

## **A Very Uneven Road: U.S. Labor Markets in the Past 30 Years**

Harry J. Holzer  
Georgetown University and American Institute for Research (AIR)  
E-mail: [hjh4@georgetown.edu](mailto:hjh4@georgetown.edu)

Marek Hlavac  
Harvard University

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## **Abstract**

In this paper we use data from the Current Population Survey to summarize labor market trends in the U.S. over the past 30 years. First we focus on secular trends over the four years (and three cycles) that constitute labor market peaks during this period: 1979, 1989, 2000, and 2007. Then we consider peak-to-trough changes in employment outcomes for each of the four recessions that have occurred in this period, including the Great Recession. Overall we find great unevenness in labor market performance across cycles and across demographic groups. Inequality has widened dramatically and important structural changes have occurred.

Women and/or more-educated workers have gained substantially relative to men and/or the less-educated, while high earners within each group gained relative to others. The Great Recession has hurt all groups but especially young and less-educated men, whose outcomes had already deteriorated over time.

*Keywords:* Current Population Survey; Labor Market Trends; Recession; Demographics; Low Education

## **A Very Uneven Road: U.S. Labor Markets in the Past 30 Years**

### INTRODUCTION

In the past three decades, the American economy has experienced large swings in performance, over shorter and longer time periods, and has undergone major structural changes.

During the 1980s, we first endured a severe recession, engineered by the Federal Reserve Bank to fight high rates of inflation, and then recovered with a lengthy period of expansion and economic growth. Another and milder recession in the early 1990s was followed by an even more robust period of expansion, often called the “Great Boom” or the “Roaring Nineties,” during which high productivity and income growth returned to the U.S. economy. But in the decade of the 2000s, which once again began with a mild recession, the economic picture was more mixed; a shorter period of recovery, during which productivity growth was high but income growth was much lower, was followed by the most severe economic downturn since the 1930s, which is commonly known as the “Great Recession.”

How did all of these economic forces play out in the U.S. labor market during this time period? In each economic cycle, how did trends in wages, employment, and annual earnings reflect these economic developments? Which groups of workers benefited from economic growth, and which did not? Despite the periodic ups and downs in the economy, what long-term trends do we find in the labor market? And does the current severe downturn, from which our recovery will likely be painfully slow, change our long-term perceptions?

We will use data from the Current Population Survey for over 30 years to answer these questions. The analysis will proceed in two parts. First, we consider secular trends in labor market outcomes over the four years that constitute labor market peaks during this time period: 1979, 1989, 2000, and 2007. We measure trends in hourly wages and annual earnings (both adjusted for inflation) as well as employment rates across these years, considering how these vary by gender and educational group as well as other demographic traits, and also how they vary over the earnings distribution. We also look at the changing

occupation and industrial distribution of American jobs, to get more of a sense of the structural forces associated with the labor market outcomes we observed.

Second, we will consider peak-to-trough changes in unemployment rates, unemployment durations, and the percentages of the unemployed enduring lengthy spells of unemployment during each of the four recessions: 1979–1982, 1989–1992, 2000–2003, and 2007–2010.<sup>1</sup> This will indicate the extent to which the current downturn is similar to that of 1979–1982 and the other milder ones, and might also suggest what an incipient recovery might look like. We will then conclude with some thoughts about long-term labor market trends and policy implications to deal with both the severe downturn and secular developments.

Of course, many of the labor market developments we present below have been described in other publications, and the causes of these labor market trends have been much analyzed and debated by labor economists over the past few decades. But most of the research does not cover the past full decade, including the last few years of the 2000–2007 cycle and the Great Recession. Our contribution is to provide an up-to-date summary, accessible to both economists and non-economists, of secular trends and cyclical swings over three decades—including the last full cycle and the Great Recession;<sup>2</sup> to interpret both short-term and long-term trends and their causes in light of the most recent evidence; and to generate some policy prescriptions for both short-term and longer-term challenges based on all of this. We review the more technical literature by labor economists, and describe what we have learned about the causes of trends from that literature, but also attempt to supplement it with more recent knowledge in various places.

The results of our analysis can be summarized as follows:

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<sup>1</sup>We use annual unemployment rates to measure labor market peaks and troughs in the business cycle. These tend to lag behind the dates of peaks and troughs as measured by changes in real gross domestic product (GDP) and the beginning and end dates of recessions as determined by the National Bureau of Economic Research (NBER).

<sup>2</sup>Other authors who have provided recent summaries of both the shorter- and longer-term trends include Autor (2010) and Mishel et al. (2010).

- Overall labor market performance in the United States has been very uneven across the past three decades. In the aggregate, moderate gains in wages and earnings during the cycle of 1979–1989 were followed by more substantial gains in that of 1989–2000 and then very modest ones during 2000–2007.
- Despite this unevenness in overall labor market performance, certain common patterns appear across decades. In general, women and/or more-educated workers gained the most in earnings and employment while men and/or less-educated workers gained the least (or actually lost ground in some cases). Within these groups, workers at the top of the earnings distribution gained the most compared to those at the middle or bottom, reflecting dramatic increases in inequality. Along some dimensions, younger and/or minority workers as well as those in the Midwest region also lost ground relative to other groups.
- Dramatic decreases in employment in manufacturing and in production and clerical jobs, relative to higher- and lower-paying categories, further reflect important structural shifts in the demand for labor. But significant employment growth in other industries (like construction and health services) and occupations (like technicians) indicate a still substantial middle of the job market exists for those with appropriate skills.
- Of the four recessions that occurred during these three decades, two were quite mild while the other two were quite severe—especially the Great Recession of 2008 and beyond. Very large increases in unemployment rates and durations have occurred in the recent downturn, and were experienced primarily by less-educated, younger and/or minority workers—who had already experienced relative declines in their earnings and employment over the past three decades.

In all, we find a labor market where progress has been very uneven over time and across labor market groups. Inequality has widened dramatically, and important structural changes have occurred. The current downturn is likely to be followed by a gradual recovery, during which time many of the unemployed will suffer from long-term “scarring.” And, even after fully recovering, labor markets might continue to show only modest improvements, of the kind we saw during 2000–2007.

Appropriate policy responses should focus on short-term assistance to the unemployed as well as longer-term efforts to improve the skills of less-educated American workers and the quality of the jobs they get. Direct assistance to improve earnings among the less-educated, in the form of institutions to raise wages and cash assistance to the working poor (through expansions in the Earned Income Tax Credit), should be considered as well.

## I. DATA AND EMPIRICAL FINDINGS

We have analyzed data from the Current Population Survey (CPS), a monthly survey of about 50,000 households conducted by the Census Bureau and the Bureau of Labor Statistics, to calculate all

labor market statistics. Annual earnings figures were obtained from the Annual Social and Economic Supplement (the “March supplement”) of the CPS for the preceding year. Hourly wages, employment-population ratios, as well as unemployment rates and durations come from the Outgoing Rotation Groups (ORGs) of the CPS’s monthly Earner Study. We also relied on a crosswalk from the Integrated Public Use Microdata Series (IPUMS-USA), published by the University of Minnesota, to classify occupations consistently across the years in our study.

To express annual earnings and hourly wages in real 2009 dollars, we deflated nominal wage and earning figures using the chain-weighted Personal Consumption Expenditures (PCE) version of the Gross Domestic Product (GDP) Deflator, constructed by the Bureau of Economic Analysis. Our sample is limited to individuals between the ages of 16 and 69, and excludes full-time students and self-employed workers. It, furthermore, excludes individuals employed in the agriculture industry, as well as those in military or farming occupations.<sup>3</sup>

To preserve the confidentiality of survey respondents, the U.S. Census Bureau top-codes high incomes and earnings: Values that exceed specified levels are reported at specified top-coded levels. To adjust annual earnings for top-coding, we used a cell mean series, created by Larrimore et al. (2008), that provides the mean of all income values above the top-code for individuals in the public use Annual Social and Economic Supplement of the CPS. For hourly wages, we applied a log-normal imputation to adjust top-coded values from the Outgoing Rotation Groups of the monthly CPS Earner Study, as proposed by Schmitt (2003).

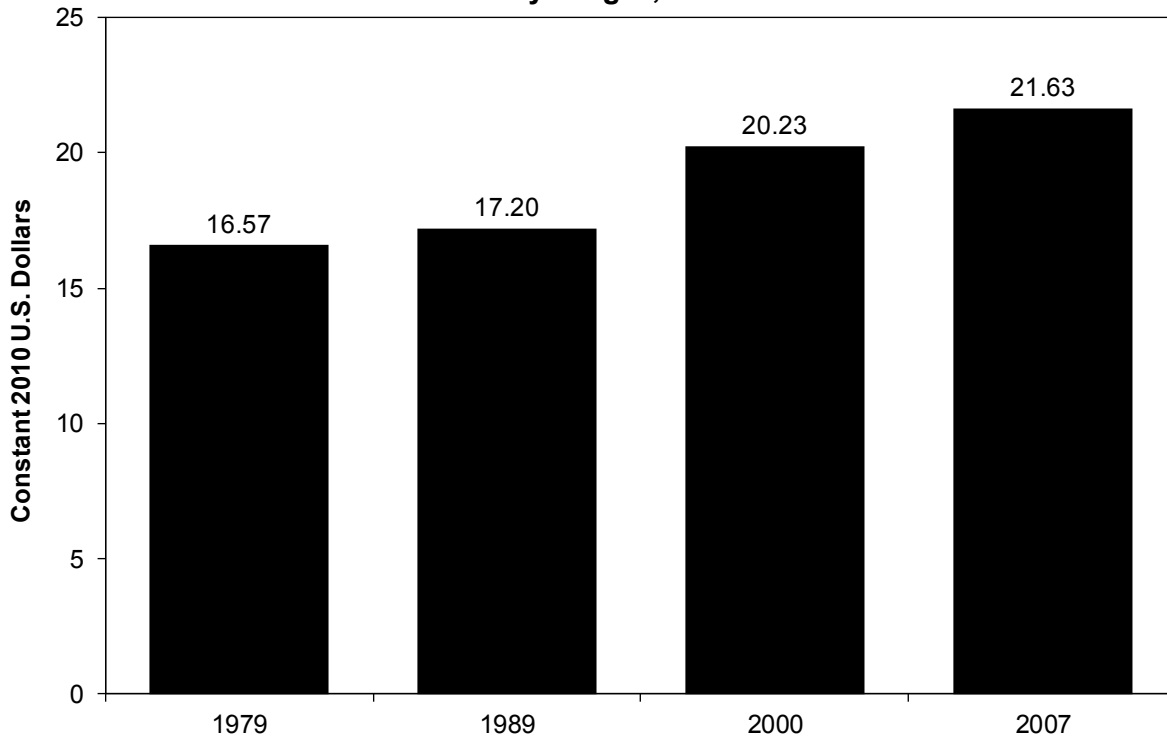
#### A. Secular Labor Market Trends Across Three Decades

We begin by presenting data on labor market outcomes in the cyclical peak years across the past three decades, which include 1979, 1989, 2000, and 2007. Figure 1 presents aggregate data on three key

