Rising Tide in the Labor Market: To What Degree Do Expansions Benefit the Disadvantaged?

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The long and eventually strong expansion of the 1990s elicited a spate of articles referring to a rising tide and its salutary effect on all boats.[1] The analogy of the rising tide says that as overall economic conditions improve, each individual's situation improves—everyone benefits. How apt is this analogy to the U.S. situation in the late 1990s–early 2000? Is the current strong U.S. expansion—rising tide—being shared across the U.S. population—floating all boats? (And what does the analogy really mean—that all boats rise in parallel or all come to float at the same level?) More specifically, to what degree are groups that are typically *disadvantaged* in the labor market—blacks, women, teens, the less educated—participating in the current prosperity?[2]

To understand the effects of economic expansion (or recession) on various labor market groups, one should investigate not only cyclical variations but also the factors that determine the groups' relative labor market positions over the longer term. The disadvantage that a group experiences in the labor market, defined here as above-average unemployment rates or below-average fractions employed, may be attributable to barriers in the labor market as well as to differences in group characteristics such as educational attainment. Different reasons for disadvantage suggest different likely responses to the business cycle.

This article presents data that describe the patterns of labor force status by race, sex, education, and age (teens) during recent decades. These data indicate that while virtually all groups are seeing improvements in labor market outcomes in the current expansion, the gaps between disadvantaged groups and the rest of the economy are shrinking more in some cases than in others. Furthermore, even the strong and long expansion of the 1990s has not reduced the gaps to zero. The research literature offers several explanations for historical patterns of disadvantage and provides some predictions as to how disparities in labor force status should respond to recessions or to an expansion like that of the 1990s. This article attempts to quantify the contributions of various

influences (suggested by that literature) on job market disparities in the 1970s, 1980s, and 1990s.

I. The 1990s (Unusual) Recovery in Historical Context—Disparities in Labor Force Status

The expansion that began in the early 1990s and continues into 2000 is an unusual one. What started in mid 1991 as the "jobless" recovery has become the "how-can-unemployment-stay-so-low?" expansion. Typically, as the U.S. economy expands output, more workers are employed and unemployment rates fall.[3] However, if the economy grows "too fast" for an extended period, pressures build in markets for inputs, including labor, and prices begin to rise, sowing the seeds of a subsequent slowdown.[4]

The top panel of Figure 1 displays U.S. unemployment rates. The "jobless" beginning of the current expansion is confirmed by the delayed peak in unemployment, which occurred more than a year after the official recession trough (shown by the end of the shaded area); in the earlier recessions, joblessness began declining before or immediately after the trough. By contrast, since mid 1997, the nation's unemployment rate has been below 5 percent, rates not enjoyed on such a sustained basis since the late 1960s.

Labor force participation rates (middle panel) typically vary much less than unemployment rates over the business cycle. Nonetheless, good times elicit new job candidates and a weak economy discourages some people from seeking work. Additionally, in the last few years of this expansion, "the end of welfare as we know it" has pushed up participation rates of former and potential welfare recipients.

While the 1990s increases in participation are much less steep than those in the expansions of the 1970s or 1980s, the uptrend in participation combined with declining unemployment rates has led to a record fraction of the working-age population being employed (lower panel). The employed percentage of the civilian population age 16 and older climbed above 64 percent in 1998. Previous cyclical peaks were 63 percent in 1989, 60 percent in 1979, and 58 percent in 1973.

Labor force participation rates typically vary much less than unemployment rates over the business cycle.

In sum, the strong economy has meant low unemployment and rising labor force participation. An unprecedented fraction of the population is working.[5]

Patterns of Labor Force Status by Race, Sex, and Age: Viewing Past Disparities

Figure 2 (first panel) disaggregates the top panel of Figure 1, plotting trends in adult unemployment rates for black and white men and women.[6] For individuals age 20 and over, unemployment rates have declined markedly for all four groups in this recovery. Nonetheless, jobless rates for blacks remain noticeably higher than those for whites, averaging 7.1 percent for black men and 3.0 percent for white men in the second half of 1999 and 6.8 and 3.2 percent for black and white women, respectively.

The prior history shown in Figure 2 reveals a tendency for the black–white unemployment gap (second panel) to expand in recessions as overall unemployment in the economy rises and to shrink in recoveries as joblessness falls. Investigation of the

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[1] Examples include the following: "A Rising Tide," *Business Week,* 8/31/98, p. 72; "The Tide Is Not Lifting Everyone," *New York Times* editorial, October 1997, p. A24; Robert B. Reich, "To Lift All Boats," *Washington Post*, May 16, 1999; Marc André Pigeon and L. Randall Wray, "Did the Clinton Rising Tide Raise All Boats?" Levy Institute Public Policy Brief No 45, 1998; William Julius Wilson, "All Boats Rise. Now What?" *New York Times*, Wednesday 4/12/00, Op-Ed page.

[2] The analysis does not include Hispanics, another disadvantaged group, because seasonally adjusted monthly data on unemployment rates for Hispanics are not available by sex or age (separating teens and adults).

[3] Okun's law describes the relationship between output growth and unemployment.

[4] The Phillips curve describes the relationship between unemployment rates and inflation. Once output is growing at the economy's potential (roughly, productivity plus labor force growth), "too fast" is typically defined as a rate of growth and an unemployment rate that lead to rising inflation.

[5] In addition, real wages have risen in the last couple of years. For example, inflation-adjusted median usual weekly earnings of full-time wage and salary workers have been rising since 1996, after about a decade and a half of virtual stagnation. This article does not investigate changes in wages, but instead focuses on changes and differences in labor market status—unemployment and labor force participation.

[6] The remaining charts and the data analysis begin in 1972 because that is the first year for which the U.S. Bureau of Labor Statistics published monthly unemployment data for blacks.
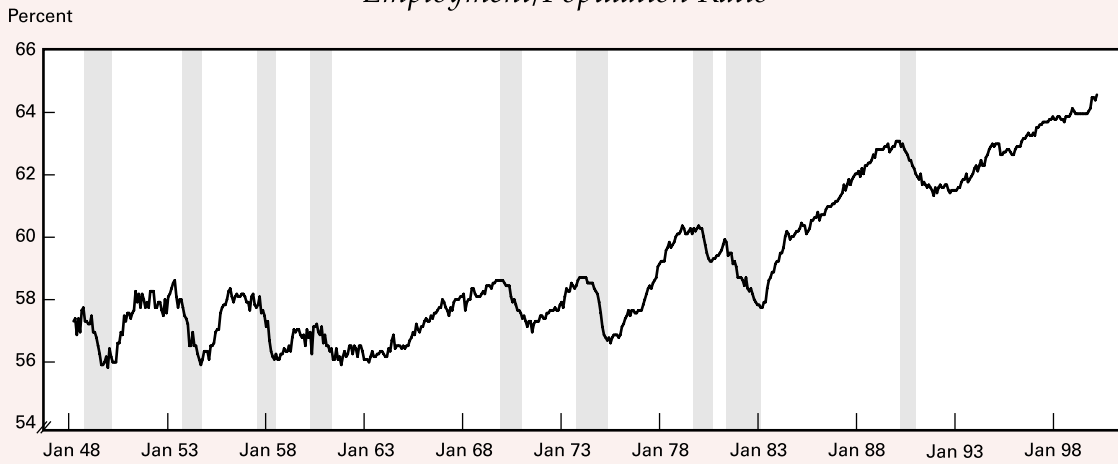
Figure 1

Unemployment Rate

Percent

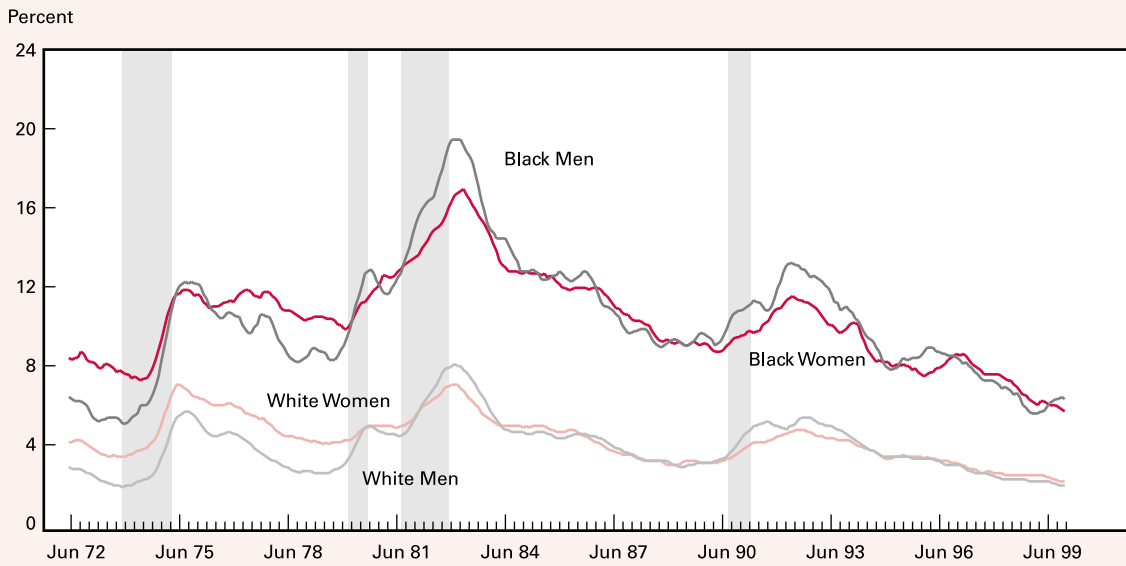## Labor Force Participation Rate
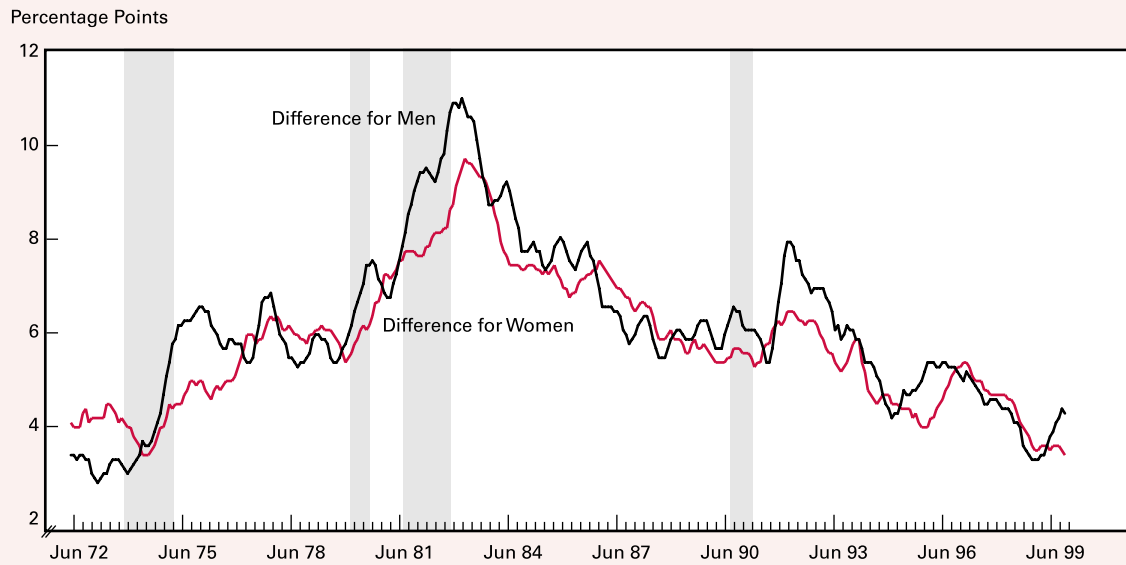
Percent

Employment/Population Ratio

Percent
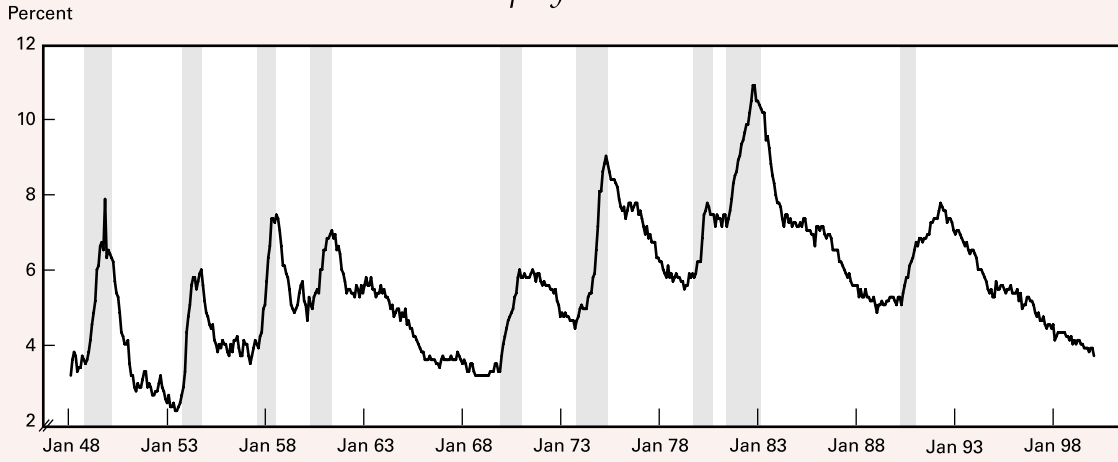
Note: Fractions of U.S. civilian population or labor force ages 16 and older. Shading indicates NBER-dated recession.
Source: U.S. Bureau of Labor Statistics.

Figure 2

Unemployment Rates

Percent

Black-White Differences in Unemployment Rates

Percentage Points

Note: Six-month moving averages of unemployment rates for adults ages 20 and older.
Source: U.S. Bureau of Labor Statistics.

extent and possible sources of this tendency is the focus of this article. The cyclical movement of the black–white *difference* in unemployment rates shown in the second panel contrasts with the absence of a

clear cyclical pattern for the black–white *ratio* of unemployment rates (see Figure A in the box).

