3. **Decomposition of change in male black-white relative earnings, 1979–89**

Variable	Earnings ratio, 1979	Earnings ratio, 1989	Percent change	Contribution to trend in the ratio (percent)[1]
Census	71.1	66.4	–6.6	100.0
Region	71.1	66.1	–7.0	5.9
Industry	71.1	68.2	–4.0	–39.5
Earnings	71.1	70.0	–1.6	–76.4

[1] Because the changes in regions, industry employment, and industry earnings are not an exhaustive list of factors influencing relative earnings, the last three rows of this column should not be expected to add up to 100 percent.

NOTE: Relative earnings are a ratio of black-white weighted average annual earnings in 1979 and 1989.

SOURCE: U.S. Bureau of Census and author's calculations.

Effects on earnings gap

This study describes trends in racial earnings differences. Relative earnings declined in all nine divisions between 1979 and 1989. The shares of black men and white men working in each region and industry changed somewhat uniformly, though the changes in average earnings by region and industry did not. Black men were more likely than white men to experience declines in real earnings in the regions where they were concentrated. The shares of both black men and white men declined in higher earnings industries and increased in low earnings industries. However, earnings for white men working in the lower paying industries rose relative to those of black men in such industries.

Shift-share analysis, used to estimate how three factors affected the change in black-white relative earnings shows that changes in the regional distribution of workers did not contribute to the decline in relative earnings, but kept the relative earnings of black men from declining more than they did. Within-region changes in both the distribution of employment and earnings by industry did contribute to the decline in relative earnings. The change in the distribution of earnings had a greater impact on relative earnings than the change in the distribution of employment, but the impact of the change in the employment distribution is too large to be ignored.

Future research should be undertaken to examine why industry-specific wage ratios have changed relative earnings with such effect. The literature on employment discrimination would benefit from more detailed (within age, region or industry group) evaluations of the impact that changes in industry requirements, occupational segregation, job quality, and employee characteristics, have had on earnings inequality. □

Footnotes

[1] Authors' calculations from *U.S. Bureau of the Census, Public Use Microdata Samples*, 1980 and 1990. Average real earnings are in 1982–84 dollars.

[2] Lee Badgett and Rhonda M. Williams, "The Changing Contours of Discrimination: Race, Gender, and Structural Economic Change," in M. Bernstein and D. Adler, eds., *Understanding American Economic Decline* (Cambridge, Cambridge University Press, 1994); and Francine Blau and Andrea H. Beller, "Black-White Earnings Over the 1970's and 1980's: Gender Differences in Trends," *Review of Economics and Statistics*, May 1992, pp. 276–86.

[3] William A. Darity, Jr. and Samuel L. Myers, Jr., "Racial Earnings Inequality and Family Structure," Mimeograph (University of Minnesota, 1993).

[4] Blau and Beller, "Black-White Earnings," May 1992.

[5] Badgett and Williams, "The Changing Contours of Discrimination," 1994.

[6] John Bound and Richard B. Freeman, "What Went Wrong? The Erosion of Relative Earnings and Employment Among Young Black Men in the 1980's," *The Quarterly Journal of Economics*, February 1992, pp. 201–32.

[7] Table 1 lists the share of black male and white male labor force participants living in each region of the country. It is assumed that they lived and worked in the same regions. Average earnings are mean wage and salary income in 1982–84 dollars.

[8] Bound and Freeman found that the change in the regional distribution of workers from 1973 to 1989 did not contribute to the decline in relative earnings. Instead they found it reversed the trend .02 percent per year. If, in both 1979 and 1989, black men and white men are similarly distributed by region, factors *other* than shares in each region should be considered.

[9] It is possible that some respondents who were in the labor force at the time the census was taken were not employed in the previous year. Thus, the relative earnings calculation (and the change in it) will be biased, if black men are more likely than white men to report 0 earnings in the previous year.

[10] Bound and Freeman also found that "region" had a positive, but "negligible effect" on relative earnings—"reversing (the trend) by 0.02 points per year" from 1973 to 1989. See Bound and Freeman, "What Went Wrong?" pp. 212–14.

[11] Shifts in region of employment and in industry employment and earnings (within regions) did not occur independently; and they are not the only factors that influenced the change in earnings. Thus, their contributions to the change in relative earnings cannot be expected to sum to 100 percent.

APPENDIX: Decomposing the change in relative earnings

A decomposition model is used in this analysis to estimate contributions to the decline in black-white relative earnings that were made by 1) changes in the shares of black men and white men working in each region; 2) changes within regions in the shares of black men and white men working in each industry; and 3) changes within regions in the average earnings of black men and white men working in each industry.

Relative earnings in the U.S. Let Y^1_t equal the relative earnings of black men and white men in the United States in 1979:

$$(1) \qquad Y^1_t = Y^B_t / Y^W_t$$

where (U.S.) weighted average earnings of black men are Y^B_t and for white men, Y^W_t. Earnings are weighted using the share of black men and white men living in each division. This means that:

$$(2) \qquad Y^B_t = \Sigma\, \alpha^B_{it} * Y^B_{it}$$

$$(3) \qquad Y^W_t = \Sigma\, \alpha^W_{it} * Y^W_{it}$$

where α^B_{it} and α^W_{it} are the shares of black men and white men who are employed in division i at time t. Y^B_{it} and Y^W_{it} are average earnings of black men and white men employed in division i at time t. The average earnings in each division are weighted using the shares of black men and white men in each division who worked in each industry.

$$(4) \qquad Y^B_{it} = \Sigma\, \beta^B_{ijt} * Y^B_{ijt} \text{ and}$$

$$(5) \qquad Y^W_{it} = \Sigma\, \beta^W_{ijt} * Y^W_{ijt}$$

where β^B_{ijt} and β^W_{ijt} are the shares of black men and white men in division i who are employed in industry j at time t.