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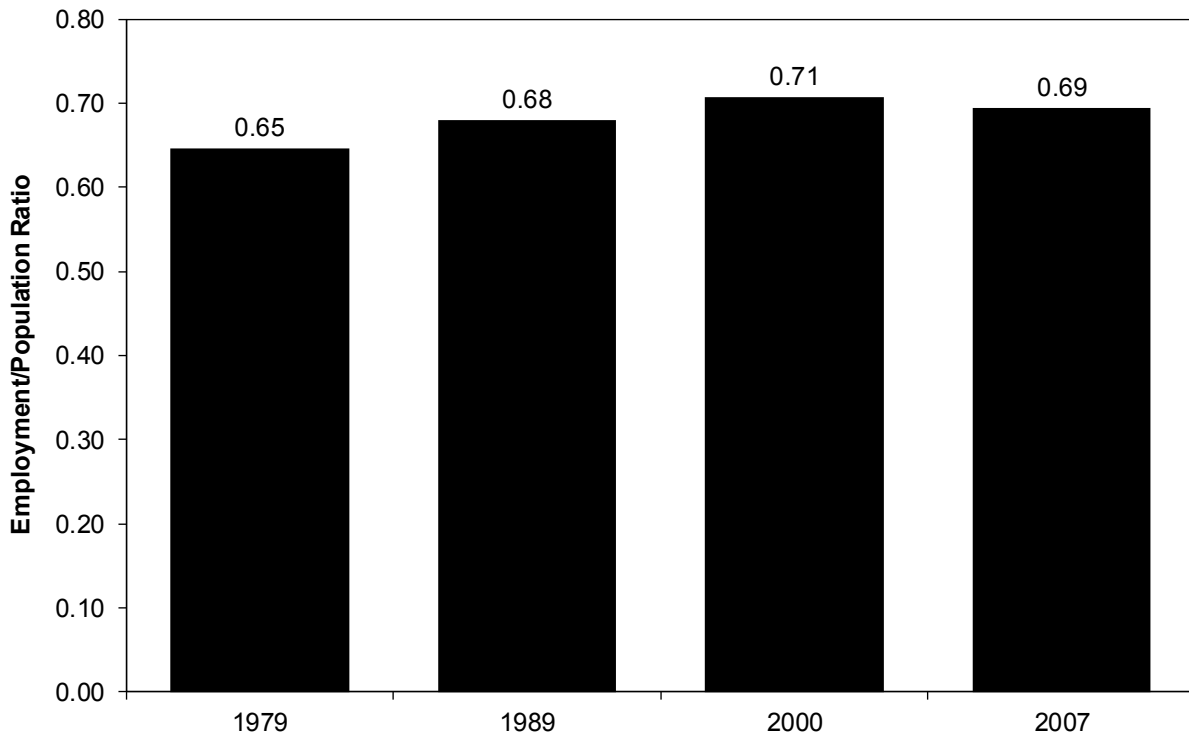
<sup>3</sup>To reduce the influence of extreme outliers, calculations of mean and median annual earnings and hourly wages are restricted to individuals who earn, in 2009 dollars, between \$2 and \$5,000 per hour, and between \$1,000 and \$10 million per year.

**Figure 1a:**  
**Mean Hourly Wages, 1979–2007**



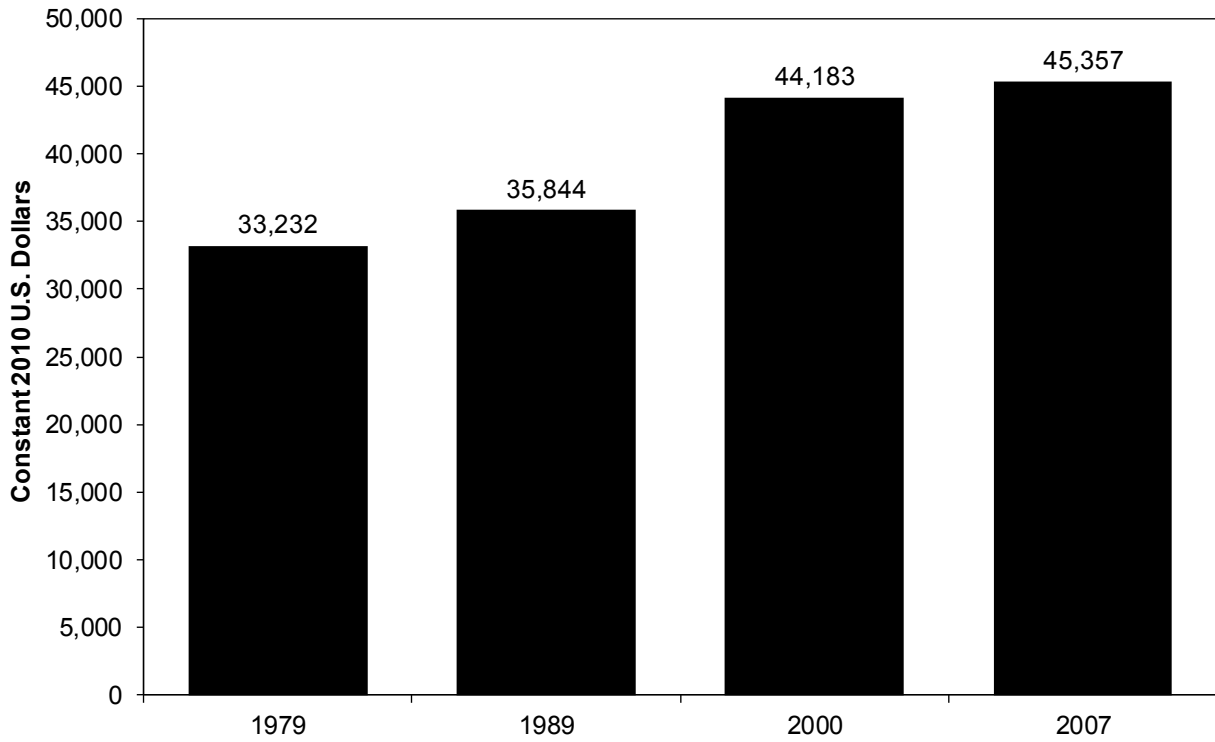
Source: CPS, Outgoing Rotation Groups.

**Figure 1b:**  
**Employment/Population Ratio, 1979–2007**

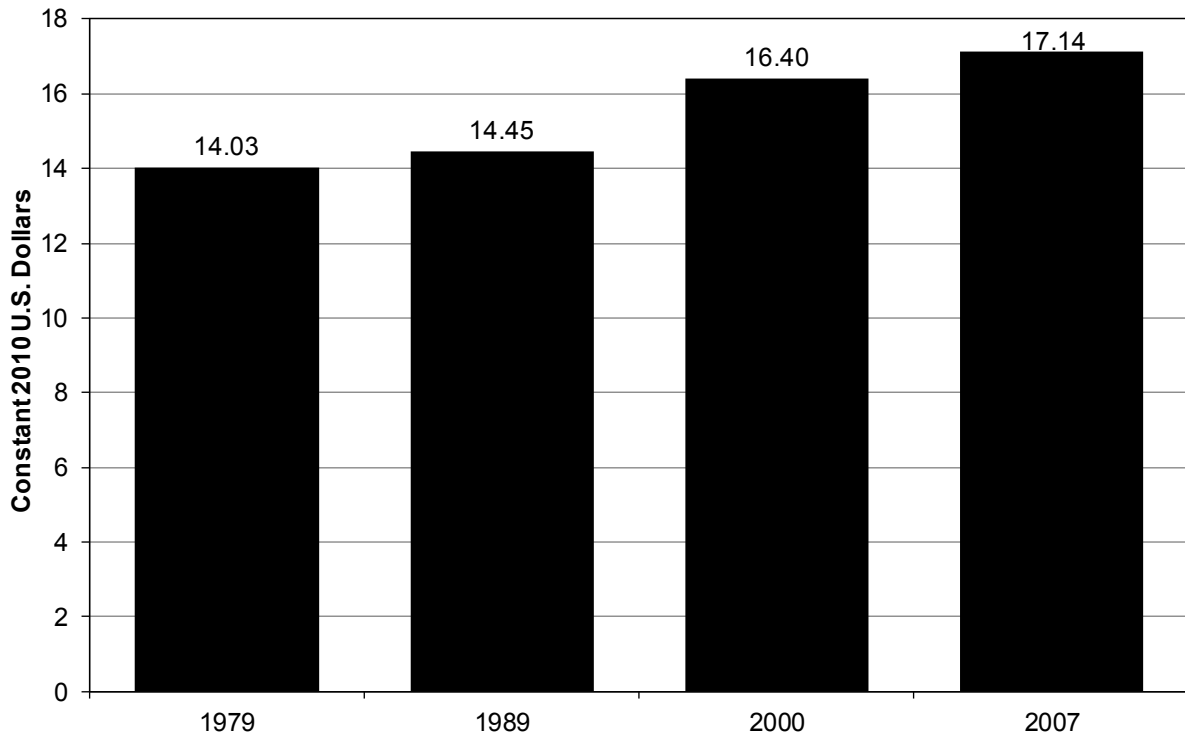


Source: CPS, Outgoing Rotation Groups.

**Figure 1c:  
Mean Annual Earnings, 1979–2007**



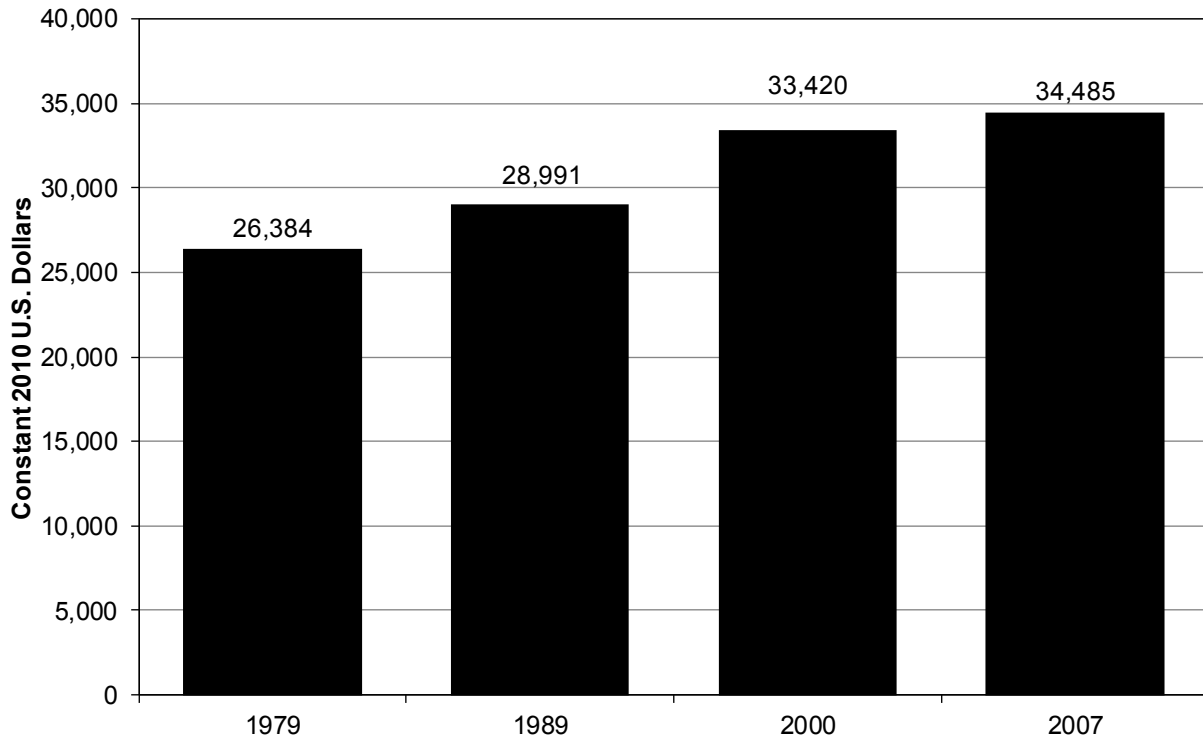
**Figure 1d:  
Median Hourly Wages, 1979–2007**



Source: CPS, Outgoing Rotation Groups.



**Figure 1e:  
Median Annual Earnings, 1979–2007**



Source: CPS, Annual Social and Economic Supplement.

labor market outcomes for those years: hourly wages, employment/population rates, and annual earnings. Both means and medians appear for the wage and earnings measures. Annual earnings represent the product of hourly wages and total hours worked per year, where the latter represents hours worked per week (part-time v. full-time) and weeks worked per year; and weeks worked (out of 50) approximates the employment rate of any group of workers, which is one of our three measured labor market outcomes. Therefore, annual earnings should reflect both the wage and employment outcomes in the labor market that we separately consider in this figure.