The third panel of Figure 2 displays female–male differences in unemployment rates. Women's rates,

Female-Male Differences in Unemployment Rates
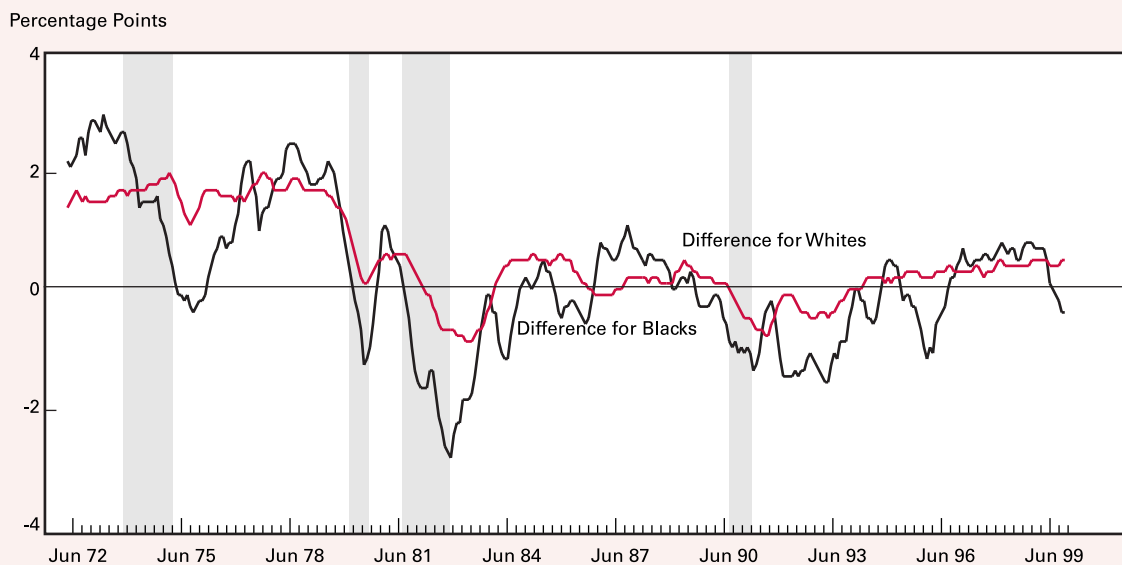
Percentage Points

Note: Six-month moving averages of unemployment rates for adults ages 20 and older.
Source: U.S. Bureau of Labor Statistics.

especially white women's rates, were noticeably higher than men's in the 1970s. However, as the economy fell into recession in the early 1980s, the gap virtually disappeared for both whites and blacks. Men's and women's unemployment rates have moved in similar ranges since then, showing no sizable unemployment disadvantage for women.[7] Consequently, female–male gaps in unemployment are not analyzed here.

Figure 3 looks at labor force participation rates for the same four groups. The general uptrend in participation shown in the middle panel of Figure 1 actually reflects gradually declining participation by men and steadily rising participation by women. For men, about 72 percent of blacks were in the labor force in 1999, as compared with 77 percent for whites. For women, black participation is higher, but white women had been narrowing the gap; however, since 1995, black women's participation has increased sharply. In 1999, almost two-thirds of black women and 60 percent of white women were in the labor force.

As overall labor force participation rates dipped slightly in the recessions of the 1970s, '80s, and '90s,

participation usually declined more for blacks than for whites (lower panel); however, this pattern is not consistent for men. Conversely, in the recoveries, black participation rates rose somewhat more (women) or fell somewhat less (men) than those of whites. For both women and men, however, the racial pattern in the current expansion seems to differ from earlier expansions. Black men have not made their typical (slight) gains in participation relative to white men in this recovery, and the rise in participation for black women has been very steep since 1995.

Figure 4 plots employment/population ratios, combining changes in unemployment and participation. Because unemployment typically rises more for blacks in recessions and participation falls more, the black–white difference in fraction employed (lower panel) generally becomes more negative (men) or less positive (women) in recessions.[8] The reverse is true in recoveries, and Figure 4 shows that the increases in

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[7] Research continues to find that women face measurable wage disadvantages. Francine Blau (1998) summarizes much of the literature on the gender wage gap.

[8] An exception is 1990–91, when participation by black men rose enough to offset their rise in unemployment.

How to Measure Disparities in Labor Force Status?

How should one measure black–white disparities in labor force status? Two candidates are the black–white ratio of unemployment rates and the black–white difference in unemployment rates. The two behaved quite differently between 1972 and 1999, as can be seen by comparing the second panel of Figure 2 with Figure A. The percentage point *differences* between black and white unemployment rates (shown in the second panel of Figure 2) rise and fall as the overall unemployment rate rises and falls over the business cycle. But the black/white *ratios* of unemployment rates (plotted in Figure A) are less clearly associated with the business cycle, in some cases falling in the early stages of a recession and rising (worsening) as recovery begins.

A constant *difference* between black and white unemployment rates when the economy weakens indicates that the same percentages of the black and white labor forces have been added to the ranks of the unemployed. An increase in the difference when the overall rate rises indicates that a greater fraction of blacks than of whites has become unemployed. In other words, the recession has affected blacks more severely. If the gap falls in an expansion, it indicates that a larger fraction of the black labor force than of the white has moved out of unemployment (into employment).

The black–white unemployment *ratio* is a useful measure of relative disadvantage at a point in time. For example, a ratio of 2.0 indicates that twice as high a fraction of the black labor force as the white labor force suffers unemployment.[a] But when overall joblessness rises in a contraction, as Richard Freeman (1973) noted, a constant ratio implies that "the unemployment rate of blacks—always higher than that of whites—rises by a larger number of percentage points and results in a larger relative decline in employment." He concluded, "Some investigators have mistakenly interpreted the cyclical insensitivity of the ratio of unemployment of black men to that of whites as evidence that the position of black men in the labor market is not especially vulnerable to cyclical declines" (pp. 76–77).

Consider how each measure changed in the severe national recession period from 1979 to 1982: The unemployment rate for black men rose from 9.4 percent in the first half of 1979 to 18.9 percent in the second half of 1982; meanwhile, the white male rate rose from 3.5 percent to 8.6 percent. Thus, the ratio of the unemployment rate of black men to that of white men declined during the recession, from 2.7 to 2.2—the white male rate more than doubled

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[a] Researchers have puzzled over the stubbornness of the two-to-one black–white unemployment ratio. One paper, for example, is titled "Why Is the Black Unemployment Rate Always Twice as High as the White Unemployment Rate?" (Steven Shulman, in R.R. Cornwall and P.V. Wunnava, eds., *New Approaches to the Economic and Social Analysis of Discrimination*. New York: Praeger, 1991, pp. 5–37).

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employment/population ratios in recent years have been steeper for blacks than for whites. Despite recent gains by blacks, however, the fraction of the adult male population at work is still markedly lower for blacks (68 percent) than for whites (75 percent), reflecting the combination of higher black unemployment and lower black participation. Black women, however, currently have a higher fraction working than white women, after a decade and a half of rough parity.

Figure 5 plots unemployment rates for black and white teens (ages 16 to 19). Teenagers have jobless rates markedly higher than adults.[9] White teens saw average unemployment rates of 15 percent and black teens 37 percent over the 1972–99 period, as compared with rates of 5 percent (whites) and 11 percent (blacks)

for adults age 20 and older. While teen unemployment rates typically move up in recessions and down in recoveries, the cyclical pattern, especially for black teens, was weaker in the 1970s and 1990s than in the 1980s. Indeed, teen–adult differences in unemployment rates (middle panel) for black males did not decline noticeably in the post-1975 recovery and showed no improvement in the 1990s expansion until 1997.

The bottom panel of Figure 5 displays black–

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[9] Only those teens who enter the labor force can be unemployed. One would not similarly refer to teens' lower labor force participation rates as a disadvantage, since they largely reflect economic decisions to invest in further education.

while the black male rate "only" doubled. However, the percentage point gaps indicate that an additional 9.5 percent of the black male labor force joined the ranks of the unemployed, as compared with "only" 5.1 percent of white males. Notwithstanding the decline in ratio, the only reasonable interpretation is that black men bore a heavier burden in that recession than white men.

Figure A

Black/White Ratios of Unemployment Rates
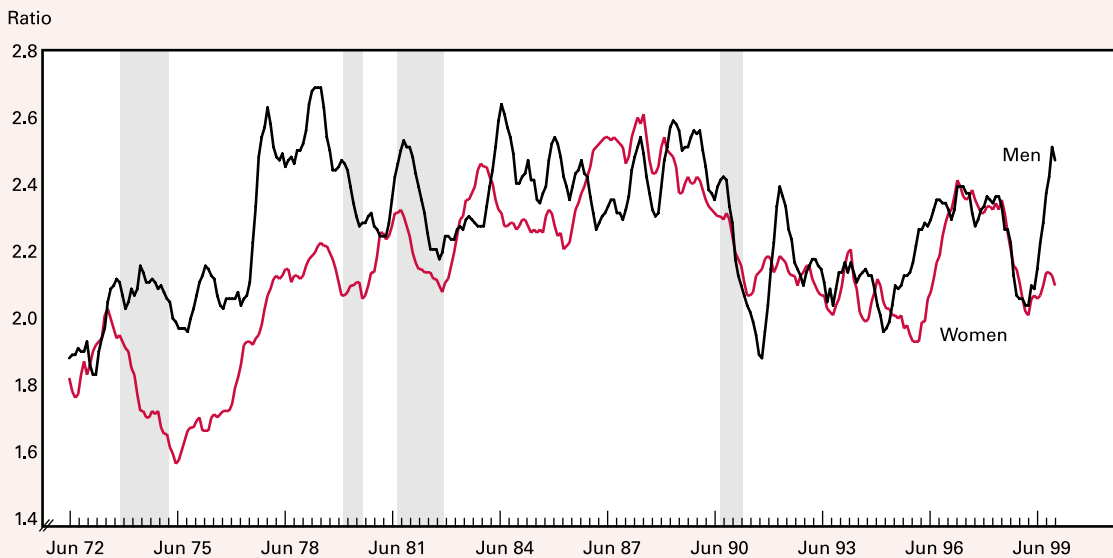
Note: Six-month moving averages of unemployment rates for adults ages 20 and older.
Source: U.S. Bureau of Labor Statistics.

white unemployment differences for teens. The racial gap for both young men and young women rose very steeply in the 1980–82 recessions and declined markedly in the long 1980s expansion, but the cyclical pattern is less clear in other periods. The black–white differences also bounce around considerably more for teens than for adults, presumably because the population of teens is relatively small.

Theories Explaining Labor Market Disparities Between Groups

Many factors contribute to differences in unemployment and participation rates among demographic groups, ranging from characteristics of individuals in the groups to the structure and functioning of the labor market. In the usual models of how labor markets operate to yield participation and unemployment outcomes, an individual enters the labor force based on a comparison between the expected return from working and whatever alternative sources of support are available—family members or transfer payments such as welfare, if eligible. Once in the labor force, individuals look for employment, accepting a job offer that exceeds their reservation wage. Employers make offers based on the characteristics of the individual compared with the characteristics of the job. An individual is unemployed if a job match fails to occur—no offer is received or job offers are inferior to what the individual expects to realize by

Figure 3

Labor Force Participation Rates
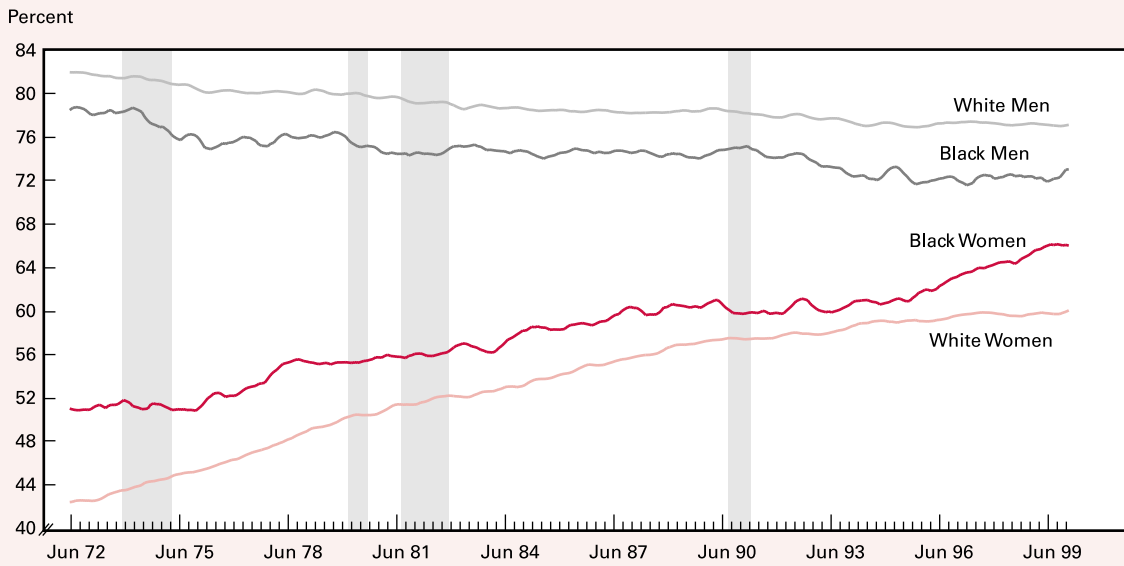
Percent

Black-White Differences in Labor Force Participation Rates

Percentage Points
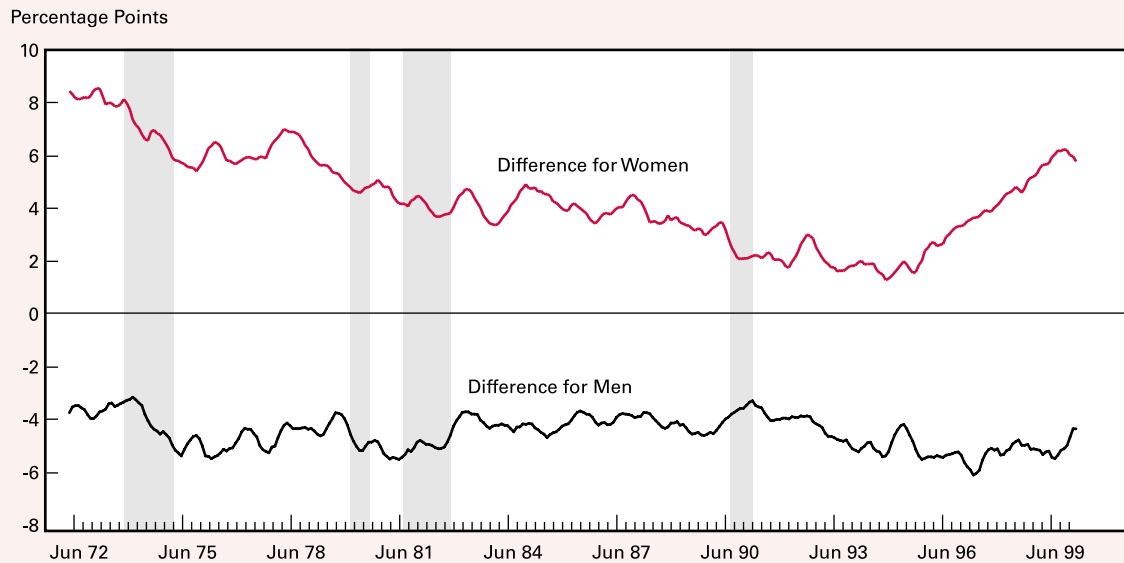
Note: Six-month moving averages of labor force participation rates of adults ages 20 and older.
Source: U.S. Bureau of Labor Statistics.

continuing to look. If offers repeatedly fail to meet the reservation wage, an individual will revise his or her reservation wage or drop out of the labor force.