Y^B_{ijt} and Y^W_{ijt} are average earnings of black men and white men in division i working in industry j. Equation (1) can be rewritten using equations (2) through (5), such that U.S. relative earnings are:

$$(6) \qquad Y^1_t = [\Sigma\, \alpha^B_{it} (\Sigma\, \beta^B_{ijt} * Y^B_{ijt})] / [\Sigma\, \alpha^W_{it} (\Sigma\, \beta^W_{ijt} * Y^W_{ijt})].$$

At time $t+1$, the black-white earnings ratio can be written:

$$(7) \qquad Y^1_{t+1} = [\Sigma\, \alpha^B_{it+1} (\Sigma \beta^B_{ijt+1} * Y^B_{ijt+1})] / [\Sigma\, \alpha^W_{it+1} (\Sigma\, \beta^W_{ijt+1} * Y^W_{ijt+1})].$$

The change in Y^1 from time t to time $t+1$ is the change in relative earnings from 1979 to 1989.

The decompositions. From equations (6) and (7) one sees that a change in Y^1 could be accounted for by a change in the shares of black men and white men working in each region, (α^B_i, α^W_i), a change in the shares of black men and white men working in each industry, (β^B_{ij}, β^W_{ij})

and a change in average industry earnings of black men and white men within each region, (Y^B_{ij}, Y^W_{ij}).[1]

Let Y^2_{t+1} denote U.S. relative earnings, if in 1989 the share of black men and white men working in each region remained at their 1979 levels. In this case,

$$(8) \qquad Y^2_t = Y^1_t \text{ and}$$

$$(9) \qquad Y^2_{t+1} = [\Sigma\, \alpha^B_{it} (\Sigma\, \beta^B_{ijt+1} * Y^B_{ijt+1})] / [\Sigma\, \alpha^W_{it} (\Sigma\, \beta^W_{ijt+1} * Y^W_{ijt+1})].$$

The change in Y^2 from 1979 to 1989 is the change in relative earnings, independent of any influence from changes in the shares of black men and white men who worked in each region (α^B_i and α^W_i). If Y^2 declines less than Y^1, then the changes in α^B_i and α^W_i from 1979 to 1989 contributed to the decline in relative earnings. The difference between the change in Y^2 and the change in Y^1 is an estimate of the contribution made by the change in α^B_i and α^W_i to the decline in relative earnings.

Let Y^3_{t+1} denote relative earnings in 1989 if the shares of black men and white men working in each industry (in each region) remained at their 1979 levels. In this case,

$$(10) \qquad Y^3_t = Y^1_t \text{ and}$$

$$(11) \qquad Y^3_{t+1} = [\Sigma\, \alpha^B_{it+1} (\Sigma\, \beta^B_{ijt} * Y^B_{ijt+1})] / [\Sigma\, \alpha^W_{it+1} (\Sigma\, \beta^W_{ijt} * Y^W_{ijt+1})].$$

The change in Y^3 from 1979 to 1989 is the change in relative earnings independent of any influence from changes (within regions) in the shares of black men and white men who worked in each industry, (β^B_{ij} and β^W_{ij}). If Y^3 declines less than Y^1, then the changes in β^B_{ij} and β^W_{ij} 1979 to 1989 contributed to the change in relative earnings. The difference between the change in Y^3 and the change in Y^1 is an estimate of the contribution that the change in β^B_{ij} and β^W_{ij} made to the change in relative earnings.

Let Y^4_{t+1} denote relative earnings in 1989 if the average industry earnings of black men and white men within each region is unchanged from 1979 to 1989. Then,

$$(12) \qquad Y^4_t = Y^1_t \text{ and}$$

$$(13) \qquad Y^4_{t+1} = [\Sigma\, \alpha^B_{it+1} (\Sigma\, \beta^B_{ijt+1} * Y^B_{ijt})] / [\Sigma\, \alpha^W_{it+1} (\Sigma\, \beta^W_{ijt+1} * Y^W_{ijt})].$$

The change in Y^4 from 1979 to 1989 is the change in relative earnings independent of any influence from changes within regions in black men and white men's average industry earnings (Y^B_{ij} *and* Y^W_{ij}). If the decline in Y^4 is less than the decline in Y^1, then the changes in (Y^B_{ij} and Y^W_{ij}) from 1979 to 1989 contributed to the decline in relative earnings. The difference between the change in Y^4 and the change in Y^1 is an estimate of the contribution that the change in (Y^B_{ij} *and* Y^W_{ij}) made to the change in U.S. relative earnings.

Footnote to the appendix

[1] Shift-share analyses, such as that used in the article, do not determine the causes of the change in relative earnings. For example, factors related to the shares of black men and white men who are employed in a specific division change in ways that influence earnings over time. Holding the shares constant and as a result, ignoring the related variables, may introduce bias into estimates of U.S. relative earnings. The results are consistent with previous research, nonetheless. (A list of other factors that influence relative earnings, and results from additional decompositions are available from the author.)