Figure 1 demonstrates consistent progress in aggregate labor market outcomes across the three decades considered. But the rate of progress is uneven, both over time and across specific outcomes. For instance, mean real hourly wages rose very modestly in the periods 1979–1989 and 2000–2007 (by 3.8 and 6.9 percent, respectively), but much more substantially in the period 1989–2000 (by 17.6 percent). Median wages show similar trends. On the other hand, employment rates rose quite strongly in the years 1979–1989 and then they continued to increase in the period 1989–2000 before declining somewhat after 2000. As a result of these wage and employment trends, annual earnings rose somewhat in the years 1979–1989 (with mean and median wages rising 8 and 10 percent, respectively) and again during the years 1989–2000 (with mean and median earnings rising 23 and 15 percent, respectively) before flattening out after 2000 (with mean and median earnings rising only about 3 percent each).

It is noteworthy that, in contrast to some other recent evaluations of labor market trends (e.g., Mishel and Schierholz, 2010), we find at least some real wage and earnings growth quite consistently occurring in the U.S. labor market over the past three decades. To the extent that our estimates are a bit more positive than some others, this might be due to our use of a price deflator that rises more modestly and more accurately than other measures of inflation (like the Consumer Price Index) over time, as well as some other differences in sample composition.<sup>4</sup>

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<sup>4</sup>A newer “research series” of the CPI for all urban workers (CPI-U-RS) has been created by the Bureau of Labor Statistics (BLS) that tries to deal with upward biases in the traditional CPI-U. But even using the latter (as

Having said that, real wage increases are very modest in the 1980s, as are wage and especially real earnings increases after 2000. What might account for the unevenness of these trends over time? Real wages declined in the aftermath of the second OPEC oil shock of the late 1970s, and recovered only a bit (due to quite modest productivity growth) afterwards. Any earnings growth observed during the 1980s is driven mostly by growth in employment, likely reflecting the aging of the Baby Boomer generation into their prime employment years. After double-digit inflation rates were brought down by a severe recession in the years 1981–1982, a more moderate macroeconomic environment likely enabled the U.S. labor market to achieve a lower aggregate unemployment and therefore growing employment rates during that time as well (Bernanke, 2004).

In contrast, the cycle 1989–2000 reflected what has become known as the Great Boom or the Roaring Nineties (Krueger and Solow, 2002; Stiglitz, 2003). After a mild recession during 1990–1991, very strong productivity growth (associated with new technological developments) allowed wages to rise significantly with low inflation. At the same time, strong consumer demand translated into strong employer demand for labor, which drove the unemployment rate to a 30-year low; and other policies (like welfare reform and expansions of the Earned Income Tax Credit) also raised labor force participation rates among certain groups (like less-educated women), leading to increasing employment rates in the population (Blank, 2003). As a result, both wages and earnings rose substantially in this period, as did employment rates. Also, it is noteworthy that most labor market outcomes for this entire period are much stronger in the 1995–2000 period than during 1989–1995 one, suggesting that the real boom was shorter-lived than the data for the whole period suggest (Holzer and Hlavac, 2011).

But labor market outcomes over the cycle 2000–2007 were much less positive than those that occurred earlier. While productivity growth remained very strong, much less of it showed up in the hourly

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Mishel and Schierholz have done), measured inflation rates are higher than attained using the chain-weighted Real GDP Deflator, as we have done. For instance, measured inflation during 1979–2007 using the CPI-U, CPI-U-RS, and GDP deflator are 185.5, 166.,1 and 150.8 percent, respectively. Other differences between our samples and those of Mishel and Schierholz include our use of a broader age range and slightly different methods of dealing with sample outliers.

wages of most American workers, perhaps reflecting growth in health care costs and other measurement issues as well as other labor market and institutional trends.<sup>5</sup> At the same time, the high levels of employment achieved in the earlier decade were not fully sustained, as labor force activity declined a bit and unemployment among labor force participants also rose. Overall, the results suggest that employer demand for labor was weaker after 2000 than in the previous cycle, with employers more able to produce the goods and services demanded by consumers without needing to hire many more workers.<sup>6</sup>

Overall, then, labor market progress in the aggregate has been extremely uneven across the past three decades. But, within each period, how were any observed aggregate gains distributed across different demographic and earnings groups in the labor market? When were gains widely shared, and when not? In other words, were the gains very unevenly distributed across groups, resulting in greater labor market inequality, as well as over time?

Mean hourly wages, employment rates, and annual earnings for the years 1979 and 2007 appear in Table 1. These are presented separately by gender and/or educational attainment, and also by race and region. In this table, we consider the absolute magnitudes of employment outcomes achieved by each group, so we can measure what happened to gaps across these groups over the entire period; subsequently, we consider patterns of changes in outcomes during each of the three cycles, to more carefully review the progress made by different groups in those years.

The results of Table 1 indicate that labor market gaps between males and females narrowed between 1979 and 2007, while those between education groups increased quite substantially. Focusing on

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<sup>5</sup>Holzer and Hlavac *op cit.* describe how more rapid increases in health care costs after 2000 led to smaller wage increases associated with given levels of real compensation growth. The increases in the share of profits in GDP, as well as huge increases over time in executive pay and financial market bonuses, also appear to have contributed to the declining shares of productivity growth that result in wage growth for most workers. Finally, the price indices used to adjust for inflation in output have risen more slowly than those used for earnings, thus leading to higher measured productivity than earnings growth over time, though it is not clear that this mattered more after 2000 than before.

<sup>6</sup>Economists generally believe that productivity growth should *not* reduce employment rates in the long run, as higher productivity generates higher real incomes which, in turn, generate rising levels of demand for goods and services and therefore for employment over the long run. But, within a short time period during which consumer demand is limited, it might be possible for such a tradeoff to exist.

**Table 1**  
**Mean Hourly Wages, Employment-Population Ratios and Mean Annual Earnings**  
**By Gender, Education, Race and Region**  
**1979–2007**

Category	Mean Hourly Wages		Employment/Population Ratio		Mean Annual Earnings	
	1979	2007	1979	2007	1979	2007
	(2010 Dollars)		(2010 Dollars)			
All	\$16.57	\$21.63	0.65	0.69	\$33,232	45,357
<b>By Gender:</b>						
Men	\$19.60	\$24.01	0.79	0.75	\$43,062	53,404
Women	12.72	19.08	0.53	0.64	20,894	36,767
<b>By Education:</b>						
Less than High School	\$13.42	\$12.51	0.48	0.47	\$24,503	22,924
High School	15.26	16.67	0.66	0.66	29,704	32,627
Some College	16.78	19.34	0.74	0.73	33,460	39,774
College	21.50	28.33	0.78	0.79	45,678	60,302
Advanced Degree	25.42	35.82	0.87	0.81	59,180	83,709
<b>By Education and Gender:</b>						
High School or Less: - Men	\$17.33	\$17.51	0.74	0.68	\$36,386	35,200
- Women	11.36	13.65	0.47	0.54	18,056	24,726
Bachelor's Degree or More: - Men	\$25.99	\$34.91	0.91	0.85	\$61,938	84,104
- Women	17.37	26.69	0.68	0.75	30,616	52,847
<b>By Race:</b>						
White	\$17.05	\$23.13	0.66	0.71	\$34,632	49,267
Black	14.07	17.98	0.60	0.65	25,442	36,767
Hispanic	13.89	16.53	0.60	0.67	26,404	32,008
<b>By Region:</b>						
Northeast	\$16.72	\$23.57	0.64	0.71	\$34,051	49,343
Midwest	16.82	20.75	0.66	0.72	34,319	43,543
South	15.43	20.42	0.63	0.68	30,724	43,159
West	17.96	22.87	0.65	0.68	34,877	47,422

**Source:** Current Population Survey, Outgoing Rotation Groups and Annual Social and Economic Supplement.

**Notes:** The sample is restricted to ages 16–69. It excludes agriculture and the military. It also excludes full-time students and self-employed individuals. Individuals with hourly wages below \$2 or above \$5,000, as well as those with annual earnings below \$1,000 or above \$10 million, are not included.

annual earnings, the ratio of female to male earnings rose from .49 to .69 percent in that period. In contrast, the ratio of earnings of high school to college graduates fell from .65 to .54 percent over the same period, and that between college graduates and those with advanced degrees (beyond the BA) fell from .77 to .72.<sup>7</sup>

When we consider trends by educational group and gender together, we find that hourly wages for less-educated men—i.e., those with a high school diploma or less—were essentially flat over this entire period, while their annual earnings declined slightly. Somewhat more positive trends in wages and earnings can be observed for college-educated men as well as less-educated women, while the greatest advances are observed for highly-educated women. Indeed, college-educated women had annual earnings well below those of less-educated men in 1979, while by 2007 the former had earnings roughly 50 percent higher than the latter.

It is also noteworthy that both employment and hourly wage growth contributed to the observed patterns of earnings growth between males and females, with both being more rapid among females. Indeed, employment rates declined among men during this time period while rising for women. As we note more clearly below, positive correlations between changes in wages and employment suggest shifts in labor demand (relative to labor supply) across groups, which have likely contributed to the patterns of outcomes observed here. In this case, labor demand seems to have shifted away from less-educated workers, particularly men, and towards more-educated workers, especially women, over this entire period.

A few other findings in Table 1 are also noteworthy. The annual earnings of blacks relative to those of whites stayed relatively constant over time (at about .73 to .75) but the relative wages of the former declined (from .83 to .78). Relative wages and earnings of Hispanics also declined while their employment rates rose quite substantially, likely reflecting a large influx of less-educated Hispanic

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<sup>7</sup>Alternatively, the college-high school premium rose from .54 to .85 and the premium for advanced degrees over college rose from .30 to .39.

immigrants into the workforce in this period (Borjas, 2007). And relative wages and earnings of workers in the Midwest region declined over time relative to those of other regions, with Midwestern workers having the highest hourly wages in 1979 but nearly the lowest by 2007. In fact, the heavy concentration of Midwestern workers and especially African American men in durable manufacturing jobs that disappeared after 1980 likely contributed to the difficulties experienced by both groups (Bound and Freeman, 1992; Bound and Holzer, 1993), as we further note below.

#### *Labor Market Changes across Groups and within Time Periods*

Exactly how and when all of these labor market developments occurred becomes clearer in the data presented below. In Table 2, we present the changes that are observed within the periods 1979–1989, 1989–2000, and 2000–2007 in hourly wages, employment/population ratios and annual earnings for all workers and by gender and educational attainment. But, even within gender or education groups, inequality might have risen quite substantially in the past three decades. So similar data appear in Table 3 across the different parts of the wage and earnings distribution (i.e., the 10<sup>th</sup>, 50<sup>th</sup>, 90<sup>th</sup>, and 99<sup>th</sup> percentiles of each distribution), with hourly wage changes appearing in part A of that table and annual earnings changes in part B. Changes in wages and earnings appear as cumulative annual growth rates, while overall absolute changes are presented for employment/population ratios.

The results for all workers in Table 2 confirm what we saw earlier in Figure 1—namely, that both employment and earnings grew rapidly in the 1989–2000 cycle in the United States, while employment grew rapidly in the 1979–1989 and 1989–2000 periods. Rising employment rates generated moderate earnings growth in the first period, while declining employment offset modest real wage growth to generate quite low growth in annual earnings (.38 percent per year) in the 2000–2007 period.