Thus, observed patterns of participation and unemployment will reflect factors on both the supply side (traits of the worker) and the demand side (job

Figure 4

Employment/ Population Ratios
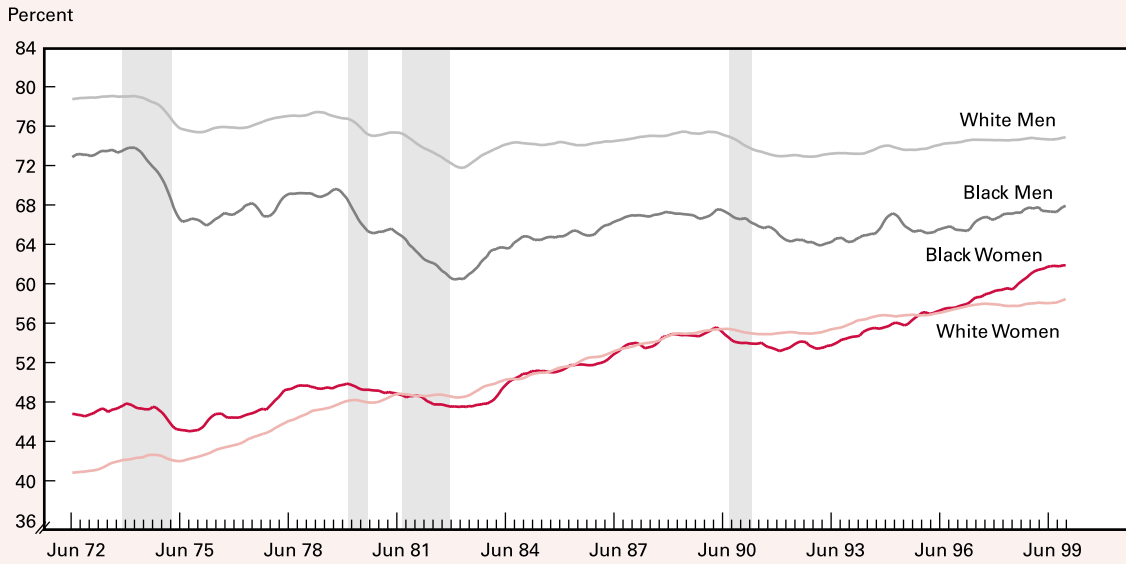
Percent

Black-White Differences in Employment/Population Ratios

Percentage Points
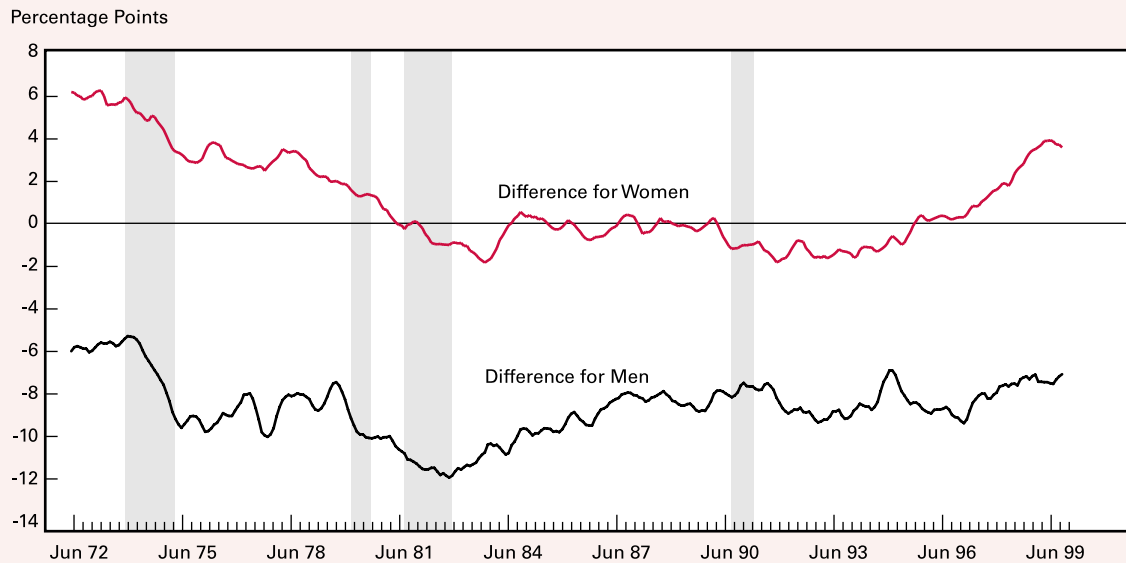
Note: Six-month moving averages of employment/population ratios of adults ages 20 and older.
Source: U.S. Bureau of Labor Statistics.

characteristics and employer behavior) of the labor market.[10]

Within the job-matching or supply-demand framework, a number of explanations have been of-

[10] Stratton (1993) presents a succinct summary of a similar theoretical framework and its implications for racial differentials in employment and unemployment. Holzer (1994) reviews evidence on the balance between problems of labor demand and labor supply in the employment difficulties of blacks.

Figure 5

Unemployment Rates of Teenagers
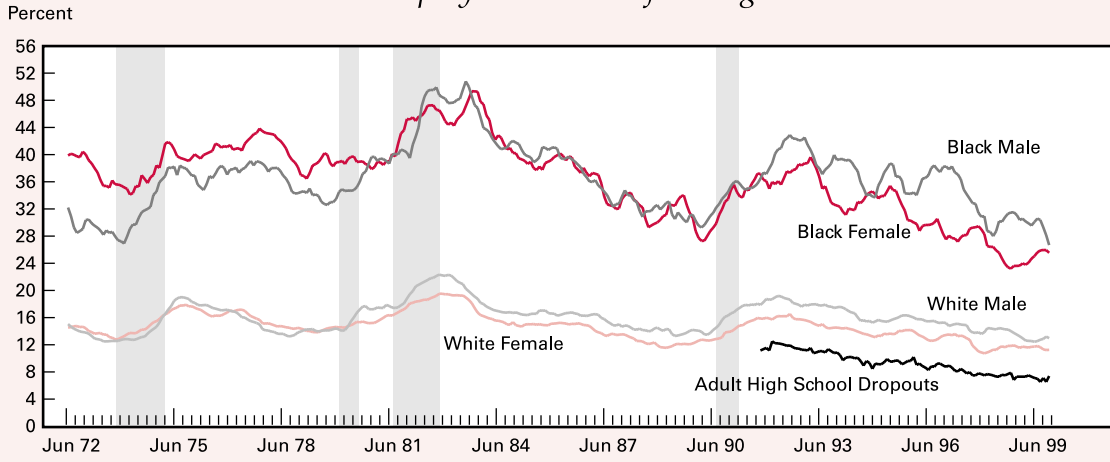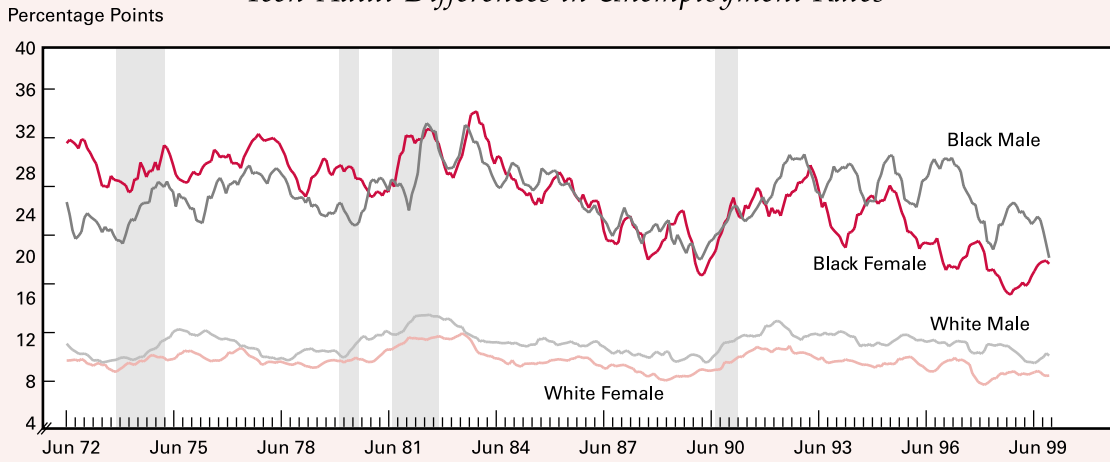
Percent

Black Male

Black Female

White Male

White Female

Adult High School Dropouts

Jun 72   Jun 75   Jun 78   Jun 81   Jun 84   Jun 87   Jun 90   Jun 93   Jun 96   Jun 99

Teen-Adult Differences in Unemployment Rates

Percentage Points

Black Male

Black Female

White Male

White Female

Jun 72   Jun 75   Jun 78   Jun 81   Jun 84   Jun 87   Jun 90   Jun 93   Jun 96   Jun 99

Black-White Differences in Unemployment Rates for Teens

Percentage Points

Male

Female

Jun 72   Jun 75   Jun 78   Jun 81   Jun 84   Jun 87   Jun 90   Jun 93   Jun 96   Jun 99
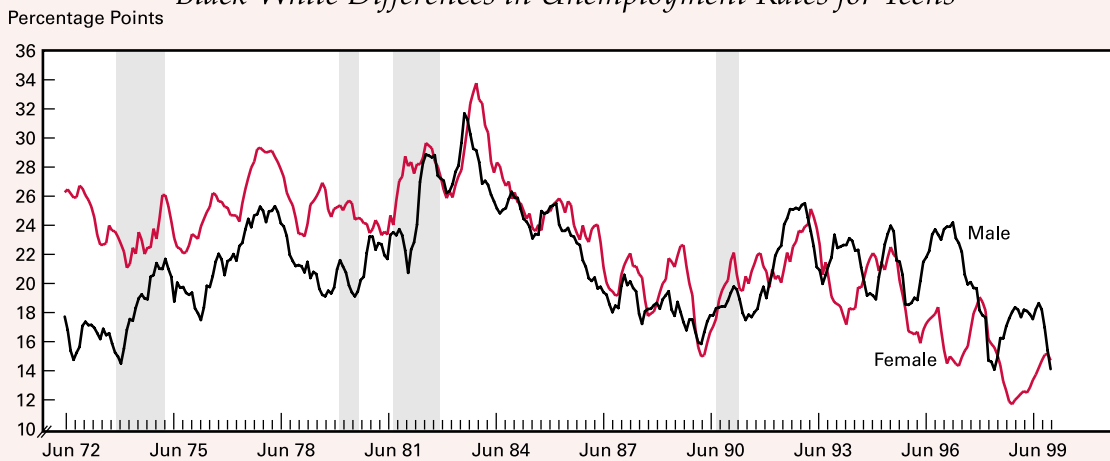
Note: Six-month moving averages of unemployment rates. Teens are ages 16 to 19; adults are ages 20 and older.
Source: U.S. Bureau of Labor Statistics.

fered for why the unemployment rates of black adults differ so markedly and persistently from those of white adults.[11] Several of these explanations focus on mismatches between the characteristics of blacks (supply) and the characteristics sought by employers (demand).

The skill mismatch hypothesis argues that the jobs employers are attempting to fill call for higher skills or education levels than those possessed by blacks, on average. Among the most important determinants of an individual's attractiveness to potential

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Several explanations of why the unemployment rates of black and white adults differ so markedly and persistently focus on mismatches between the characteristics of blacks (supply) and the characteristics sought by employers (demand).

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employers are skill and educational attainment. Work experience (strongly associated with age) also plays a role. While more education and experience also raise an individual's reservation wage, the effect on demand (the employer's offer) is stronger (Mortensen 1970). Thus, if groups differ in their average levels of education, their average levels of unemployment and labor force participation would be expected to differ as well. Differences between blacks and whites in educational and age mix, and their labor market implications, are explored in Section II below, as well as in the regression analysis of Section III.

A second explanation relates to spatial mismatch, a hypothesis that because of racial segregation in housing, blacks typically reside in central city locations, which have poorer access to available jobs than the residential locations of whites. Conversely, employers, particularly those in expanding industries, typically choose locations distant from where blacks live. With greater physical distance separating blacks from jobs, a good match is less likely.

A third hypothesis is based on the importance of

informal information networks in the process of job finding and worker recruitment. This hypothesis argues that because of historical employment patterns and at least partly segregated residential neighborhoods and social interactions, blacks are less likely to hear about job openings. For the same reasons, they are also less likely to be in contact with persons well established in the labor market who can facilitate job finding for them. A fourth hypothesis is that discrimination or stereotyping by employers reduces the number and attractiveness of job offers to blacks, limiting blacks' employment opportunities relative to those of whites and thereby raising relative black unemployment rates.