But growth rates were very uneven across gender and education groups as well as over time. In general, both wages and employment grew more rapidly for women than for men. This is true in each of the three cycles, and within most education groups. The differences in employment trends are particularly noteworthy, with employment growth being much more positive for women than for men at all levels of

**Table 2**  
**Changes in Mean Hourly Wages, Employment-Population Ratios and Mean Annual Earnings**  
**By Gender and Education**  
**1979–1989, 1989–2000, 2000–2007**

Category	Mean Hourly Wages			Employment/Population Ratio			Mean Annual Earnings		
	1979–1989	1989–2000	2000–2007	1979–1989	1989–2000	2000–2007	1979–1989	1989–2000	2000–2007
	(Cumulative Annual Growth Rate)			(Absolute Change during Time Period)			(Cumulative Annual Growth Rate)		
All	0.37%	1.4% <sup>9</sup>	0.96%	0.03	0.03	-0.01	0.76%	1.92%	0.38%
<b>Men by Education:</b>									
Less than High School	-1.23%	-0.26%	0.39%	-0.06	0.00	-0.01	-1.47%	0.20%	-0.59%
High School	-0.83	0.75	0.17	-0.05	-0.03	-0.03	-0.57	0.47	-0.63
Some College	-0.12	0.88	0.15	-0.03	-0.01	-0.04	0.29	1.19	-0.84
College	0.32	1.51	0.64	-0.02	-0.01	-0.02	0.76	1.90	-0.63
Advanced Degree	1.12	1.68	1.29	-0.04	-0.03	-0.01	0.87	3.12	-0.21
<b>Women by Education:</b>									
Less than High School	-0.64%	0.52%	0.72%	0.01	0.03	-0.02	0.49%	0.71%	0.58%
High School	0.18	1.10	0.65	0.05	0.02	-0.02	1.05	1.34	0.67
Some College	1.10	1.05	0.67	0.07	0.02	-0.02	1.95	1.55	0.76
College	1.53	1.90	0.76	0.09	0.00	-0.01	2.56	2.03	0.57
Advanced Degree	1.58	1.76	0.87	0.04	0.00	-0.02	1.89	2.57	0.85

**Source:** Current Population Survey, Outgoing Rotation Groups and Annual Social and Economic Supplement.

**Notes:** The sample is restricted to ages 16–69. It excludes agriculture and the military. It also excludes full-time students and self-employed individuals. Individuals with hourly wages below \$2 or above \$5,000, as well as those with annual earnings below \$1,000 or above \$10 million, are not included.



education until 2000, and less negative since then. Indeed, employment growth for men is quite uniformly negative over time and across groups, while for women it is mostly positive until 2000. As a result, the earnings of women generally outpaced those of men in each period and within most education groups, with only a modest decline in employment rates after 2000 marring an otherwise complete record of labor market progress among females over nearly three decades.

For both men and women, growth in wages, employment, and annual earnings are generally stronger for those with college or advanced degrees than for non-college workers. Real wage growth is stronger for these groups in each period, and especially the pre-2000 periods, when workers with higher education enjoyed dramatic wage growth and earnings growth. Trends in employment growth are a bit more mixed, especially given the strong growth of employment for less-educated women in the 1990s as a result of policy changes like welfare reform and EITC expansions. Still, in most periods and across most groups, employment and hourly wage growth across groups are positively correlated, suggesting that relative labor demand shifts across both gender and education groups have important effects on the relative outcomes we observe.

Comparing the trends for men and women at different education levels, we note that real wage and earnings growth was negative for non-college men in the 1979–1989 period, while earnings growth was negative for all groups of men after 2000. Thus, *earnings trends for men, and especially the less-educated, have been mostly negative, except during the boom of the 1990s*. In contrast, trends have been mostly positive for women, even among the less-educated, and they are dramatically positive for those with college or advanced degrees. During the 2000–2007 period, hourly wage and earnings gains were even modest for college graduates, especially among men, but they were substantially stronger for men and women with advanced degrees.

Similar data for hourly wages and annual earnings appear in Tables 3a and 3b, respectively, for different parts of the wages and earnings distributions. At several points of these distributions (i.e., the 10<sup>th</sup>, 50<sup>th</sup>, 90<sup>th</sup>, and 99<sup>th</sup> percentiles) we present hourly wage and annual earnings gains for workers over each of the three cycles, for all workers and separately by gender and educational category.

**Table 3a**  
**Changes in Hourly Wages**  
**By Gender and Education, Across the Earnings Distribution**  
**1979–1989, 1989–2000, 2000–2007**

Category	10 <sup>th</sup> Percentile			50 <sup>th</sup> Percentile (Median)			90 <sup>th</sup> Percentile			99 <sup>th</sup> Percentile		
	1979–1989	1989–2000	2000–2007	1979–1989	1989–2000	2000–2007	1979–1989	1989–2000	2000–2007	1979–1989	1989–2000	2000–2007
	(Cumulative Annual Growth Rate)			(Cumulative Annual Growth Rate)			(Cumulative Annual Growth Rate)			(Cumulative Annual Growth Rate)		
All	-0.91%	1.43%	0.13%	0.29%	1.16%	0.63%	0.89%	1.60%	1.20%	1.11%	2.63%	1.04%
<b>Men by Education:</b>												
Less than High School	-1.88%	0.91%	0.66%	-1.42%	-0.56%	0.55%	-0.88%	-0.52%	0.12%	-0.55%	0.36%	0.60%
High School	-1.44	0.76	-0.01	-1.01	0.26	-0.11	-0.25	0.89	0.33	-0.16	1.38	1.06
Some College	-1.17	1.64	-0.27	-0.48	0.67	0.01	0.26	0.84	0.32	0.84	0.59	1.39
College	-0.44	1.13	-0.27	0.44	1.13	0.24	0.39	1.60	1.42	-0.12	2.61	-0.17
Advanced Degree	0.50	1.31	0.60	1.15	1.24	0.72	1.11	1.78	1.72	1.81	1.78	-1.69
<b>Women by Education:</b>												
Less than High School	-1.65%	1.47%	-0.07%	-0.52%	0.64%	0.56%	-0.05%	-0.20%	0.76%	0.02%	0.23%	3.76%
High School	-1.63	1.37	0.11	0.28	1.08	0.20	0.76	1.01	0.66	0.74	1.38	1.60
Some College	-0.78	1.28	0.24	0.96	0.96	0.39	1.71	1.01	0.99	1.91	1.00	1.98
College	0.73	1.14	0.18	1.46	1.45	0.35	1.75	2.27	0.86	1.80	3.53	0.67
Advanced Degree	1.21	1.25	0.29	1.81	1.45	0.36	1.65	2.10	1.17	0.97	3.02	1.31

**Source:** Current Population Survey, Outgoing Rotation Groups.

**Notes:** The sample is restricted to ages 16–69. It excludes agriculture and the military. It also excludes full-time students and self-employed individuals.

**Table 3b**  
**Changes in Annual Earnings**  
**By Gender and Education, Across the Earnings Distribution**  
**1979–1989, 1989–2000, 2000–2007**

Category	10 <sup>th</sup> Percentile			50 <sup>th</sup> Percentile (Median)			90 <sup>th</sup> Percentile			99 <sup>th</sup> Percentile		
	1979–1989	1989–2000	2000–2007	1979–1989	1989–2000	2000–2007	1979–1989	1989–2000	2000–2007	1979–1989	1989–2000	2000–2007
	(Cumulative Annual Growth Rate)			(Cumulative Annual Growth Rate)			(Cumulative Annual Growth Rate)			(Cumulative Annual Growth Rate)		
All	2.92%	3.54%	0.88%	0.95%	1.30%	0.45%	0.66%	1.62%	0.60%	0.83%	5.36%	-2.68%
<b>Men by Education:</b>												
Less than High School	-0.97%	3.08%	0.34%	-1.88%	0.08%	-0.64%	-1.25%	-0.22%	-0.63%	-1.46%	1.23%	0.54%
High School	-1.71	1.07	-1.36	-1.01	0.22	-1.32	-0.24	0.67	-0.18	0.41	0.85	0.29
Some College	0.86	2.35	-2.29	0.17	0.67	-0.77	0.28	1.16	-0.28	1.08	2.09	-2.00
College	-0.50	1.30	-0.28	0.43	1.25	-0.95	0.54	1.44	0.01	3.27	4.84	0.91
Advanced Degree	-0.52	2.54	0.88	1.04	2.04	-0.27	-0.21	3.09	-0.14	3.27	4.84	0.91
<b>Women by Education:</b>												
Less than High School	2.99%	2.71%	4.15%	0.45%	1.90%	-0.11%	0.52%	0.59%	0.29%	2.02%	-0.26%	1.47%
High School	3.46	3.50	1.55	1.05	1.09	0.21	1.62	1.18	0.13	2.02	1.15	2.22
Some College	6.03	3.98	1.61	2.43	1.42	0.10	2.02	1.30	0.55	2.02	1.66	1.53
College	8.11	2.99	-0.81	2.52	1.45	0.51	2.52	2.21	0.65	2.52	4.28	-0.22
Advanced Degree	1.70	6.12	0.29	1.49	1.78	0.18	1.80	2.47	0.88	0.66	9.24	1.07

**Source:** Current Population Survey, Annual Social and Economic Supplement.

**Notes:** The sample is restricted to ages 16–69. It excludes agriculture and the military. It also excludes full-time students and self-employed individuals.

The results of Tables 3a and 3b indicate that the median American worker enjoyed modest wage and earnings growth in the 1979–1989 and 2000–2007 periods, and more substantial growth in both during the 1989–2000 years. But, once again, the patterns by gender and/or education are much more mixed. In general, the trends experienced by the median workers of different gender and education groups are quite similar to what we saw in Table 2. Specifically, the median female college graduate experienced real wage and earnings growth in all periods. The median female non-college worker has mostly enjoyed wage and earnings growth, while college-educated men did so as well until 2000. But *the median less-educated male workers in the U.S. mostly experienced real wage and earnings losses both in 1979–1989 and 2000–2007*, with earnings growth only between 1989 and 2000.

What trends are observed at other parts of the wage/earnings distributions? Wage growth for the bottom 10 percent was substantially lower than for others in the 1979–1989 period, even within education and gender groups, and it has been more mixed since. But wage and earnings growth for those at the 90<sup>th</sup> and 99<sup>th</sup> percentiles has been positive and quite dramatic, especially for those with college and advanced degrees, among both men and women. The huge returns to the highest earners are most noteworthy during the 1990s boom but has persisted in the 2000s for men (at the 90<sup>th</sup> percentile) and women (at both the 90<sup>th</sup> and 99<sup>th</sup>). Furthermore, earnings (but not wage) growth has been dramatic for highly educated women at the 10<sup>th</sup> percentile of earnings—likely indicating dramatic increases in their employment rates over time.<sup>8</sup>

Overall, we find that employment and earnings have generally risen for more-educated and high-earning workers, especially females, while declining most for less-educated and low-earning workers, especially males. Despite the inconsistencies across particular time periods, these patterns hold up fairly consistently over a nearly 30-year period. Inequality has thus risen quite dramatically *within* as well as between education groups over this time period.

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<sup>8</sup>The same value is shown in Table 3b for the men in the 99<sup>th</sup> percentiles of college graduates and those with advanced degrees, since in the CPS both of these values are affected by the top-coding issue described earlier.

*Causes of these Trends*

What labor market developments might explain these trends in relative outcomes? A lengthy literature by labor economists now exists on the causes of these trends, though most of it does not cover the completion of the last full cycle in 2007 and the beginning of the Great Recession after that.

Generally, labor economists have focused on both labor market and institutional forces, and there has been some debate over the extent to which observed outcomes are accounted for by each; more mainstream economists (e.g., Katz and Autor, 1998, Autor et al., 2008) have stressed the former and “revisionists” (e.g., Card and Dinardo, 2002, 2007; Bernstein, 2008) the latter.

The mainstream economists mostly argue that relative labor demand—i.e., labor demand relative to supply—has shifted away from less-educated workers, especially those working in traditionally male-dominated industries (like manufacturing), and towards highly skilled workers in newer (service) industries. On the demand side, they mostly attribute these developments to skill-biased technical change (e.g., Berman et al., 1994; Autor et al., 1998, 2003; Levy and Murnane, 2004), in which the microcomputer revolution has enabled employers to replace well-paid unskilled workers doing routine work in production and clerical while they demand more workers performing analytical functions. Large increases in inequality within educational categories, including those with college and advanced degrees, might also be attributable to these forces (Lemieux, 2006).

Recently, some of these writers (Autor et al., 2006; Autor, 2010) have also noted a trend towards labor market “polarization” since the 1990s, in which the demand for low-wage service workers performing nonroutine social tasks has also increased relative to demand in the middle of the pay distribution. Also, the forces of trade and globalization earlier on were generally considered weaker contributors to the shifts in relative demand towards skilled workers (e.g., Freeman, 1995; Feenstra and Hanson, 1998); but the rise of foreign offshoring of services in the past decade and the growing labor market integration of Eastern Europe, China, and India into the global economy have led some

economists (Freeman, 2007a; Blinder, 2007; Spence, 2011) to view globalization as a much more potent force in the past decade and into the future.<sup>9</sup>

And the shift of demand from routine production labor to nonroutine professional and service labor is widely seen as one that benefits women relative to men (Blau and Kahn, 2000). Improvements in the relative earnings of women likely reflect other forces as well, including declining discrimination (at least partly attributable to government antidiscrimination policy) and the growing education and experience among female workers (Blau and Kahn, 2006).<sup>10</sup> The fact that both employment and earnings have declined for less-educated men (Juhn, 1992) and risen for women (especially the more-educated) reinforces the view that relative demand shifts have been an important part of this story.

But the shift in relative demand towards the more-educated also appears to be at least partly driven by lagging growth in the supply of more-educated workers (Katz and Murphy, 1992; Goldin and Katz, 2008). Indeed, the strong increases in the supply of skilled labor in the United States over much of the 20<sup>th</sup> century seem to have stalled in the past three decades, thus contributing to a shortfall in such skills relative to the growing demand for them. And, while the growth of skill demand appears to have decelerated in the past few decades (relative to the 1980s), the growth of its supply has decelerated as well, contributing to ongoing and even rising labor market inequality (Goldin and Katz, *op. cit.*). The fact that education and “achievement” gaps between those from higher- and lower-income families have grown over time also suggests declining opportunity for social mobility for the children of the latter over time and across generations, on top of rising inequality at any point in time (Duncan and Murnane, 2011).

Finally, the “revisionists” noted above continue to argue that the exact pattern and timing of growing inequality is not fully explained by trends in labor supply and demand. Instead, they emphasize institutional factors such as declining real values of minimum wages (Lee, 1999) and weakening labor

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<sup>9</sup>These views have been disputed by Bhagwati (2010) and Lawrence (2010), among others.

<sup>10</sup>To the extent that gender gaps in earnings continue to exist, these seem to be at least partly associated with losses of experience and earnings growth associated with motherhood (Waldfogel, 1998) and perhaps to the persistence of “glass ceiling” effects for professional and managerial women (Albrecht et al., 2003).

unions (Card et al., 2003; Freeman, 2007). Also, the enormous growth of earnings among the very highest-paid earners, along with specific analyses of trends in executive compensation (Bebchuk and Fried, 2004) and financial market bonuses (Roubini and Mihm, 2010) suggest peculiarities in the functioning of these specific markets that have helped dramatically raise inequality in the labor market overall, especially in the past decade. In many cases, these pay increases do not reflect high productivity or efficient market functioning, and may even impede performance and productivity by creating perverse incentives for excess risk-taking and instability.<sup>11</sup>

In our view, there is some merit to all of these views, which should be viewed as complementary rather than mutually exclusive. There is no doubt that the powerful market forces of technological change and globalization have changed the ways labor markets function, and perhaps have contributed to a general stagnation of labor market outcomes since 2000. The need to improve our educational outcomes in response to these trends, especially among lower-income Americans, remains very strong. Furthermore, the forces of technology and globalization have likely made labor markets more competitive, making it harder for traditional institutions like minimum wages and institutions to raise wages among the less-skilled without causing job loss.<sup>12</sup> On the other hand, some labor markets remain highly imperfect, and institutions and policies continue to play important roles, as we argue in the Conclusion below.

### *Demographic and Regional Breakdowns*

Besides gender, education, and place in the earnings distribution, what trends do we find in employment outcomes for workers along some other demographic or geographic breakdowns? In Table 4

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<sup>11</sup>See also Levy and Temin (2007). Financial market bonuses, in particular, might reflect market failures such as asymmetric information between buyers and sellers of financial products, a lack of transparency that leads to underpricing of risk, and moral hazard among financial managers (especially if they feel their banks are “too big to fail” and the risks of their actions are borne by the public), according to Roubini and Mihm.

<sup>12</sup>Barry Hirsch (2008) argues that deregulation and imports made product markets more competitive in the past few decades, making it harder for unions to raise worker compensation levels absent offsetting increases in their productivity.

**Table 4**  
**Changes in Median Hourly Wages and Median Annual Earnings**  
**By Age, Race and Region**  
**1979–1989, 1989–2000, 2000–2007**

Category	Median Hourly Wages			Median Annual Earnings		
	1979–1989	1989–2000	2000–2007	1979–1989	1989–2000	2000–2007
	(Cumulative Annual Growth Rate)			(Cumulative Annual Growth Rate)		
<b>By Age Group:</b>						
16–34	-0.14%	0.72%	0.21%	0.39%	0.88%	-0.16%
35–54	0.27	0.92	0.70	0.65	0.97	0.22
55–69	-0.01	1.33	1.48	0.23	1.42	1.40
<b>By Race:</b>						
White	0.44%	1.34%	0.76%	0.90%	1.77%	0.29%
Black	-0.01	1.23	0.63	1.36	1.50	0.50
Hispanic	-0.42	0.70	0.84	-0.17	1.06	1.03
<b>By Census Region:</b>						
Northwest	1.14%	0.89%	0.69%	1.52%	1.30%	-0.11%
Midwest	-0.35	1.44	0.09	-0.01	1.64	-0.41
South	0.15	1.41	0.73	0.75	1.54	0.39
West	0.24	0.72	0.76	0.70	1.07	0.98

**Source:** Current Population Survey, Outgoing Rotation Groups and Annual Social and Economic Supplement.

**Notes:** The sample is restricted to ages 16–69. It excludes agriculture and the military. It also excludes full-time students and self-employed individuals.



we present changes in median hourly wages and annual earnings for each of the three time periods by age group, race, and region. Since we include workers aged 16 to 69 in our sample (but exclude full-time students and the self-employed), it is possible that some changes in observed outcomes over time are driven by changes in sample composition associated with rising school enrollments among the young and lower retirement rates among older workers.<sup>13</sup>

The results show uneven trends across all of these dimensions. Specifically:

- The youngest cohort (aged 16–34) experienced the least wage and earnings growth, with modest real wage declines in 1979–1989 and earnings declines since 2000, while older workers (ages 55–69) experienced the strongest gains after 1989;
- Wage gains of blacks and Hispanics lag behind those of whites in most periods, while annual earnings gains are more mixed; and
- Residents of the Midwest experienced flat or declining real earnings except during the 1989–2000 years, when they did relatively well.

Combining these results, we see once again that young and less-educated men did poorly in the past three decades, but this is especially true of young African American men in industrial regions. Indeed, the employment rates of young and less-educated black men have consistently fallen over time (Holzer et al., 2005), and are associated with rising rates of incarceration as well as unwed fatherhood. Faced with falling demand for their services, many young and less-educated black men seem to have “disconnected” from the labor market, and from mainstream behaviors and institutions, altogether (Holzer, 2009). In contrast, employment rates remain high among Hispanic and especially immigrant men, who remain hopeful about future improvements for their children, even if their real wages now lag behind those of native-born workers (Card, 2005).

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<sup>13</sup>If both part-time and full-time enrollment rates are rising, then the inclusion of part-time students and exclusion of full-time students both suggest lower rates of employment or hours of work for those groups with rising enrollment, who are likely stronger in academic ability than those who continue to work full-time. This potentially could generate some downward trends in labor market outcomes among younger and older workers. On the other hand, evidence in Holzer et al. (2005) suggests these compositional effects account for little of the employment trends observed over time for young men. Declining rates of retirement can also lead to rising employment among the elderly, and even rising wages if the most able workers are those who are working longer.

And the less-educated young women in these groups have made some progress, in terms of employment rates as well as real wages, as a result of both labor market and policy changes. Specifically, the “push” of welfare reform in the 1990s and the “pull” of a strong service economy plus supports for young working mothers (like child care subsidies and expansions of the EITC) have generated some employment gains for these groups, despite their low levels of skill (Blank, 2002). Education levels are also rising more rapidly for young women than young men in all race/gender groups in the United States, which suggests relatively more positive trends for them in the future as well. On the other hand, the persistence of “achievement gaps” between racial and income groups in the United States, along with continuing discrimination and other forms of market “mismatch,” cause earnings gaps between whites and minorities to persist over time as well.<sup>14</sup>

Finally, the relative improvements in labor market outcomes among older workers are quite noteworthy as well. The long-term decline in labor market participation of older workers has already begun to be reversed (Munnell, 2007), and retirement ages will no doubt continue to rise over the coming years for a variety of reasons, especially among more-educated workers.<sup>15</sup> But improvements in their relative wage and earnings over time also suggest that older workers who choose to work longer might find a labor market that is at least somewhat hospitable, with shifting demand by employers accommodating the rising supplies of older workers.

Overall, then, the previous tables have indicated that males, less-educated, and younger or minority workers have lost ground relative to others in the labor market in recent years. Do these individual results hold up when controlling for other factors, and which changes are statistically significant in our data? The Appendix presents tables with results from regressions for both hourly and

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<sup>14</sup>For evidence on recent trends in the black-white achievement gap, see Magnuson and Waldfogel (2008). Some evidence of growing achievement gaps over time across family income groups appears in Reardon (2011).

<sup>15</sup>Rising retirement ages and work effort among the elderly likely reflect improving health and lack of sufficient assets to finance consumption during retirement on the “supply side” of the labor market, and perhaps growing demand for experienced workers or declining discrimination on the “demand side.”

annual earnings. The regressions have been estimated using Ordinary Least Squares (OLS) for the effects on mean wages and earnings, as well as using quantile regressions for the effects on medians. (Since the OLS and quantile regressions presented very similar results, only the OLS estimates are reported here, though the quantile results are available from the authors.) Separate regressions have been estimated for each of the four peak years we've analyzed—1979, 1989, 2000, and 2007. Regressors in each equation include variables for gender, race, education age, and region.

The regression results largely confirm what we have seen in the descriptive tables. While hourly wages have improved in relative terms for females, they have mostly declined for less-educated workers and minorities across these years. Gaps across age groups are relatively constant, but they widen in the 2000–2007 period. Midwestern workers lose ground relative to the Northeast, especially after 2000.

And, comparing results on annual earnings to those on hourly wages, we find similar patterns of changes but sometimes larger magnitudes of differences and changes over time, reflecting the generally positive correlations between levels and changes in wages and employment. Thus, relative annual earnings gains by women are even larger than in hourly wages; the earnings gaps between high school graduates and dropouts narrow over time (as the latter have gained more employment) but they widen between high school and college graduates (as well as those with advanced degrees); and they narrow quite substantially between younger and older workers until 2000 but widen somewhat after that.

#### *Outcomes by Occupation and Industry*

The results so far clearly suggest that demand has shifted away from less-educated and/or male workers towards more-educated and/or female workers in the economy. What does this actually mean, in terms of jobs and the economic sectors into which workers are hired? A clearer picture of the demand side of the labor market emerges from data on the distributions of employment across occupations and industries. Tables 5a and 5b present these data respectively for 1979, 1989, 2000, and 2007 at the broadest (1-digit) levels.