The main explanation for teenagers' high unemployment is that they are less attached to the labor market than adults, either because they are new entrants after completing school, because they work part time while in school, or because they are in and out of the labor market as they leave and enter school on a seasonal basis. In addition, teens have many fewer marketable skills, on average, than the typical adult, having completed much less schooling than most adults. As a simple benchmark, Figure 5 includes unemployment rates for adults (ages 25 to 64) who did not complete high school, starting in 1992.[12] While jobless rates for black teens are much higher than the rates for less-educated adults, the rates for white teens are only moderately higher than those of adult high school dropouts. Given education, teenagers also have much less work experience than most adults, another trait reducing the probability of job offers from employers, at least when more experienced or more educated adults are available for hire.

Regarding labor force participation, the supply-demand framework implies that nonworking alternatives available to different groups, compared with labor market prospects, are key factors in explaining outcomes. The returns considered in the comparison must include nonmarket, nonmonetary returns in and out of the labor force as well as the dollar paycheck compared with money income available without working. For example, the availability of welfare payments may raise the reservation wage of a single mother with little education or work experience beyond what employers typically offer for those characteristics.[13] By the same token, studies have docu-

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[11] This literature is summarized by Moss and Tilly (2000).

[12] These monthly data by educational attainment are not available prior to 1992.

[13] The gap between reservation wage and offer will be particularly high, for example, when Medicaid eligibility is contingent on

mented that the payoff to illegal activity rose relative to the employment opportunities of young black men in the 1980s (Freeman 1992, discussed in Holzer 1994) with negative consequences for their labor force participation.

The factors associated with differential unemployment rates may also feed back to labor force participation decisions by influencing an individual's evaluation of his or her own labor market prospects. "Discouraged workers" are individuals who say they want a job but are not currently searching (and hence not in the labor force) because they think no work is

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Employers may make extra efforts in good times to overcome the barriers created by skill and spatial mismatch. They may also find discrimination more costly when the economy is strong.

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available for them. (The U.S. Bureau of Labor Statistics describes their situation as follows: "could not find work, lack schooling or training, employer thinks too young or old, or other types of discrimination.") To the degree that mismatches and discrimination cause blacks to experience more unemployment than otherwise-similar whites, they would also be expected to cause some blacks to be less likely to enter (or more likely to leave) the labor force. In fact, blacks are overrepresented among discouraged workers,[14] which contributes to their below-average labor force participation rates.

Each of these possible reasons for groups to experience different average rates of unemployment or participation may have different implications over the business cycle. The skill and spatial mismatches are not likely to shift noticeably at business cycle frequencies and neither are discriminatory attitudes. However, employers may make extra efforts in good times to overcome the barriers created by skill and spatial mismatch. Furthermore, employers may find discrimination more costly when the economy is

strong and their usually preferred type of job candidate is fully employed elsewhere.

One approach to overcoming spatial barriers is to advertise more widely for job candidates and increase the range of recruiting media. In particular, if employers put less emphasis on informal information networks and shift somewhat toward want ads and other formal recruitment techniques, they will increase blacks' access to information on job openings (Moss and Tilly 2000). In addition, to reduce the barriers created by skill mismatch or lack of schooling, employers can adapt job content to the available workers or increase on-the-job training to provide the needed skills after hire.[15]

By making such extra efforts and by accepting less well-matched candidates, employers move down the "queue," recruiting and hiring and training individuals whom they might not usually consider. Arthur Okun (1973) described differences in how the labor market operates in a slack economy as compared with a "high-pressure" economy. In noting the tendency of secondary workers—women and teenagers—to experience the largest proportionate increase in employment in good times, he argued that "Market queues are an intrinsic part of the story" (p. 236). Thus, noncyclical explanations for differences in groups' unemployment rates contribute to the cyclical story insofar as they explain various groups' positions in the queue.

Other factors also influence the impact of cyclical unemployment shifts. Some industries, notably manufacturing and construction, are more cyclically sensitive than others. To the degree that the employment of some groups is more concentrated in these industries, they will see more layoffs when the economy turns down and their unemployment will show wider cyclical variations.[16]

One interpretation of queuing theory says that it takes a sustained period of prosperity or exceptionally low overall unemployment rates—a "hot" economy—for the benefits to spread fully to the most disadvantaged. That is, not only do unemployment and participation gaps move systematically with the business cycle, but some nonlinearity is involved—long recoveries in which unemployment moves to very low

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welfare receipt but most low-level job offers do not include health coverage.

[14] See the note by Yolanda Kodrzycki in this issue of the *New England Economic Review*.

[15] As Poole and Wall (2000) put it, "What has happened . . . [in the 1990s expansion] . . . is that the shortage of well-qualified workers has led firm after firm to hire less-educated workers, and those with poor employment histories, and train them" (p. 7).

[16] Fairlie and Kletzer (1998), Okun (1973), and Hoynes (1999) examine the cyclical responsiveness of unemployment for different demographic groups as a function of the industry mix of their employment.

levels bring better-than-average improvements to disadvantaged groups. If the factors that keep the unemployment rates of the disadvantaged above average most of the time become less influential when employers find their usual hires difficult to come by, an improvement in unemployment will be most widely shared among all groups in the labor market when the economy is very strong. As *Business Week* put it (describing the situation in 1998), "With the economy continuing to expand and unemployment at its lowest point in 30 years, companies are snapping up minorities, women, seniors, and anyone else willing to work for a day's pay."[17]

Because the last hired tend to be the first fired, economic slowdowns typically reverse the pattern of expansions, raising the unemployment rates of the groups who populated the end of the queue more than those of employers' usual or preferred hires.[18] An existing research literature finds minority unemployment rates or employment/population ratios more cyclically sensitive than those of whites (Thorbecke 1999; Abbring, van den Berg, and van Ours 1999; Hoynes 1999). Freeman (1973) corroborates the "widely asserted last in, first out pattern of black employment over the cycle." Thus, unemployment rates of disadvantaged groups will rise sooner and higher in recessions than the overall unemployment rate. Indeed, even without a recession, during the growth slowdown in 1995 the unemployment rates of black men and women rose, while those of whites simply ceased declining, briefly widening the difference between them (Figure 2).

II. Education, Age, and Labor Force Status

For the reasons outlined in the previous section, both educational attainment and age are strongly associated with individual labor force status, regard-

[17] "A Rising Tide," *Business Week*, August 31, 1998, p. 74.

[18] However, the effect of the good times is not entirely reversed. Analysts have found that individuals who have been employed for some period, even if only when labor markets are very tight, have a higher probability of finding future employment than those with no work experience. Poole and Wall (2000) note "not only is the U.S. economy generating employment for many left behind in earlier years, but these workers are also developing new skills that will undoubtedly yield opportunities for them in the future" (p. 7). On the downside, Blanchard and Summers (1986) discuss such human capital explanations (among others) for the observed effects of one period's unemployment on subsequent periods' jobless rates in the context of over a decade of high and rising unemployment in Europe. Layard and Nickell (1987) and Malinvaud (1987) focus on Britain and France, respectively.

less of race and sex. Figure 6 displays patterns of labor force status by educational attainment for individuals between the ages of 25 and 64. Those whose education did not go beyond high school were less likely to be in the labor force and more likely to be unemployed than college grads; hence, they were less likely to be working than college graduates, even in 1998's tight labor market.

Education has become a stronger determinant of labor force status over the last few decades, as can be seen by comparing the data for 1972 and 1998 in Figure 6. Much attention has been focused on the growing educational *wage* premium—the rise in wages of more educated workers relative to less educated, which was especially pronounced in the

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Just as for the wage premium, the widening gaps in labor force status are particularly marked for individuals who do not have a high school diploma relative to those with more education.

1980s. But the educational premium in labor force status has also risen—the tendency for individuals with less education to experience higher unemployment and lower labor force participation rates relative to college grads has become more pronounced. Just as for the wage premium, the widening gaps in labor force status are particularly marked for individuals who do not have a high school diploma relative to those with more education. Thus, Figure 6 shows a decline in participation and a rise in unemployment for high school dropouts between 1972 and 1998 that led to widening unemployment and participation gaps between dropouts and all the more educated groups. The participation and unemployment payoff to some college compared with high school grads also expanded. And for unemployment, the gaps widened throughout the education spectrum.

Black–White Education-Related Gaps

The importance of education in determining labor force status, and the fact that its importance has increased, has implications for the relative labor mar-

Figure 6

Labor Force Status by Education
Civilian Noninstitutional Population Ages 25 to 64

Participation Rate

Percent of Population

	1972	1998
Less than 4 Years High School	64.1	63.0
4 Years High School	70.1	78.4
1 to 3 Years College	73.7	83.5
4 Years College or More	83.0	88.0

Unemployment Rate

Percent of Labor Force

	1972	1998
Less than 4 Years High School	5.8	8.5
4 Years High School	3.9	4.8
1 to 3 Years College	3.5	3.6
4 Years College or More	2.0	1.8

Employment/Population Ratio

Percent of Population

	1972	1998
Less than 4 Years High School	60.4	57.6
4 Years High School	67.4	74.6
1 to 3 Years College	71.1	80.5
4 Years College or More	81.3	86.4

Source: U.S. Bureau of the Census, March Current Population Survey.

ket success of blacks and whites because blacks are less educated than whites, on average.[19] The black–white educational gap was quite pronounced in the early 1970s (Figure 7). As of 1972, over 60 percent of the black civilian noninstitutional population had not graduated from high school, as compared with just under 40 percent of the corresponding white population. Between 1972 and 1998, the educational attainment of the U.S. population advanced considerably. The increase in education was especially pronounced for blacks, as the fraction without a high school diploma fell markedly and the fractions with only a

Blacks' educational gains over the 1972–98 period should have brought with them reductions in black–white gaps in labor force status, if nothing else had changed.

high school diploma or some college rose to equal the corresponding fractions of whites. Although the fraction of blacks who graduated from college more than doubled between 1972 and 1998, whites retained a sizable advantage with respect to college degrees in 1998.

Blacks' educational gains over the 1972–98 period should have brought with them reductions in black–white gaps in labor force status. Table 1 reports the simulated effects of changes in education mix on labor force status. These simulations calculate the effect on each group's labor force status of their own 1972–98 changes in educational attainment, applying the total population's rates of labor force participation and unemployment for each education category to both groups.[20] If nothing else had changed, the shift in

Table 1
Simulated Effects of Shifts in Educational Composition

	White	Black	Gap
Change in Labor Force Participation Rate			
with 1972 rates	3.5	4.0	.4
with 1998 rates	5.3	7.4	2.2
actual change	10.5	6.0	−4.5
Change in Unemployment Rate			
with 1972 rates	−.7	−.9	−.2
with 1998 rates	−1.3	−1.8	−.5
actual change	−.3	.6	.9
Change in Employment/ Population Ratio			
with 1972 rates	3.9	4.4	.6
with 1998 rates	6.0	8.4	2.4
actual change	10.4	5.1	−5.3

Notes: Simulated effects are calculated using 1972–98 changes in education mix of the black or white population multiplied by participation or unemployment rates for the total population in 1972 or 1998. (See text footnote 20.) Gap is black change minus white change.
Figures may not add to totals because of rounding.
Source: Author's calculations.

education mix for blacks relative to whites between 1972 and 1998 would have caused blacks' labor force participation rate to rise 0.4 to 2.2 percentage points more than that of whites (see right-hand column of top panel). (The range of simulated effects reflects the use of 1972 vs. 1998 participation and unemployment rates.[21]) Changing education mix would also have reduced the unemployment gap by 0.2 to 0.5 percentage points, resulting in a drop in the black–white difference in employment/population ratio of 0.6 to 2.4 percentage points.

[19] Fairlie and Sundstrom (1997), and Fairlie and Kletzer (1998), for example, have documented the contribution of educational disparities to unemployment or employment differences between whites and nonwhites. Most researchers, for example, Hoynes (1999) and Lerman and Schmidt (1999), control for education when comparing the labor market experiences of blacks and whites.

[20] Let edw^1_{72} be the fraction of the white population in educational attainment level 1 (not completed high school) in 1972 and edb^4_{98} the fraction of the black population in educational attainment level 4 (college degree or higher) in 1998, while $lfpr^1_{72}$ is the labor force participation rate for high school dropouts in 1972 and

ur^4_{98} the unemployment rate for college graduates in 1998. Then the simulated 1972–98 change in black labor force participation attributable to shifts in education mix using 1972 rates is calculated as

$$\sum_{i=1-4} lfpr^i_{72}(edb^i_{98}-edb^i_{72}).$$

And the change in white unemployment attributable to shifts in education mix using 1998 rates is calculated as

$$\sum_{i=1-4} ur^i_{98}(edw^i_{98}-edw^i_{72}).$$

[21] The larger estimates result from calculating the effect of changing mix using 1998 labor force participation rates and unemployment rates by education category; the smaller estimates use 1972 rates. The higher payoff to education in 1998 gives greater weight to the improvement in black educational attainment over the period.