**Table 5a**  
**Distribution of Employment (%)**  
**By Occupation**  
**1979, 1989, 2000, 2007**

Occupation Group	Distribution of Employment			
	1979	1989	2000	2007
	(Percent)			
Professional	11.78%	13.12%	16.03%	17.57%
Managerial	10.50	12.09	14.34	13.37
Technical	2.83	3.50	3.66	3.92
Clerical	18.49	17.31	14.97	15.00
Sales	7.65	10.32	10.54	10.18
Crafts	8.41	8.37	7.96	8.14
Operators	21.27	16.19	13.56	11.85
Laborers	4.51	4.34	4.24	3.55
Service	12.47	13.01	13.09	14.75

**Source:** Current Population Survey, Outgoing Rotation Groups.

**Notes:** The sample is restricted to ages 16–69, and excludes full-time students and self-employed individuals.

**Table 5b**  
**Distribution of Employment (%)**  
**By Industry**  
**1979, 1989, 2000, 2007**

Industry Group	Distribution of Employment			
	1979	1989	2000	2007
	(Percent)			
Mining	0.99%	0.67%	0.44%	0.57%
Construction	5.79	5.84	6.20	7.22
Manufacturing, Non-durable	11.70	9.84	7.57	5.30
Manufacturing, Durable	14.17	11.06	9.09	7.14
Transportation, Communications and Utilities	7.25	7.67	7.90	8.24
Wholesale Trade	3.84	3.93	4.10	3.16
Retail Trade	14.79	15.03	15.02	10.82
Finance, Insurance, Real Estate	6.09	6.98	6.54	6.80
Health Services	7.51	8.32	9.34	10.90
Educational Services	8.68	8.39	8.92	9.67
Other Services	11.20	15.03	18.14	23.96
Public Administration	6.06	5.58	5.14	5.39

**Source:** Current Population Survey, Outgoing Rotation Groups.

**Notes:** The sample is restricted to ages 16–69, and excludes full-time students and self-employed individuals.

The occupational data in Table 5a show rising demand in the professional and managerial occupations, especially during the period 1989–2000. Employment in the low-wage service sector grows most rapidly in the period 2000–2007. Employment declines quite dramatically for equipment operators over the entire period, with their employment shares dropping from over 20 percent to under 12 percent; and clerical employment drops as well, especially during the 1989–2000 period during which secretaries are largely being replaced by personal computers.

All of these findings are, of course, consistent with the “polarization” hypothesis that has been advanced by David Autor and his various coauthors and that we have noted earlier.<sup>16</sup> In that view, routine work in middle-skill or middle-paying jobs that existed as of 1980 have been largely replaced by computerized technology, while demand for nonroutine work at the high (professional/managerial) and low (service) ends of the labor market has expanded.

On the other hand, other parts of the middle of the labor market have maintained their relative shares or even grown. For instance, technical jobs have risen as a share of the market, as did sales jobs in the 1979–1989 period; and the share of the market accounted for by crafts has remained largely constant. Indeed, the middle-skill occupations (technical, clerical, sales, crafts, and operators jobs) accounted for 59 percent of jobs in 1979 and 49 percent in 2007; the widespread notion that the middle of the job market is completely disappearing is clearly not true. Of the jobs that remain in the middle, a higher share likely require some kind of postsecondary training or certification than before, and tasks are far less likely routine than previously; but fairly well-paying jobs remain in strong demand for workers in these occupations.<sup>17</sup>

Similarly, Table 5b shows a large decline in employment in manufacturing, both durable and non-durable. Indeed, the per-year declines appear largest in the period 2000–2007, as imports from China

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<sup>16</sup>See, for instance, Autor et al. (2008) and Autor (2010).

<sup>17</sup>See Holzer and Lerman (2007) as well as Holzer (2010).

began to grow quite dramatically.<sup>18</sup> The steep declines in manufacturing (and operator) employment are also consistent with the weak labor market performance of the Midwest region observed in the previous table, as (durable) manufacturing jobs were heavily concentrated in that region historically.

In contrast, strong employment growth is observed in health and other services. While other services contain many jobs at the high (professional) and low (service) ends of the skill spectrum, the health services also contain a strong contingent of middle-skill jobs for technicians, medical assistants, and nurses below the level of registered nurse (or RN). Furthermore, there has been quite notable growth in construction, which also employs large numbers of workers in craft occupations. At least some of this growth clearly predates the “housing bubble” period of 2000–2005, and represents the long-term trend to which the labor market will likely return after we recover from the Great Recession (during which construction employment declined precipitously).<sup>19</sup>

All of these results are very consistent with data on job quality, worker skill, and industry that appears in Holzer et al. (2011). In that analysis, longitudinal data on both employers and workers enable the authors to estimate separate measures of job and worker quality, based on firm and worker “fixed effects.”<sup>20</sup> The results show that “good jobs” are not disappearing from the U.S. labor market over the longer term. But they are much less likely than before to be found in the manufacturing sector, and instead they increasingly appear in construction, health care, retail trade, and professional services. While these good jobs are largely available to workers without BA degrees in all but the last of these sectors,

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<sup>18</sup>Before the current decade, most economists had attributed employment declines in manufacturing much more to technological advances than to growing levels of imports, since the share of American-made products in world output had not declined nearly as much as had employment in manufacturing industries. But the rise of Chinese imports of manufacturing products to the U.S. since 2000 seems to have somewhat changed this view (Krugman and Wells, 2009). Houseman et al. (2010) also argue that output and productivity growth in U.S. manufacturing has been overstated due to various statistical biases.

<sup>19</sup>For instance, construction employment levels reached roughly 7 million workers in 2000, before the housing bubble really became inflated, before falling to a level of about 5.5 million workers in 2010.

<sup>20</sup>Holzer and his coauthors use micro data from the Longitudinal Employer Household Dynamics (LEHD) data, based on unemployment insurance (UI) earnings records of states that are matched to various surveys by the U.S. Census Bureau. Since both workers and firms are identified in the UI data, which are longitudinal, separate “worker effects” and “firm effects” can be calculated for each that measure worker and job quality respectively.

they require a higher skill set than in earlier years. Accordingly, a higher correlation between worker skills and job quality is observed in the post-2000 period than in earlier years, implying that strong basic skills and postsecondary certifications are more likely to be prerequisites for employment in good-paying jobs than they were in the past.

B. Business Cycle Effects: The Great Recession v. Others

The analysis of secular trends in the labor market over the last three decades focuses on cyclical peaks only, and thus abstracts from the issue of recessions. To analyze these in greater detail—and especially the effects of the Great Recession of 2008 and beyond—we compare labor market outcomes in cyclical peaks and troughs for all recessions that occurred in the last three decades.

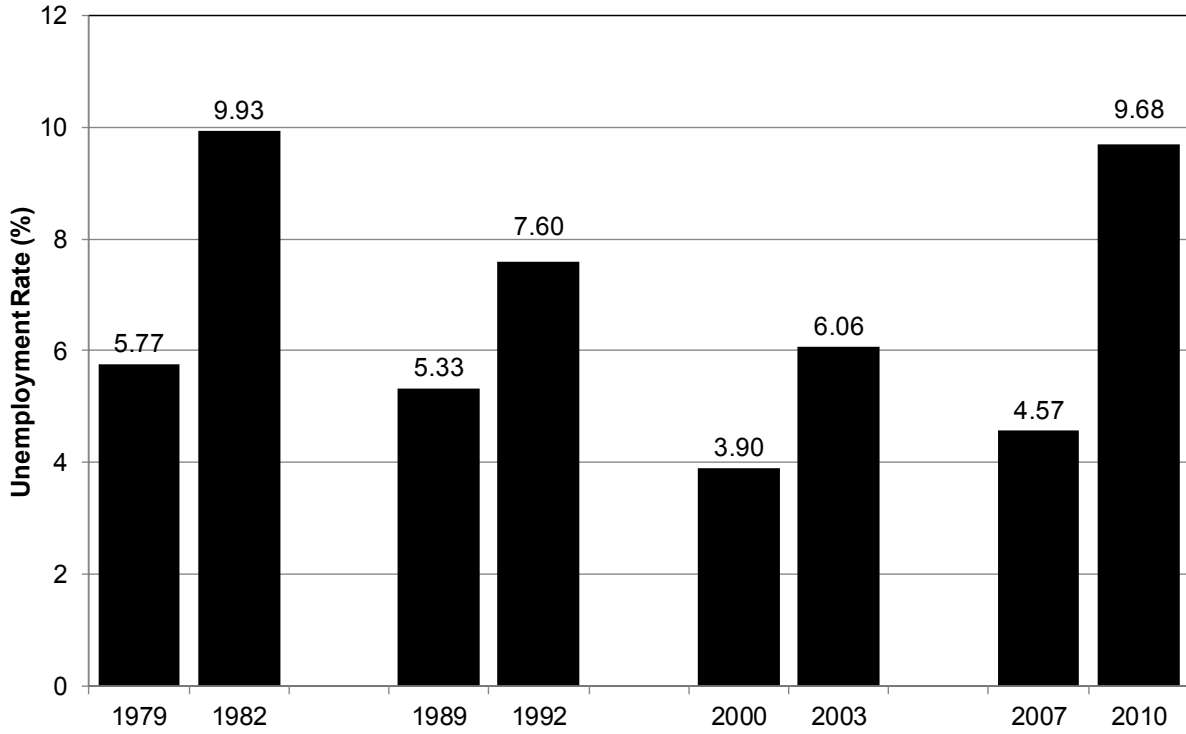
Thus, we compare labor market changes during the periods 1979–1982, 1989–1992, 2000–2003, and 2007–2010. Figure 2a presents peak-to-trough changes in aggregate unemployment rates for these four downturns, while Figure 2b presents them for average unemployment durations only for the latter two periods (which are the only ones during which duration data are available from the CPS). As is well known, average unemployment rates increased the most during the relatively severe recessions of 1979–1982 and 2007–2010 and less during the milder ones in the intervening years. While aggregate (monthly) unemployment rose to its highest level of nearly 11 percent in 1982, the peak-to-trough increase was largest during the Great Recession of 2007–2010.

And the increase in the duration of unemployment spells in the current downturn has been huge. Mean durations rose by half in the 2000–2003 recession (from about 14 to 21 weeks) but they have nearly doubled in the Great Recession (from 18 to 35 weeks), after a secular increase in durations between 2000 and 2007.

More detailed data on unemployment rates and durations, as well as how they have changed over time, appear in Tables 6 and 7.