Figure 7

Educational Attainment by Demographic Group
Civilian Noninstitutional Population Age 25 and Older

1972

Percent

Legend:
- White Men
- Black Men
- White Women
- Black Women

1998

Percent

Legend:
- White Men
- Black Men
- White Women
- Black Women
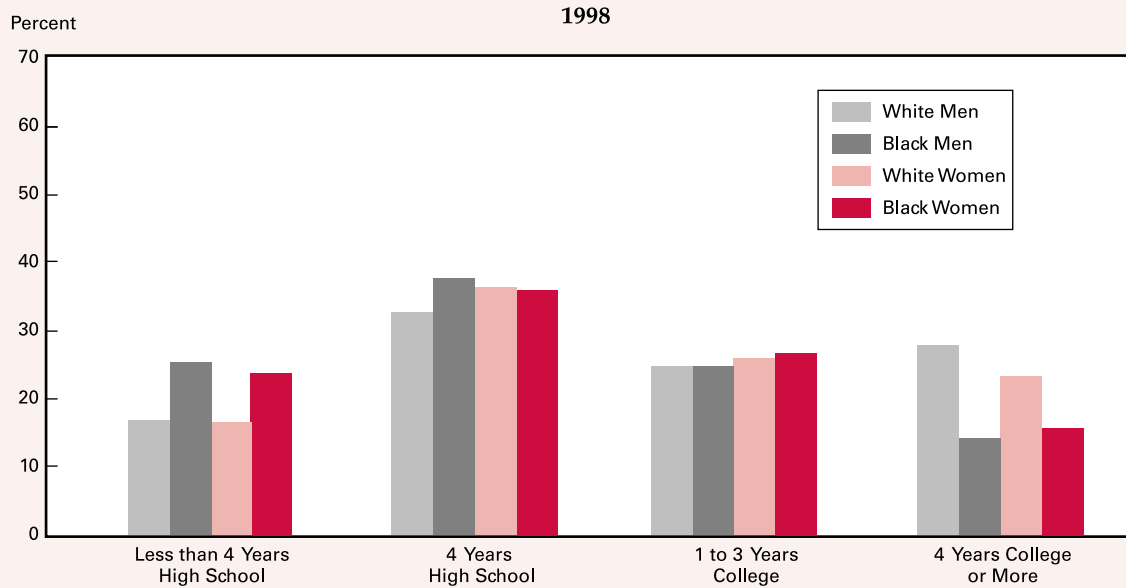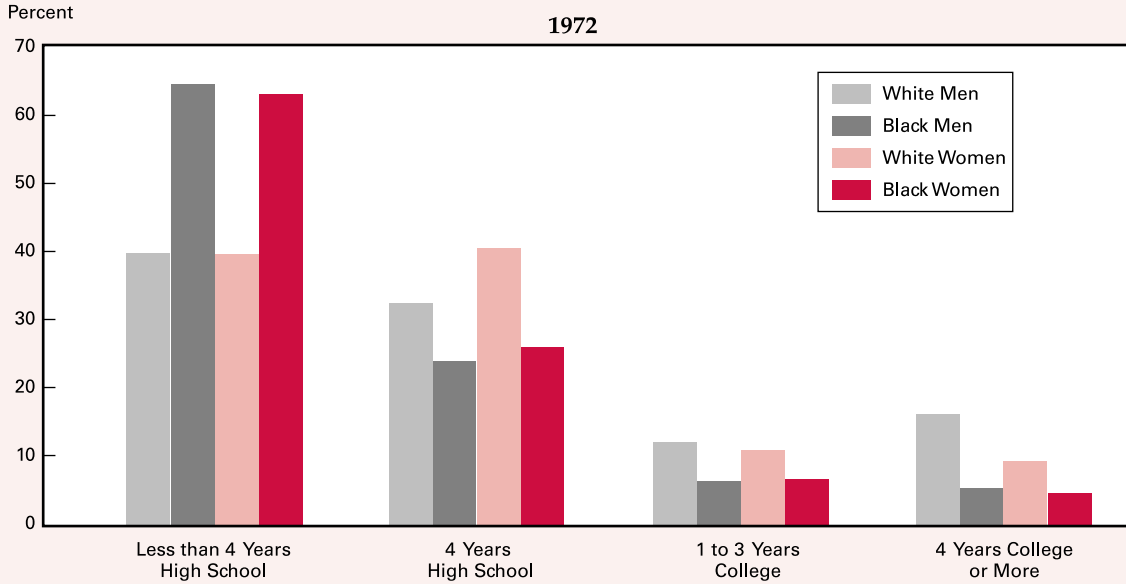
Source: U.S. Bureau of the Census, March Current Population Survey.

Age-Related Gaps in Labor Force Status

Participation and unemployment rates vary substantially across age groups (Figure 8). Individuals under 25 and over 54 are less likely to be employed than individuals in the "prime working age" years between 25 and 54. Furthermore, the age variation is more pronounced for women than for men (not

Figure 8

Labor Force Status of Adults by Age, 1998

Participation Rate

Percent

Unemployment Rate

Percent

Employment/Population Ratio

Percent
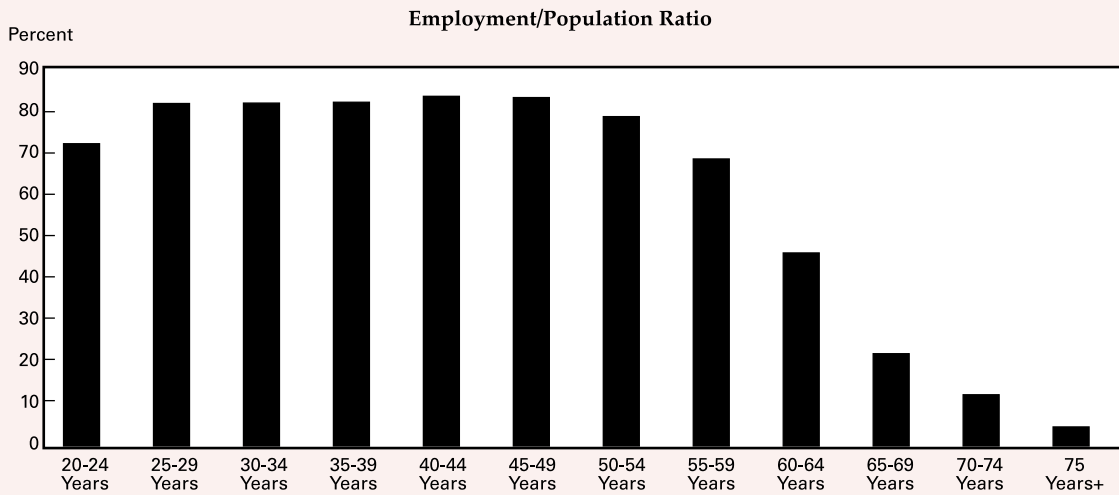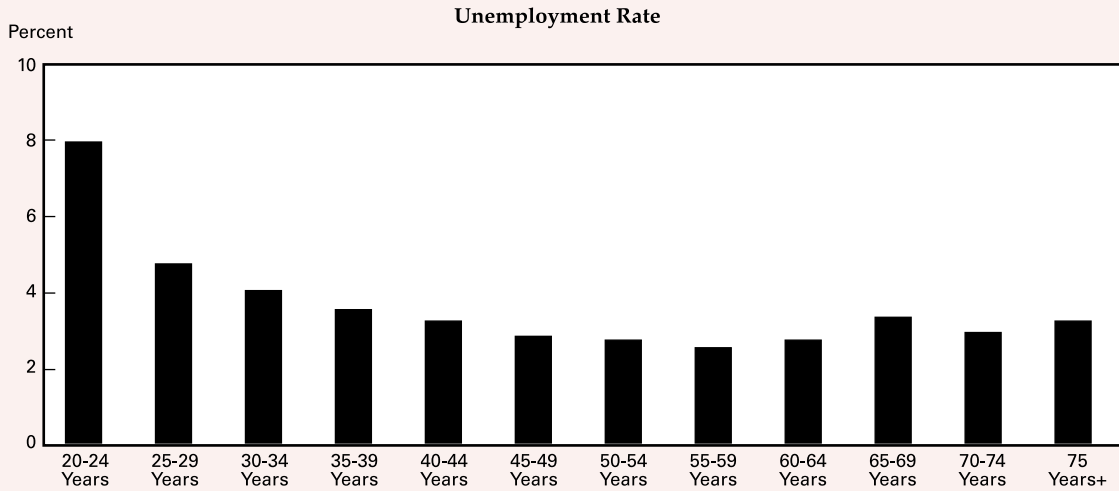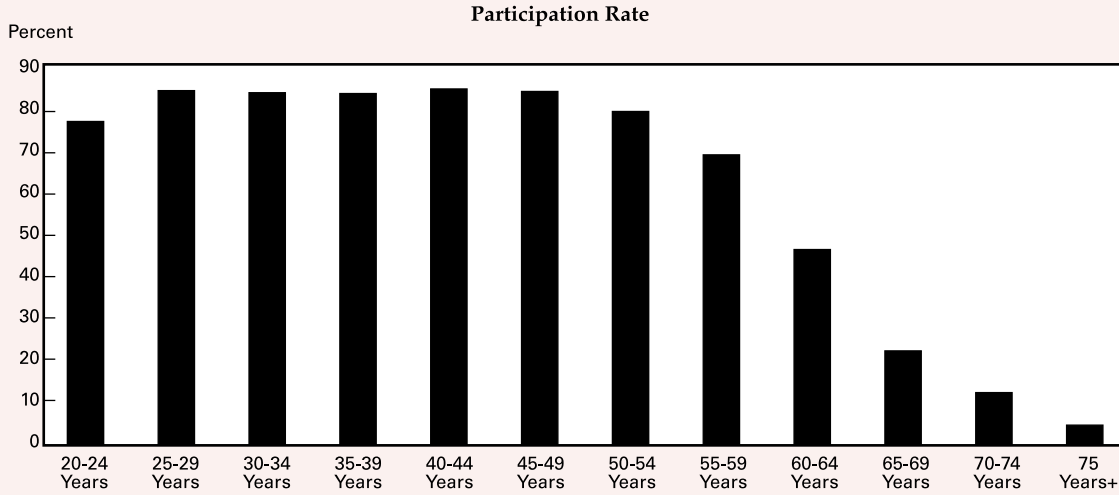
Source: U.S. Bureau of the Census, March Current Population Survey.

Figure 9

Age Mix of Demographic Groups
Population Age 20 and Older

1972

Percent

Legend:
- White Men
- Black Men
- White Women
- Black Women

20-24 Years · 25-34 Years · 35-44 Years · 45-54 Years · 55-64 Years · 65+ Years

1998

Percent

Legend:
- White Men
- Black Men
- White Women
- Black Women

20-24 Years · 25-34 Years · 35-44 Years · 45-54 Years · 55-64 Years · 65+ Years
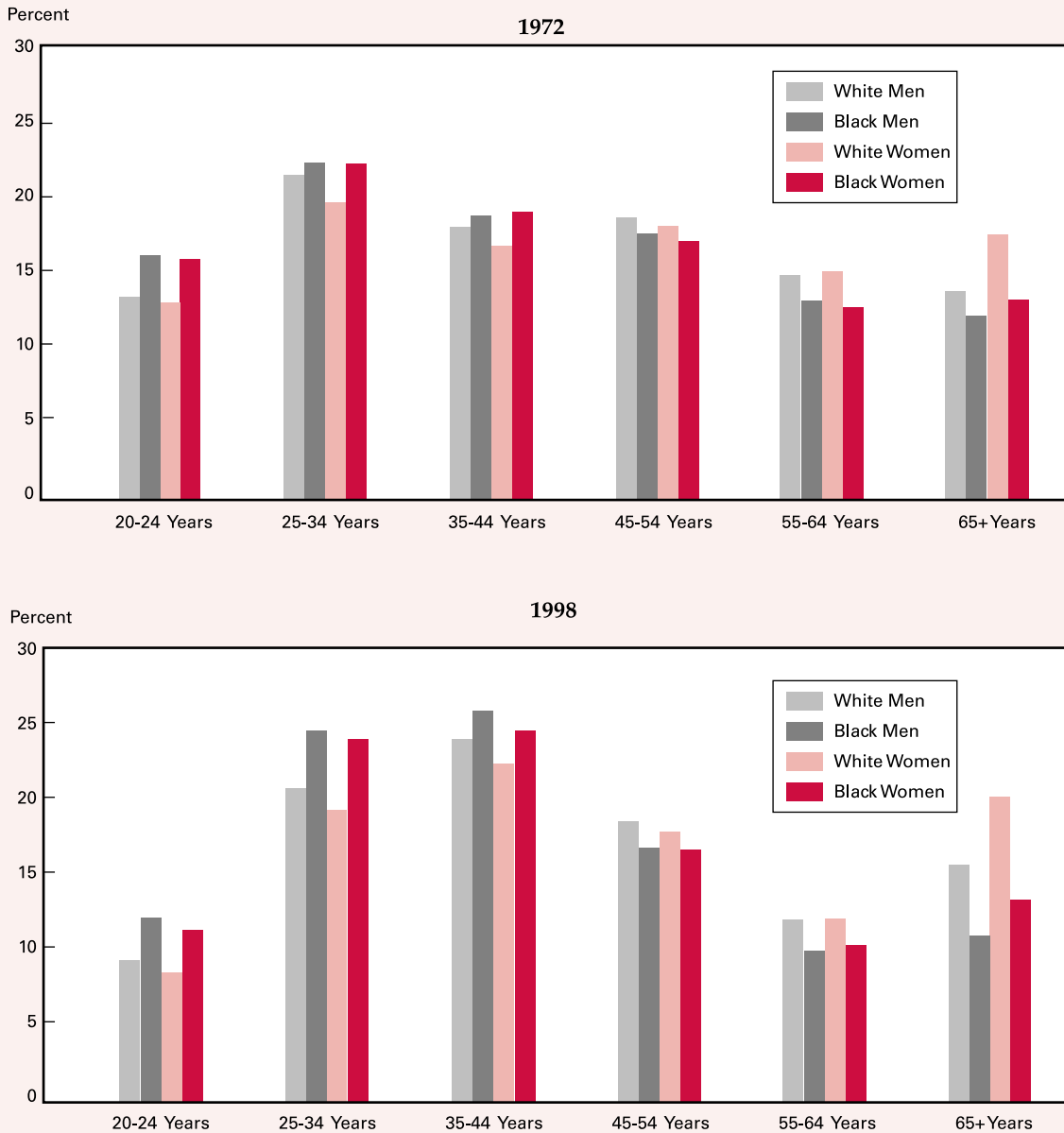
Source: U.S. Bureau of the Census, March Current Population Survey.

shown in figure). For example, the unemployment rate for women ages 25 to 34 is 1.5 percentage points higher than that of women ages 35 to 54, while men in the age range 25 to 34 face average joblessness only 1 percentage point higher than 35- to 54-year-old men.

Blacks are younger, on average, than whites (see Figure 9). The analysis in the next section examines, among other things, the contributions of these differ-

ences in age mix and their changes over time to black–white differences in unemployment and labor force participation.[22]

III. Understanding Changes in the Relative Labor Market Status of Blacks and Whites, 1972 to 1999

Long-term "structural" shifts in population characteristics such as educational attainment and age composition go on in the background while cyclical ups and downs cause shorter-term (and often wider) swings in labor force status. Regression analyses of historical data on unemployment rates and employment/population ratios are used in this section to sort out both short-term and long-term factors that determine which groups are disadvantaged and how the degree of disadvantage varies over time. The analysis uses data from the 1972 to 1999 period and includes business cycle indicators plus a time trend. In addition, measures of educational attainment and age mix control for longer-term "structural" factors.[23] The variables are measured twice yearly; this frequency represents a compromise between a desire to capture business cycle fluctuations (shorter periods) and the availability of education and age mix data only at annual frequencies. For labor force status and related measures available on a monthly frequency, the variables are six-month averages for the first and second half of each year. The longer-term factors observed only with annual frequency include each annual value for the two half-years that it encompasses.[24]

The variables to be explained are black–white or teen–adult differences in unemployment rates, black–white differences in adult labor force participation rates, and black–white differences in adult employment/population ratios. The analysis aims to provide an indication of the extent to which the relative black (or teen) disadvantages have moved over time and with the business cycle, although aside from education, the data cannot distinguish among the various hypotheses—spatial mismatch, weak information

flows, discrimination—as to why blacks have above-average unemployment rates. For adults, the regressions can also quantify the contributions of differences in educational attainment and age mix to racial differences in labor force status. In this context, the analysis addresses the question of whether, or the degree to which, the reductions in disparities that occurred in the long 1990s expansion are unusual or follow a fairly typical cyclical pattern.

Table 2 reports means and spreads for the variables used in the regression analysis. Among the business cycle measures, the GDP gap indicates the percentage by which actual GDP exceeds or falls short of "potential" GDP, an estimate of the long-run sustainable level of GDP.[25] The GDP gap hit its low point at the trough of the severe 1981–82 recession and its high point (output above potential) in the first half of

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The black–white unemployment disparity for adult men is highly responsive to the business cycle.

1973. (See Figure 10.) The economywide unemployment rate for individuals age 16 and older ranged from a high of 10.3 percent in the second half of 1982 to a low of 4.2 percent in the final period (second half of 1999). The analysis also includes two possible indicators of a "hot" or "high-pressure" economy, dummy variables indicating when the economywide unemployment rate is below 5 percent and when the economy is outperforming potential by more than 2 percent (GDP gap greater than 2 percent). A third dummy variable—the recession dummy—is equal to 1 during the recession periods that occurred in the mid 1970s, early 1980s, and early 1990s.

The time patterns of the business cycle variables are displayed in Figure 10. The two hot-economy dummy variables identify somewhat different, but overlapping periods, with both "on" in 1973 and 1999 (as highlighted in the figure), but the GDP gap rising over 2 percent also at the end of 1978 when the

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[22] A simple simulation like that reported above for changing education mix suggests that the relative changes in age mix for blacks and whites that occurred between 1972 and 1998 would have reduced the black–white participation rate gap by 2 percentage points, other things equal (using 1998 participation rates of the total population).

[23] Unfortunately, data are not available to track industry mix by race and sex over time. Industries have differing rates of long-term growth as well as differences in cyclical responsiveness.

[24] Because education and age mix data are not yet available for 1999, 1998 values were duplicated for both halves of 1998 and 1999.

[25] This analysis uses the Congressional Budget Office's estimate of potential GDP. Like most forecasters, they base their estimate of potential GDP on an estimate of the NAIRU (non-accelerating-inflation rate of unemployment) and projections of the rate of growth of the labor force, capital stock, and productivity. See U.S. Congressional Budget Office (2000).

Table 2

Variables Used in the Regression Analysis

	Mean	Standard Deviation	Minimum	Maximum	Notes
Black–White Differences					
in male adult unemployment rates	6.1	1.8	3.0	10.9	Adults are age 20 and older.
in female adult unemployment rates	5.8	1.5	3.4	9.8	Differences are in percentage
in male teen unemployment rates	21.2	3.3	14.8	29.3	points.
in female teen unemployment rates	22.6	4.4	12.7	33.1	
in male adult labor force participation rates	−4.2	.6	−5.7	−3.1	
in female adult labor force participation rates	4.6	1.8	1.5	8.6	
in male adult employment/population ratios	−8.6	1.4	−11.7	−5.4	
in female adult employment/population ratios	1.0	2.2	−1.8	6.0	
Teen–Adult Differences					
in black male unemployment rates	26.1	2.8	20.3	31.5	Teens are ages 16 to 19.
in white male unemployment rates	11.0	1.1	9.1	13.9	
in black female unemployment rates	26.0	4.3	16.5	34.6	
in white female unemployment rates	9.3	1.0	7.0	11.8	
Business Cycle Indicators					
Overall unemployment rate	6.5	1.4	4.2	10.3	Age 16 and up.
GDP gap	−.5	2.4	−7.2	5.0	See text for definitions.
Recession dummy variable	.161	.371	0	1	
Low unemployment dummy (below 5%)	.125	.334	0	1	
High GDP gap dummy (above 2%)	.107	.312	0	1	
Educational Attainment					
Black–white difference in college for men	−13.3	1.0	−14.6	−10.7	Education mix variables refer
Black–white difference in not-h.s. for men	16.4	5.3	8.4	24.6	to percentage of population
Black–white difference in college for women	−6.2	1.2	−8.4	−3.9	ages 25 and older.
Black–white difference in not-h.s. for women	14.9	5.1	7.1	23.2	
Age Mix					
Black–white difference males age 20–24	3.2	.3	2.6	4.1	Age mix variables are
Black–white difference males age 25–34	2.5	1.4	−.4	3.9	percentages of adults ages
Black–white difference males age 55–64	−1.9	.4	−2.8	−1.0	20 and older.
Black–white difference males age 65 and older	−3.1	1.4	−6.3	−1.0	
Black–white difference females age 20–24	3.2	.3	2.8	3.6	
Black–white difference females age 25–34	3.7	.9	2.3	4.6	
Black–white difference females age 55–64	−2.1	.5	−2.7	−1.2	
Black–white difference females age 65 and older	−5.5	.9	−6.9	−4.3	

Note: See Appendix Table for black and white percentages underlying differences shown here.
Number of observations = 56; analysis period 1972–99.
Sources: U.S. Bureau of the Census, U.S. Bureau of Labor Statistics, Congressional Budget Office.

unemployment rate only fell slightly below 6 percent, and the unemployment rate falling below 5 percent in 1997 when the GDP gap had just turned positive.

Unemployment Rates of Black Men Compared With White Men

Table 3 presents equation estimates that investigate the determinants of the difference between unemployment rates for black and white men ages 20 and older. The first equation includes two cyclical measures (the economywide unemployment rate and the GDP gap), measures of education and age mix for black men compared with white men, plus a time trend and constant term. The next few columns include alternative or additional cyclical indicators aimed at investigating the degree and nature of cyclical responsiveness of the black–white unemployment gap. The final column explores further the education relationships. The basic story is similar across the

Figure 10

Indicators of Business Cycle

Percent
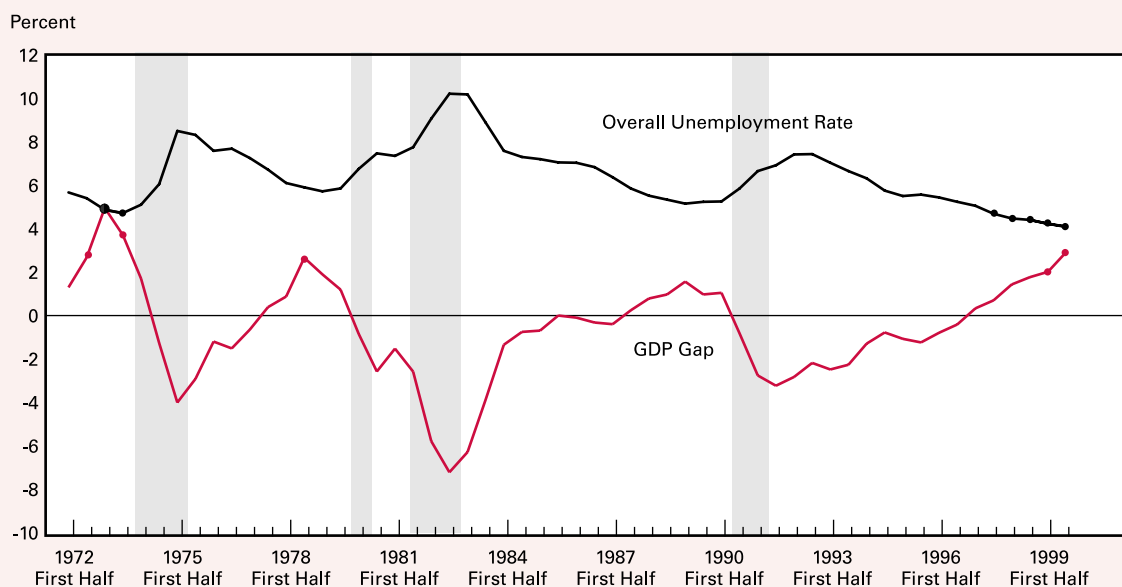
Note: Six-month averages, plotted semiannually.
Source: U.S. Bureau of Labor Statistics; U.S. Bureau of Economic Analysis; Congressional Budget Office.

columns although individual coefficient estimates differ. The equations explain a large fraction of the variation in racial unemployment gaps over the 1972–99 period.

The top two rows of the table confirm that the black–white unemployment disparity for adult men is highly responsive to the business cycle. Because the unemployment rate and GDP gap move in opposite directions over the cycle (as shown in Figure 10), the signs of their two coefficients (both positive) indicate some offsetting influences. Combining their effects quantifies a strong cyclical element in the black–white disparity.[26] Using the coefficients in column 1, for example, when the overall unemployment rate falls from 7.5 to 4.2 percent and the GDP gap rises from −2.8 percent to 3.0 percent (as the unemployment rate and GDP gap actually did between the first half of 1992 and the second half of 1999), the black–white difference would fall by 2.9 percentage points, other things equal. The difference actually fell by more than

that, partly for unexplained reasons (a subject to which the analysis returns below), and partly because relative black–white shifts in education and age mix augmented the decline.

These latter variables obtain coefficients of the expected signs. The black–white difference in fraction completing college has a statistically significant effect on the racial unemployment gap for men. For each percentage-point gain black men made in college attainment, compared with white men, the racial unemployment gap fell by half a percentage point. And for each percentage point by which the black fraction in the age group 20 to 24 (which, like teens and the age group 25 to 34, has above-average unemployment rates) exceeded the white fraction, the racial unemployment gap rose 0.9 percentage points.

The equations in columns 2 and 3 add a dummy variable for recession periods and one of the two dummy variables for periods in which the labor market is very tight or the economy is growing markedly faster than potential. In each case, the coefficient on the recession dummy indicates that the black–white gap is half a percentage point larger in recessions, even controlling for the other cyclical vari-

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[26] When either is included without the other, strong business cycle effects are also confirmed (results not shown). The GDP gap obtains a negative coefficient when the unemployment rate is not included, capturing the dominant business cycle pattern.

Table 3

Black–White Difference in Unemployment Rates for Men Ages 20 and Older

Estimated coefficients and standard errors

	(1)	(2)	(3)		(4)
Cyclical Indicators					
Overall unemployment rate	1.4***	1.7***	1.8***		1.5***
	(.2)	(.2)	(.2)		(.2)
GDP gap	.32***	.50***	.57***		.39***
	(.10)	(.12)	(.12)		(.11)
Recession dummy variable		.58**	.61***		.53**
		(.24)	(.23)		(.23)
Low unemployment dummy (under 5 percent)		−.44* (.26)			
High GDP gap dummy (over 2 percent)			−.74*** (.27)		
Education and Age					
Black–white difference in fraction of men with college degree	−.56*** (.11)	−.49*** (.11)	−.46*** (.11)	Black male % college	−.29* (.16)
				White male % college	.69*** (.19)
Black–white difference in fraction of men without h.s. diploma	.054 (.099)	.056 (.094)	.027 (.090)	Black male % not-h.s.	.079 (.095)
				White male % not-h.s.	−.073 (.147)
Black–white difference in fraction of men age 20–24	.90** (.39)	.88** (.37)	.86** (.35)		.48 (.39)
Black–white difference in fraction of men age 25–34	.44*** (.15)	.37** (.15)	.36** (.14)		.36** (.15)
Other					
Time trend	.013 (.065)	.058 (.064)	.040 (.059)		−.079 (.094)
Constant	−41 (130)	−130 (129)	−95 (119)		137 (190)
Adjusted R-squared	.918	.926	.933		.929

Notes: Number of observations = 56; 1972–99.
See Table 2 for variable means.
   * Significantly different from zero with 90–95 percent confidence.
  ** Significantly different from zero with 95–99 percent confidence.
*** Significantly different from zero with 99 percent confidence or greater.

pleting college has a bigger effect on expanding the black–white unemployment gap than the shrinking effect of a percentage-point college gain by black men.[27]

Section II above noted that education was more strongly associated with labor force status in 1998 than in 1972 (Figure 6). However, when the equations in columns 1 to 4 are reestimated to allow the coefficients on the education variables to vary over time, the time-education interactions never obtain coefficients significantly different from zero (results not shown). In addition, earlier research suggests a strong cyclical pattern to the association between labor force status and educational attainment, finding that less-educated individuals see more cyclical variation in unemployment than college graduates.[28] But when the equations are reestimated to allow the education coefficients to differ in recession periods, the interaction terms are not statistically distinguishable from zero (results not shown). Thus, the stronger association between education and labor force status that seemed to exist in 1998 compared with 1972 and the expected cyclical pattern of shifts in education effects in recessions cannot be detected when other factors are controlled for.

ables, and the "hot" periods are found to have about half a percentage point smaller black–white jobless gaps.