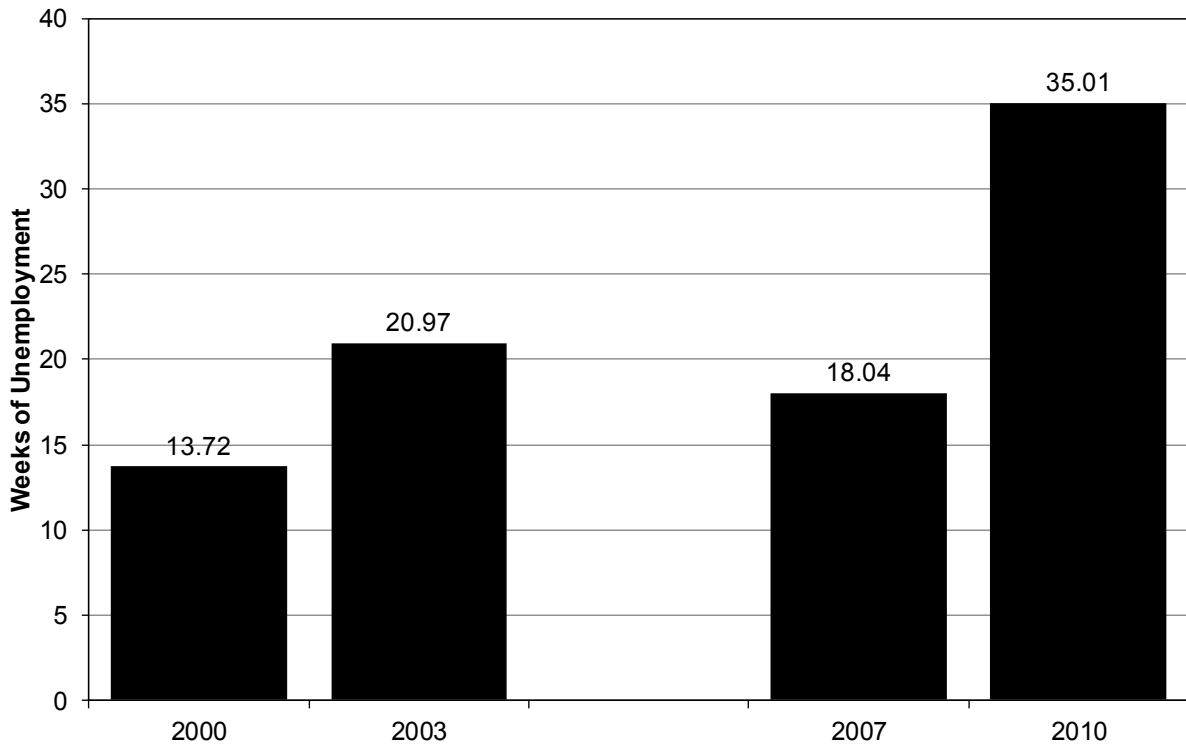
Table 6 presents unemployment rates in 2007 by age, education group, region, race, and gender, so as to give us a sense of unemployment differentials across groups that persist even in tight labor

**Figure 2a:  
Unemployment Rates, 1979–2010**



Source: CPS, Outgoing Rotation Groups.

**Figure 2b:  
Mean Unemployment Durations, 2000–2010**



Source: CPS, Outgoing Rotation Groups.



**Table 6**  
**Unemployment Measures**  
**By Gender, Education, Race and Census Region**  
**2007**

Category	Unemployment Rate	Mean Duration of Unemployment
	2007 (Percent)	2007 (Weeks)
All	4.57%	18.0
<b>By Gender:</b>		
Men	4.69%	18.9
Women	4.44	17.1
<b>By Age:</b>		
16–34	6.56%	16.2
35–54	3.47	19.2
55–69	3.45	22.2
<b>By Education:</b>		
Less than High School	9.98%	18.1
High School	5.56	18.2
Some College	4.30	17.3
College	2.43	19.1
Advanced Degree	2.03	17.9
<b>By Race:</b>		
White	3.87%	16.7
Black	7.87	23.2
Hispanic	5.26	15.1
<b>By Region:</b>		
Northeast	4.42%	19.5
Midwest	5.12	19.8
South	4.19	17.1
West	4.73	16.3

**Source:** Current Population Survey, Outgoing Rotation Groups.

**Notes:** The sample is restricted to ages 16–69. It excludes agriculture and the military. It also excludes full-time students and self-employed individuals

markets. Table 7 then shows how unemployment rates, durations, and the percentages of the unemployed with long spells (i.e., over 6 months) have changed for these groups over each of the last four downturns (unemployment rates) or the last two (durations and percentages with long-term unemployment).

The results in Table 6 show high unemployment rates among blacks, less-educated younger, and Midwestern workers (relative to those of whites, the more-educated, older workers, and those of other regions), even in good times. And Table 7 shows that virtually all of these gaps widen during downturns, especially severe ones like 1979–1982 and 2007–2010. In particular, during the Great Recession we have seen unprecedented increases in unemployment rates among men, less-educated workers, young workers, and minorities (with Hispanics as well as blacks being particularly hard hit this time).<sup>21</sup>

The patterns of unemployment increases in the Great Recession are thus not dramatically different than those observed in earlier downturns, though their magnitudes are much more serious. Furthermore, the groups hard hit during the downturn are, for the most part, those who have suffered secular relative declines in employment and earnings outcomes, as observed in the analysis above. These groups include less-educated and/or minority men, and (more recently) younger workers. Thus, the Great Recession exacerbates labor market difficulties that these groups have already experienced, certainly in the short term and perhaps in the longer term as well.

Finally, we note in Table 7 that increases in unemployment durations and in the percentages of the unemployed suffering long spells are somewhat more evenly spread across these groups. Thus, to the extent that long-term unemployment will generate problems for workers who seek to reenter the labor market with more obsolete skills and who perhaps are stigmatized by their long unemployment spells, these difficulties might be experienced across a fairly broad group of workers.<sup>22</sup>

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<sup>21</sup>The precipitous declines in construction and manufacturing employment that have occurred since 2007 appear to have particularly lowered employment rates among Hispanic men, more than in previous downturns.

<sup>22</sup>See Dai and Loungani (2010) for a review of the evidence on how long-term unemployment can reduce reemployment rates among workers.

**Table 7**  
**Peak-to-Trough Change in Unemployment Measures**  
**By Gender, Education, Demographic Group and Census Region**  
**1979–1982, 1989–1992, 2000–2003, 2007–2010**

Category	Unemployment Rate				Mean Duration of Unemployment		Unemployment Duration Over 6 Months	
	1979–1982	1989–1992	2000–2003	2007–2010	2000–2003	2007–2010	2000–2003	2007–2010
	(Percentage Points)				(Weeks)		(% of Unemployed Individuals)	
All	4.16%	2.27%	2.16%	5.12%	7.3	17.0	12.36%	26.89%
<b>By Gender:</b>								
Men	5.34%	2.91%	2.65%	6.00%	7.4	16.6	13.69%	26.85%
Women	2.73	1.57	1.64	4.18	6.9	17.3	10.65	26.77
<b>By Education:</b>								
High School or Less	5.69%	3.03%	2.50%	7.29%	6.0	17.1	10.62%	26.69%
Bachelor's Degree or More	1.03	1.01	1.65	2.87	9.0	15.3	14.46	25.41
<b>By Age Group:</b>								
16–34	5.20%	2.56%	2.69%	6.18%	5.8	14.3	9.63%	22.70%
35–54	3.26	2.18	1.92	4.65	8.4	18.3	14.51	29.22
55–69	2.51	2.38	1.90	4.36	7.7	20.4	14.02	32.00
<b>By Race:</b>								
White	3.65%	2.10%	1.89%	4.31%	8.1	17.6	13.56%	28.08%
Black	6.79	2.68	3.22	7.76	7.9	15.8	14.30	24.23
Hispanic	5.78	2.85	1.87	6.72	2.4	17.4	3.71	28.13
<b>By Region:</b>								
Northeast	2.51%	3.79%	2.26%	4.56%	5.7	16.6	11.92%	26.97%
Midwest	6.23	1.27	2.21	4.49	8.2	15.8	13.47	23.83
South	3.76	1.69	2.15	5.15	6.8	16.9	11.04	27.00
West	4.02	2.88	2.04	6.17	8.1	18.9	13.36	30.09

**Source:** Current Population Survey, Outgoing Rotation Groups.

**Notes:** The sample is restricted to ages 16–69. It excludes agriculture and the military. It also excludes full-time students and self-employed individuals.

And it is important to remember that recessions, especially very serious ones, generally limit earnings and its growth, even among those who are working (Hines et al., 2001). In particular, young workers now entering the job market are likely to be “scarred” by lower earnings as well as lower employment for years to come (Kahn, 2010). And other impacts on worker health and the educational achievement of the children of unemployed workers will likely be negative as well (von Wachter, 2010).

Before concluding this section, we turn to a controversy that has been brewing recently: the extent to which the recent increase in unemployment might be *structural* rather than *cyclical*. In the latter case, high rates of unemployment exist primarily because of insufficient numbers of available jobs relative to workers; but, in the former case, unemployment can be exacerbated by a *mismatch* between the characteristics of unemployed workers and those sought by employers with vacant jobs. Mismatches can exist in terms of the skills sought by employers (whether general or sector-specific) versus those held by jobseekers, which become more likely if jobs permanently disappear during a downturn and then reappear in different sectors than before. Mismatches can also exist across geographic areas, if jobs are growing in areas different from where unemployed workers live.

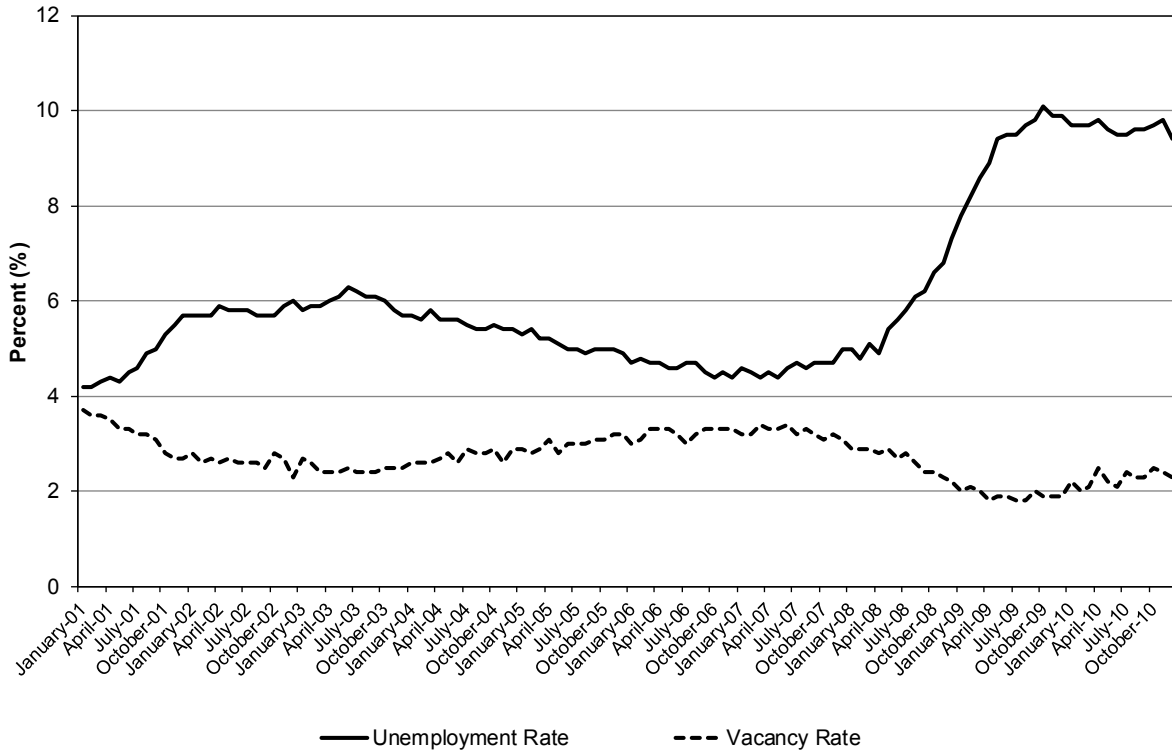
One way to measure structural versus cyclical unemployment is to compare unemployment and job vacancy rates. Cyclical movements should show only inverse movements between job vacancy and unemployment rates; while structural and mismatch problems might be reflected in rising job vacancy rates for any given level of unemployment.<sup>23</sup>

Figure 3 plots quarterly movements in aggregate job vacancy and unemployment rates over the entire period from 2001–2010. Mostly, the plot shows inverse movements between the two rates, suggesting a dominance of cyclical swings over time. And vacancy rates have clearly fallen during the

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<sup>23</sup>Movements along the “Beveridge Curve” that plots aggregate unemployment and vacancy rates measure cyclical movements in the labor market, while outward shifts in the curve suggest growing structural or frictional problems that raise the non-accelerating inflation rate of unemployment (or NAIRU). For a recent discussion that suggests such growing structural factors, see Elsby et al. (2010). A skeptical reading of this argument appears in Mishel (2010).

**Figure 3:  
National Unemployment and Job Vacancy Rates, 2001–2010**



Source: Bureau of Labor Statistics.

Great Recession as unemployment rates have risen so dramatically, suggesting that unemployment in 2008–2010 is still mostly a cyclical phenomenon.