Column 4 reports equation estimates when the educational attainments of black and white men are entered separately. While the coefficients indicate, as in columns 1 to 3, that disparities in college education are important for men, they also suggest that each percentage point that whites add to the fraction com-

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[27] By including only the black–white difference in college attainment, the equations in columns 1 to 3 impose the restriction that the two effects are equal and opposite in sign. An F-test cannot reject the hypothesis that this restriction is appropriate.

[28] Juhn, Murphy, and Topel (1991) note, "Students of the business cycle will not be surprised that when unemployment rises, it rises more for less skilled persons. For example, in a typical recession, changes in unemployment rates are higher among persons in low-wage occupations and for individuals with less experience and education, the main observable indicators of skills" (p. 100). Hoynes (1999) also finds that the responsiveness to changes in the economy is higher among those who have lower education levels.

Table 4

Black–White Difference in Unemployment Rates for Women Ages 20 and Older

Estimated coefficients and standard errors

	(1)	(2)	(3)		(4)
Cyclical Indicators					
Overall unemployment rate	1.2***	1.1***	1.2***		1.1***
	(.2)	(.2)	(.2)		(.2)
GDP gap	.43***	.38***	.45***		.38***
	(.10)	(.12)	(.12)		(.12)
Recession dummy variable		−.26	−.19		−.25
		(.25)	(.24)		(.25)
Low unemployment dummy (under 5 percent)		−.060 (.274)			
High GDP gap dummy (over 2 percent)			−.47* (.28)		
Education and Age					
Black–white difference in fraction of women with college degree	−.19 (.16)	−.20 (.16)	−.17 (.16)	Black female % college	−.24 (.19)
				White female % college	.089 (.213)
Black–white difference in fraction of women without h.s. diploma	.18** (.09)	.19** (.09)	.21** (.09)	Black female % not-h.s.	.18** (.09)
				White female % not-h.s.	−.28** (.13)
Black–white difference in fraction of women age 20–24	2.2*** (.4)	2.3*** (.4)	2.1*** (.4)		2.2*** (.4)
Black–white difference in fraction of women age 25–34	1.8*** (.2)	1.8*** (.3)	1.7*** (.2)		1.6*** (.3)
Other					
Time trend	.013 (.062)	.0072 (.0650)	.028 (.063)		.0025 (.1376)
Constant	−44 (124)	−33 (130)	−75 (126)		−18 (275)
Adjusted R-squared	.878	.876	.883		.876

Notes: Number of observations = 56; 1972–99.
  * Significantly different from zero with 90–95 percent confidence.
 ** Significantly different from zero with 95–99 percent confidence.
*** Significantly different from zero with 99 percent confidence or greater.

Unemployment Rates of Black Women Compared With White Women

Table 4 reports coefficient estimates for a set of equations (like those for men in Table 3) explaining disparities in unemployment between black and white women. The overall pattern of coefficients on the cyclical variables is similar to that for men, but the cyclical effects are smaller. Based on the coefficients in column 1, the decline in overall unemployment and rise in GDP gap that occurred between the first half of 1992 and the end of 1999 were associated with a 1.5 percentage-point decline in the racial unemployment gap for women. This effect is about half that for men. Furthermore, the coefficients on the three cyclical dummy variables (columns 2 and 3) are either not significantly different from zero or much smaller than the corresponding coefficients for men. In part, the less cyclical behavior of the female gap may reflect the definitional fact that the economywide unemployment rate reflects the labor market experience of white men more than any other labor market group.[29] It could also result from a tendency for black women to "try harder" than white women to avoid unemployment (being willing to accept less attractive job offers) because they have less of a family income cushion in economic downturns.[30]

Differences in educa-

[29] That is, the unemployment rate used as an explanatory variable is very similar to the unemployment rate being subtracted in calculating the dependent variable for men. White men represented over half of the economywide labor force in the 1970s, falling to about 45 percent in the 1990s; white women rose from over one-third in the 1970s to 38 percent in 1998; black men have hovered around 5.5 percent, and black women rose from under 5 percent to over 6 percent.

[30] Richard Freeman (1973) notes a related tendency for black women's participation to rise in recessions (in the 1950s and 1960s),

Table 5

Black–White Differences in Unemployment Rates for Teenagers
Estimated coefficients and standard errors

Explanatory Variables:	Male Teenagers				Female Teenagers			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cyclical Indicators								
Overall unemployment rate	3.2***	3.2***	3.2***	3.3***	2.7***	2.5***	2.7***	2.8***
	(.6)	(.7)	(.6)	(.6)	(.7)	(.8)	(.7)	(.7)
GDP gap	.77**	.76*	.93**	.92**	.68*	.56	.85**	.85**
	(.35)	(.43)	(.35)	(.38)	(.38)	(.46)	(.38)	(.40)
Recession dummy variable		−.046				−.50		
		(1.026)				(1.10)		
Low unemployment dummy (under 5 percent)			−2.1**				−2.1*	
			(1.0)				(1.1)	
High GDP gap dummy (over 2 percent)				−1.3				−1.4
				(1.1)				(1.2)
Other								
Time trend	.18***	.18***	.21***	.19***	−.21***	−.23***	−.19***	−.21***
	(.05)	(.07)	(.05)	(.05)	(.06)	(.07)	(.06)	(.06)
Constant	−365***	−362***	−414***	−369***	431***	466***	381***	426***
	(112)	(134)	(111)	(111)	(120)	(143)	(120)	(119)
Adjusted R-squared	.576	.567	.599	.578	.721	.716	.734	.722

Notes: Number of observations = 56; 1972–99. Teenagers are ages 16 to 19.
 * Significantly different from zero with 90–95 percent confidence.
 ** Significantly different from zero with 95–99 percent confidence.
 *** Significantly different from zero with 99 percent confidence or greater.

tional attainment also affect the unemployment rate of black women relative to white women; unlike for men, the key differences appear to be related to high school dropouts. While a percentage-point decrease in the black–white disparity in high school dropouts would reduce the unemployment rate of black women relative to white women by less than 0.2 percentage point, the 1972–99 decline in the racial dropout gap was so pronounced (falling from 23 percentage-points difference to 7) that its net effect on the racial unemployment gap was sizable.

The equation in Column 4 separates the contributions of black and white educational gains. The results indicate that the percentage-point gains of white women (in this case, each percentage-point drop in the fraction of high school dropouts) do more to augment the black–white unemployment gap than an equal percentage-point gain of black women does to reduce

which he attributes to "the marked changes in employment for black male breadwinners over the cycle."

it; however, the difference between the offsetting effects is not statistically significant. The education coefficients were tested for time trend and cyclical shifts. As reported above for men, neither hypothesis seems consistent with the data.

The effect of changes in age mix on jobless gaps is more pronounced for women than for men; the coefficients on black–white age mix differences are much larger in the women's equations. Thus, each percentage-point increase in fraction of the black population age 20 to 24 or 25 to 34 relative to the white fraction was associated with a 2-percentage-point increase in the black–white unemployment gap for women, but much less for men. The stronger age mix effect likely reflects women's greater variation in unemployment rates by age.

Black–White Differences in Unemployment Rates for Teenagers

Table 6
Teen–Adult Differences in Unemployment Rates
Estimated coefficients and standard errors

| Explanatory Variables: | Male Teens and Adult Men | | | | Female Teens and Adult Women | | | |
| | Whites | | Blacks | | Whites | | Blacks | |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cyclical Indicators								
Overall unemployment rate	.20	.54***	1.4**	2.5***	.27*	.48**	1.1*	1.4*
	(.16)	(.18)	(.6)	(.7)	(.16)	(.19)	(.7)	(.8)
GDP gap	−.31***	−.20**	.00067	.39	−.19**	−.12	−.12	−.033
	(.09)	(.09)	(.34446)	(.34)	(.09)	(.09)	(.36)	(.389)
Age								
Fraction of adult population in "prime" ages 35–54		.15***		.39***		.092*		.099
		(.05)		(.13)		(.048)		(.171)
Other								
Time trend	.018	−.0047	.090*	.046	−.024*	−.036**	−.34***	−.35***
	(.014)	(.0147)	(.054)	(.052)	(.014)	(.015)	(.06)	(.06)
Constant	−27	11	−161	−96	55*	74**	688***	700***
	(29)	(29)	(110)	(104)	(29)	(30)	(114)	(117)
Adjusted R-squared	.755	.795	.411	.493	.706	.720	.736	.732

Notes: Number of observations = 56; 1972–99. Teens are ages 16 to 19; adults ages 20 and older.
   * Significantly different from zero with 90–95 percent confidence.
  ** Significantly different from zero with 95–99 percent confidence.
*** Significantly different from zero with 99 percent confidence or greater.

The general cyclical patterns for teens are similar to those estimated above for adults. Table 5 reports coefficient estimates for equations explaining black–white differences in unemployment rates for young men and young women ages 16 to 19. Columns 1 and 5 include only the two basic cyclical measures—overall unemployment and GDP gap—along with a time trend; the other columns report on additional cyclical variables.

Using the estimates in columns 1 and 5, the changes in unemployment and the GDP gap that occurred between the first half of 1992 and the second half of 1999 (a drop of 3.3 percentage points in unemployment and a rise of 5.8 percentage points in the GDP gap) would reduce the black–white unemployment gap for young men by 6.2 percentage points and for young women by 5.0 points, other things equal. The actual gaps shrank by 3.7 and 5.6 percentage points, respectively, partly because of unexplained factors, but also because of significant time trends. The time trends indicate the black–white gap has been growing for young men and shrinking for young women, after controlling for cyclical shifts. The significance of these time trends is presumably also an indication (consistent with the relatively low R-squared) that the teen equations do not include a complete enough set of explanatory variables.

Nonetheless, much of the variation is cyclical. The results in columns 3 and 7 indicate that black teens make extra gains compared to white teens in very good times, more than in proportion to the general cyclical movements of the overall unemployment rate and the GDP gap. The black–white gaps for teens, which average over 20 percentage points, drop by about 2 percentage points when the overall unemployment rate is below 5 percent.

Unemployment Rates of Teens Compared with Adults

The final set of unemployment gap equations focuses on how teenagers fare relative to adults of the same race and sex. One might expect to see greater cyclical variation in unemployment for teens since they are more on the margins of the economy than adults, lacking long attachments to employers and the accompanying seniority and job-specific knowledge that presumably insulate some adults from layoffs.

Table 6 reports estimates for equations explaining teen–adult differences in unemployment rates for white males (columns 1–2) and black males (columns 3–4); columns 5–8 do the same for females.

All the equations show pronounced cyclicality of teen–adult differences in unemployment. However, a comparison of columns 1, 3, 5, and 7 reveals that the teen–adult difference in unemployment for white males and for white females is more closely associated with the GDP gap, while the overall unemployment rate is the key to teen–adult differences for blacks.[31] The cyclicality of these teen–adult gaps in unemployment indicates that teen unemployment rates are more responsive to the business cycle than adult rates. However, teens do not benefit disproportionately, relative to adults, in a hot economy nor do they suffer disproportionately in recessions. Estimated coefficients on these dummy variables were statistically indistinguishable from zero (results not shown).[32]

Data are not available on educational attainment for teenagers, who may be high school dropouts, currently in high school, or high school graduates. When measures of educational attainment of the comparison group adults are included in the equations, their estimated coefficients are either not significantly different from zero or of the wrong sign (results not shown).[33]

Columns 2, 4, 6, and 8 include a measure of the fraction of the comparison group adults who are in the "prime working ages" of 35 to 54. For all but black females, this variable obtains a positive coefficient that is significantly different from zero, indicating (as would be expected) that the teen–adult gap is larger when the comparison adults are more concentrated in an age range associated with low unemployment rates.

Black–White Differences in Labor Force Participation and Employment/Population Ratios

Individuals who are out of the labor force, like the unemployed, are not bringing home paychecks. Thus, in addition to unemployment, another summary measure of labor market success is the fraction of the population who actually have jobs.[34] Table 7 reports regression estimates for black–white differences in labor force participation rates and employment/population ratios for men and women age 20 and older.

These equations supplement the age mix variables used in the unemployment rate equations with some older age groups. This addition reflects the patterns shown in Figure 8, which indicated that labor force participation rates and hence employment/population ratios drop sharply going into the retirement ages (while unemployment rates are similar for all age groups over 35). For men, the age mix results are counterintuitive; negative coefficients would be expected because older age groups have lower participation rates; as the black fraction in these age groups increases relative to the white fraction, the black employment/population ratio should fall relative to the white ratio.[35]

Aside from age mix, the equations for men include the same variables as the unemployment equation in column (3) of Table 3. Labor force participation is not significantly related to any of the business cycle variables. Black–white differences in educational mix have the expected effects on participation gaps—as more black men obtain college degrees (relative to whites), black participation rises (relative to white); as relatively more black men drop out of high school, relative black participation falls. With the employment/population ratio as dependent variable (column 2), determinants of both unemployment and participation obtain coefficient estimates significantly different from zero (with the variables obtaining signs opposite to those for unemployment, of course).[36]

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[31] Note that the cyclical effects of the two variables are reinforcing, not offsetting, for three of the four groups (all but black males).

[32] Recall that the comparison groups are defined in terms of race and sex. Thus, the earlier results showed extra gains (drop in unemployment) in a "hot economy" for black adult men (compared with white men) and black young men (compared with white male teens). What the teen–adult results indicate is that black young men obtain no extra boost compared with black adult men, black young women relative to black adult women, and so on.

[33] The expected signs would be positive for percent of adults with college degrees and negative for percent of adults who are high school dropouts, since the higher the educational attainment of the comparison adults, the larger the expected unemployment gap for these teens who have less education by definition.

[34] One would not apply this statement to teenagers, however, since their future labor market success is enhanced by going to school and hence staying out of the labor force while teens. For women, who have traditionally carried more nonmarket tasks such as caring for children and other "home production" (cooking and cleaning for their own household), the assumption that higher employment/population ratios indicate improved well-being is somewhat questionable as well. Even without unambiguous implications for well-being, however, it is informative to describe and attempt to explain the relative patterns of labor force participation of black and white women.

[35] The estimated results suggest that black men have a less pronounced age-participation profile than white men—greater fractions of older and younger black men reduce their overall participation rate less than similar fractions of older and younger white men.

[36] Juhn, Murphy, and Topel (1991) note that changes in unemployment rates are responsible for most of the cyclical changes in

Black–White Differences in Labor Force Participation Rates and Employment/Population Ratios for Men and Women Ages 20 and Older

Estimated coefficients and standard errors

Dependent variable: Black–White Difference in	Men		Women			
	Labor Force Participation Rate	Employment/ Population Ratio	Labor Force Participation Rate		Employment/ Population Ratio	
Explanatory Variables:	(1)	(2)	(3)	(4)	(5)	(6)
Cyclical Indicators						
Overall unemployment rate	−.089	−1.3***	−.35	−.19	−.74**	−.57**
	(.231)	(.2)	(.30)	(.25)	(.29)	(.22)
GDP gap	.0043	−.40***	−.10	.0030	−.21	−.088
	(.1297)	(.14)	(.17)	(.1424)	(.17)	(.128)
Recession dummy variable	−.011	−.51*	−.34	−.51**	−.12	−.30
	(.220)	(.27)	(.28)	(.23)	(.28)	(.21)
High GDP gap dummy (over 2 percent)	.010	.66**	.76**	.23	.90***	.32
	(.250)	(.32)	(.33)	(.30)	(.33)	(.27)
Education and Age						
Black–white difference in fraction with college degree	.25**	.51***	.10	.020	.21	.12
	(.12)	(.13)	(.18)	(.146)	(.17)	(.13)
Black–white difference in fraction without h.s. diploma	−.16*	−.17	−.047	.00075	−.055	−.0021
	(.09)	(.12)	(.114)	(.09420)	(.111)	(.0850)
Black–white difference in fraction age 20–24	.53	.031	−5.4***	−2.0**	−6.4***	−2.7***
	(.34)	(.447)	(.8)	(1.0)	(.7)	(.9)
Black–white difference in fraction age 25–34	.35**	.040	−.65**	−.18	−1.8***	−1.3***
	(.14)	(.165)	(.29)	(.26)	(.3)	(.2)
Black–white difference in fraction age 55–64	.76**	.62**	−4.8***	−1.7*	−4.6***	−1.1
	(.30)	(.24)	(.6)	(.8)	(.6)	(.7)
Black–white difference in fraction age 65 and older	1.3***	.36*	.041	−.41	−.98*	−1.5***
	(.4)	(.18)	(.575)	(.48)	(.56)	(.4)
Other						
Time trend	−.062	−.12*	.0080	−.21***	−.028	−.27***
	(.063)	(.07)	(.0709)	(.07)	(.069)	(.07)
Time trend after 1995				1.1***		1.2***
				(.2)		(.2)
Constant	132	258*	2.0	418***	76	537***
	(125)	(141)	(141)	(146)	(138)	(132)
Adjusted R-squared	.526	.855	.903	.934	.939	.965

Notes: Number of observations = 56; 1972–99.

* Significantly different from zero with 90–95 percent confidence.

** Significantly different from zero with 95–99 percent confidence.

*** Significantly different from zero with 99 percent confidence or greater.

For women (column 3), black–white differences in labor force participation rates reflect age mix differ-

ences in the expected fashion, but they are not responsive to differences in educational mix. The negative signs on the age mix variables reflect markedly lower labor force participation rates among younger and older women. The business cycle variables are generally not important, but the coefficient on the high GDP

employment rates, while secular declines in male employment/ population ratios reflect shifts in participation as well as unemployment.

gap dummy variable shows three-quarters of a percentage-point increase in the participation rate of black women relative to white women in a very strong economy.

One of the "strong-economy" periods, however, was the late 1990s when another shift took place that would be expected to affect women's labor force participation rates—welfare reform. Federal legislation in 1996 expanded and required welfare-to-work activities and tightened the eligibility for welfare assistance in a variety of ways, most directly by imposing time limits on welfare receipt during an individual's lifetime.[37] These reforms increased welfare recipients' incentives to join the labor force; they would be expected to have a greater effect on the labor force participation of black women than of white women because a greater fraction of black women head families with children.[38]

The equation in column 4 includes a time trend that begins in 1996, the year of federal enactment.[39] The estimated trend is highly statistically significant, implying increases of over 1 percentage point per year

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One of the "strong economy" periods was the late 1990s, when another shift took place that would be expected to affect women's labor force participation rates—welfare reform.

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during the 1996–99 post-welfare-reform period in the fraction of black women in the labor force relative to

white women.[40] The inclusion of this variable also causes the full-period time trend to become negative and significantly different from zero. Being much smaller, it offsets only a fraction of the post-1995 time trend, and presumably reflects the relative increases in participation of white women through most of the period until the mid 1990s. Once the welfare reform period is separately explained, the effect of a "hot economy" is statistically indistinguishable from zero.

Columns 5 and 6 model black–white differences in employment/population ratios for women with the same variables and confirm the combined effects from the unemployment and participation equations. Reflecting rising participation by black women, the time trend after 1995 is strongly associated with the racial difference in employment/population ratios.[41] The employment/population equations reflect the business cycle responsiveness of black–white female unemployment differences via the overall unemployment rate, but the effect of educational differences on unemployment does not translate to relative employment rates.

IV. The Strong Expansion of the 1990s—Are the Declines in Unemployment Gaps Explained or Unexplained?

For each of the unemployment gaps examined— black–white differences for women, men, and teens, and teen–adult differences for black and white males and females—the business cycle plays an important role in determining the gap, but some of the shrinkage in the gap in the 1990s expansion remains unexplained. Specifically, the equations that capture the business cycle with the overall unemployment rate and GDP gap generally underpredict the relative improvement in the unemployment situation of blacks (relative to whites) and teens (relative to adults) that occurred in the second half of the 1990s expansion.

An example of these underpredictions is the following: The equation shown in column 1 of Table 4 predicts a drop of 1.6 percentage points in the black–

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[37] The change in approach is embodied in the program's name change, from AFDC (aid to families with dependent children) to TANF (temporary assistance to needy families).

[38] In 1990 and 1998, 30 to 31 percent of black families were headed by women with children; the corresponding fraction for whites was 7 to 8 percent. Source: U.S. Bureau of the Census, *Statistical Abstract of the United States 1999*, p. 51.

[39] Alternative versions looked for welfare reform effects in interaction terms that allowed the coefficients on the overall unemployment rate and GDP gap to differ after 1995. These coefficients were never significantly different from zero (results not shown). Notwithstanding the failure of these equations to find interaction effects, it is clear to all observers that the strong economy has been critical to the success of welfare reform in converting former and potential welfare recipients into workers. See, for example, Loprest (1999).

[40] Note that the variable is only a time trend that begins in the year of welfare reform; the results are consistent with other (non-welfare-reform) explanations for the shifting trend in black women's participation, where the shift occurred in 1996.

[41] The black–white difference in unemployment rates for women does not have a differential time trend after 1995 (results not shown). Thus, black women's participation apparently rose relative to white women's without a corresponding relative rise in unemployment as the new entrants joined the labor force.

white gap in female unemployment rates in the 1990s expansion (to 4.4 points in the second half of 1999); the actual drop was 2.9 percentage points (ending at a 3.6 percentage point gap at the end of 1999). Since the equations capture the usual relationships between the size of the disparities and the business cycle variables, these underpredictions imply that the 1990s expansion brought more than the "typical" cyclical reduction in these groups' disadvantaged positions in the labor market.

However, the unexplained improvements in the late 1990s could alternatively be due to idiosyncratic factors not related to the business cycle. To capture the possibility that the additional gains are associated specifically with strong expansions, equations were also estimated with dummy variables for periods in which the unemployment rate was below 5 percent or the GDP gap was greater than 2 percent. Recall that this interpretation says it takes a "red-hot" economy to motivate employers to recruit and hire the most severely disadvantaged, those who usually remain in pockets, whether geographic, cultural, or educational, that isolate them from jobs. When unemployment is very low or output exceeds potential by a substantial amount, employers "snap up" anyone they can find, moving much deeper into the unemployment queue than they typically do.

The coefficient estimates on these "hot economy" variables in the equations for black–white unemployment gaps confirm that blacks make extraordinary gains in good economic times. The same is not the case for teen–adult differences in unemployment rates; with these dependent variables, the dummy variables never enter in a statistically significant way (these results were not shown). The lack of an extra boost to teens implies that they do not gain disproportionately in a very strong economy relative to their adult comparison group.

V. Implications and Conclusions

Overall, this analysis finds that the rising tide of economic expansion does indeed lift all groups' boats—blacks as well as whites, teens as well as adults. All show declining unemployment during economic recoveries and adults show growing fractions at work. Not only do all the jobless rates fall and employment/population ratios rise, but also disadvantaged groups see larger percentage-point declines in unemployment rates and larger percentage-point increases in fraction employed than their advantaged comparison groups. Thus, economic expansions with strong growth and low unemployment clearly help the disadvantaged; they help everyone, including the disadvantaged.

In addition, this analysis has found some evidence that extraordinarily good times with very strong production or very low unemployment—like the late 1990s expansion—bring even greater gains to the disadvantaged. The usual cyclical improvements and even the extra gains from a "hot" economy, however, are not enough to eliminate the disparities. The analogy with the tide breaks down when one asks whether a strong economy raises all boats to the same level; disadvantaged groups still have above-average

This research confirms the importance of educational attainment, or skill mix more broadly, in determining the relative labor market success of different groups.

unemployment (and black men have below-average employment rates) in the best of times. Thus, the ongoing problem is that the status of being left out or slower-gaining remains disproportionately concentrated among blacks and teens. (The lines in the charts have moved toward each other, but the gaps remain sizable.)

This research confirms the importance of educational attainment, or skill mix more broadly, in determining the relative labor market success of different groups. If even a strong economy is not enough to eliminate unemployment gaps, some analysts argue that only targeted employment and training policies, or policies to reduce geographic and other barriers to job access, can provide sufficient labor market opportunity to the disadvantaged. And they argue further that the time to undertake them is when the strong economy can enhance their effectiveness. As Arthur Okun wrote in 1973 after an earlier high-pressure episode, such "policies to promote upward mobility are probably best accomplished in the context of a higher-pressure labor market."

Appendix Table
Underlying Variables for Regression Analysis
All variables measured as percents

	Mean	Standard Deviation	Minimum	Maximum	Notes
Unemployment Rate					
Black male adult unemployment rate	10.9	3.0	5.9	19.4	Adults are age 20 and older.
White male adult unemployment rate	4.8	1.3	2.8	8.6	
Black female adult unemployment rate	10.9	2.3	6.8	17.3	
White female adult unemployment rate	5.1	1.1	3.2	7.8	
Black male teen unemployment rate	37.0	5.1	27.5	49.8	Teens are ages 16 to 19.
White male teen unemployment rate	15.8	2.3	12.2	22.4	
Black female teen unemployment rate	37.0	6.0	24.0	50.4	
White female teen unemployment rate	14.4	2.0	10.5	19.5	
Labor Force Participation Rate					
Black male adult labor force participation rate	74.7	1.7	71.8	78.6	
White male adult labor force participation rate	78.9	1.4	77.0	82.0	
Black female adult labor force participation rate	58.0	4.2	51.0	66.2	
White female adult labor force participation rate	53.4	5.5	42.6	60.0	
Employment/Population Ratio					
Black male adult employment/population ratio	66.6	2.9	60.6	73.8	
White male adult employment/population ratio	75.2	1.8	72.0	79.2	
Black female adult employment/population ratio	51.7	4.4	44.9	61.7	
White female adult employment/population ratio	50.7	5.6	40.5	58.0	
Educational Attainment:					
Black male fraction with college degree	10.0	2.7	5.5	13.9	Education mix variables refer to percentage of population ages 25 and older.
White male fraction with college degree	23.3	3.3	16.2	27.3	
Black female fraction with college degree	10.1	3.0	4.8	15.4	
White female fraction with college degree	16.3	4.0	9.4	22.8	
Black male fraction without h.s. diploma	41.6	12.3	24.8	64.3	
White male fraction without h.s. diploma	25.2	7.1	16.4	39.7	
Black female fraction without h.s. diploma	40.6	12.3	23.3	62.8	
White female fraction without h.s. diploma	25.7	7.3	16.2	39.5	
Age Mix:					
Black male fraction age 20–24	15.0	2.0	11.9	17.4	Age mix variables are percentage of adults ages 20 and older.
White male fraction age 20–24	11.8	1.8	9.3	13.9	
Black female fraction age 20–24	14.2	1.9	11.3	16.4	
White female fraction age 20–24	11.1	1.7	8.5	13.0	
Black male fraction age 25–34	26.4	2.3	22.2	29.4	
White male fraction age 25–34	23.8	1.6	20.7	25.9	
Black female fraction age 25–34	25.6	1.8	22.2	27.9	
White female fraction age 25–34	21.9	1.4	19.3	23.6	
Black male fraction "prime" age 35–54	35.6	3.6	31.6	42.7	
White male fraction "prime" age 35–54	36.3	3.2	32.5	42.4	
Black female fraction "prime" age 35–54	35.0	3.1	31.3	41.1	
White female fraction "prime" age 35–54	34.4	3.0	30.7	40.1	
Black male fraction age 55–64	11.4	1.1	9.5	13.1	
White male fraction age 55–64	13.3	1.2	11.6	14.8	
Black female fraction age 55–64	11.4	.8	10.0	12.7	
White female fraction age 55–64	13.5	1.3	11.6	15.0	
Black male fraction age 65 and older	11.6	.7	9.5	12.8	
White male fraction age 65 and older	14.7	.7	13.7	15.9	
Black female fraction age 65 and older	13.7	.3	13.2	14.1	
White female fraction age 65 and older	19.2	.9	17.6	20.3	

Note: Number of observations = 56; analysis period 1972–99.
Sources: U.S. Bureau of the Census, U.S. Bureau of Labor Statistics.

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