At the same time, we note that the job vacancy rates observed in this downturn are not dramatically lower than those observed in the much shallower recession of 2000–2003. And, since early 2009, the vacancy rate has shown a distinct rise, even while unemployment remains at or near double-digit levels. The higher vacancy rates are also consistent with some recent journalistic accounts of employers having difficulty filling jobs that require some fairly specific technical skills.<sup>24</sup>

While not conclusive, these results suggest that employers might be having a somewhat more difficult time filling their vacant jobs, perhaps due to growing mismatch problems.<sup>25</sup> And, along with the rise in the numbers of the long-term unemployed, the data suggest that a return to unemployment rates below 5 percent might become even more difficult, if the slowness of employers to create new jobs becomes compounded by a growing difficulty they have in filling them over time.

## II. CONCLUSION AND POLICY IMPLICATIONS

We have analyzed wage, employment, and earnings outcomes in the U.S. labor market over the past three decades. We have analyzed secular trends in the labor market by looking at how worker outcomes have changed across the peak years of 1979, 1989, 2000, and 2007; and we have analyzed four recessions that also occurred in these years, especially the Great Recession that began at the end of 2007 and from which our job market has yet to really emerge (as of early 2011).

Our secular analysis indicates that labor market trends have been fairly uneven over time. During the period 1979–1989, improvements in employment rates allowed earnings to rise quite significantly, despite modest wage (and productivity) growth; during 1989–2000, employment continued to rise while

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<sup>24</sup>See, for instance, Uchitelle (2009) and Fletcher (2011).

<sup>25</sup>Another possibility is that lengthy spells of UI availability to workers during this downturn have limited their willingness to apply for available jobs, thereby raising job vacancy rates somewhat. See Elsby *op. cit.*

wage increases and productivity grew to raise earnings even more; while, in the period 2000–2007, employment rates fell and wages grew very modestly despite continuing high productivity growth.

In addition to the unevenness of labor market performance over time, there has been unevenness (but somewhat more consistency over time) in the relative performance of different groups in the job market. Generally, women have gained ground relative to men; while wage and earnings gaps have widened between education and earnings groups. In the 1980s, gaps grew across the entire education and earnings spectrum; in the 1990s and 2000s, earnings and employment rose somewhat more for the lowest groups relative to the middle while gains at the top decile or percentile grew the most. In some periods and by some measures, minorities lost ground relative to whites and younger workers did so relative to older ones. And residents of the Midwest region lost ground relative to those of the Northeast and other geographic areas.

The fact that employment and wage growth tend to be somewhat positively correlated across groups and over time suggests that labor demand, relative to labor supply, has shifted in major ways across these groups. Indeed, we believe that skill-biased technical change and globalization have contributed importantly to the trends we observe across education and gender groups. Our analysis of occupational and industrial patterns of employment shed more light on these developments. Growth in the highest and lowest-skill occupations exceeded that in the middle, especially for clerical workers and equipment operators; employment in manufacturing shrank dramatically while it grew in the services, especially health care. On the other hand, the widely held views that the middle of the job market is completely collapsing seem overblown; substantial demand remains in many sectors and occupational categories for workers with at least some postsecondary educational credential or training.

On the other hand, institutions (like unions) and policies continue to play important roles. Policy shifts, including antidiscrimination efforts, welfare reform, and the growth of work supports for low-income mothers (like the EITC and child care subsidies), as well as improvements in their education and experience, have all contributed to the improved status of women in the labor market. More negative trends among other groups, like less-educated African American men, reflect market forces and the

behavioral responses of these groups along with a general lack of similarly supportive policies for these low-wage workers.

Finally, our analysis of cyclical downturns over the last 30 years confirmed that the one that began at the end of 2007 constitutes, indeed, a Great Recession. Increases in unemployment rates and durations, and especially the growth of long-term unemployment, are quite dramatic. For the most part, unemployment rates have risen the most for the workers who have already lost ground on a secular basis—in other words, males, less-educated workers, minorities, and the young. And there is at least some basis for being concerned about structural factors impeding recovery—such as a rise in job vacancy rates while unemployment remains very high, and growing ranks of the long-term unemployed for whom gaining reemployment often becomes a growing challenge, at least according to the experiences of other countries in recent years.

What does the future hold for the U.S. labor market, in both the short and longer terms? And what policies are suggested by this analysis, to help those workers who have lost the most ground in the downturn and over the longer period?

Most economists expect a slow recovery from the current downturn, which is often the case after a financial “bubble” bursts. Unemployment remained above 9 percent for all of 2010 and will likely remain high for the next several years, declining only modestly each year.<sup>26</sup> For example, in January 2011, the Congressional budget office forecast that unemployment would still be above 5 percent for most of 2015. If anything, the slower than anticipated growth in output and employment we’ve had since then suggests that these projections might be too optimistic. Previous research shows that certain groups of workers—especially the young who enter the labor market during such inauspicious times and permanent job losers who suffer long-term unemployment—are likely to be “scarred” by their experiences and to suffer from lower earnings for many years, even after the labor market recovers.

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<sup>26</sup>See Reinhart and Rogoff (2009) for a discussion of how recessions brought on by financial market turmoil generate persistent unemployment over time. Forecasts of unemployment rates over the next decade have been generated by the Congressional Budget Office (2010).



And, when such recovery occurs, to what kind of labor market will we return? Are we more likely to revert to the economy of the 1990s, with its widely shared employment and earnings growth, or the 2000s, when the growth in demand for many kinds of labor was more limited, and when employment and earnings growth were limited and uneven as well?

We have no way to forecast future trends; but, unfortunately, the 1990s now look more like the anomalous period, while the period 2000–2007 more likely reflects the secular trends to which we will return. For instance, we have no reason to believe that the forces apparently generating limited labor demand for U.S. workers in the last decade—including technological changes and growing globalization—will have very different effects in the coming decade.<sup>27</sup> Productivity growth will hopefully remain strong, though that is not certain; and, even if it does, much of it may not show up in many workers' paychecks.

Other drains on earnings growth, such as rising health care costs, show little sign of abatement, while the future trends in executive and financial manager compensation (which shifted so much compensation to the top 10 and 1 percent of workers) remain quite unclear. Also, much of the employment growth that we observed in the past few decades was concentrated in sectors such as health care, financial services, and construction, and future employment growth there is now more uncertain; and a decline over time in business startups in the United States might continue and limit new hiring and employment growth in the United States more broadly (McKinsey Global Institute, 2011; Spence, 2011).

With such an uncertain forecast for both the near-term and longer-term, how should labor market policy respond? At a minimum, expanded safety net provisions (including Unemployment Insurance, Food Stamps, and Medicaid) should remain in effect while the aggregate unemployment rate remains so high. Fears that such extensions will discourage job search and reemployment might make sense in an

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<sup>27</sup>See Freeman (2007a) and Blinder (2007) for pessimistic accounts of how global forces will affect workers in the coming decade.

economy with tight labor markets and significant job availability, but not in a market with so much slack.<sup>28</sup>

Reemployment services that better help match these workers to existing jobs and provide them with necessary assistance with job search or skills training should be considered as well, on top of other efforts to spur job creation in the short term. The latter, which could include payroll tax cuts targeted towards employers who expand their payrolls, as well as direct government expenditures on job creation (e.g., for infrastructure or state and local employees), could also include public service employment programs targeted towards disadvantaged groups with the highest unemployment rates.

Over the longer term, and even in a generally weak labor market, there remains a strong case for improving the educational outcomes of workers. These outcomes should include certificates and degrees at two-year schools (i.e., community and technical colleges) as well as those at four-year colleges and universities. Though earnings growth in the 2000s was modest even for college graduates, the enormous and sometimes growing gaps in earnings between more- and less-educated workers suggest great scope for improving earnings and for dampening inequality if more of them could have such credentials. And this means not only improving the access of many Americans to the full range of colleges, but also raising rates of completion of degrees and certificates there.<sup>29</sup>

Of course, what happens in the labor markets depends not only on the quality of workers and their skills, but also on the quality of jobs created by employers. As we noted earlier, and contrary to many popular accounts, the U.S. labor market continues to create many millions of high-quality jobs (Holzer et

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<sup>28</sup>Recent evidence suggesting that Unemployment Insurance only modestly affects job search and unemployment rates can be found in Card et al. (2007).

<sup>29</sup>See Goldin and Katz op. cit. for a discussion of how rising rates of college completion might help dampen inequality, and Haskins et al. (2009) for a discussion of how college completion rates can be improved, especially among lower-to-middle income Americans.

al., 2011); but, in contrast to jobs in previous generations, these jobs increasingly require workers who have good basic skills and educational credentials.<sup>30</sup>

From a policy point of view, it is therefore important that the skills obtained by workers match the areas of the labor market where demand is strongest, and that we give them the credentials sought by employers in well-paying jobs. Potential workers need more career guidance from workforce development systems on where labor market demand is strong, and employers need to be engaged in the process of generating workers' skills to fill their available jobs, through "sectoral" training programs, apprenticeships, and other kinds of incumbent worker training.<sup>31</sup> Even high-quality career and technical education in high schools, such as the Career Academies (which have provided strong labor market benefits to at-risk young men), should be strengthened as well.<sup>32</sup>

Also, we need to encourage the creation of more good-paying jobs by employers, as well as the skills of workers to fill them. Historically, we have used legal and institutional methods like higher minimum wages and collective bargaining to do so. While we continue to believe these institutions play important roles in the labor market, we also believe that their ability to raise private sector wages is considerably lower than in earlier eras.<sup>33</sup> Thus, efforts to induce employers to create more good-paying

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<sup>30</sup>In this study, the quality of a job is distinguished from that of workers by whether or not the firm pays a wage premium above what the worker usually obtains in others jobs in the labor market. With longitudinal earnings data over many years for both workers and firms, the authors were able to estimate "worker effects" and "firm effects" where the latter reflect job quality.

<sup>31</sup>See Furchtgott-Roth et al. (2010) for a discussion of how improvements in the attainment of degrees and certificates, especially at community colleges, can improve economic mobility for disadvantaged Americans, and also on the need to make sure that such certifications are linked to trends in labor market demand. See Maguire et al. (2010) for recent evidence on sectoral training programs and Kemple (2008) for evidence on the success of Career Academies. Lerman (2007) also discusses the potential of career education to improve labor market outcomes for disadvantaged youth.

<sup>32</sup>See Lerman (2007) and Kemple (2008).

<sup>33</sup>The fractions of private sector workers covered either by federal minimum wages or collective bargaining are both very low; for the latter, less than 7 percent of workers are now covered, while the fraction covered by the former depends on the statutory minimum relative to the median market wage at any time but is always below 10 percent and often below 5 percent. In addition, when labor and product markets become more competitive, as they no doubt have in recent decades, the ability of these institutions to raise wages without creating job losses diminishes as well, unless the higher wages are offset by higher worker productivity.

jobs might have to rely more on “carrots,” such as subsidies and technical assistance related to broader economic development efforts, and less on “sticks” than in the past.<sup>34</sup>

And, for those workers whose education and skills remain limited and who face only the prospects of employment at low wages, other forms of income supplementation may need to be considered. For instance, the Earned Income Tax Credit (EITC) from the federal government currently enhances the earnings of low-income parents with two or more children by as much as 40 percent; but childless adults and noncustodial parents paying child support benefit little from the current system. These limitations mean that many less-educated (and especially minority) men, who have fared so poorly in the labor market in recent years, gain little from an important program that provides support to so many low-income mothers. Accordingly, expanding federal EITC eligibility, and enhancing payments to these currently underserved groups, constitutes one way in which earnings can be supplemented and inequality reduced even in a labor market generating flat earnings growth and enormous gaps between the highest and lowest paid workers.<sup>35</sup>

Finally, since the enormous increases in pay at the very top of the earnings distribution do not seem to always reflect productivity or efficient markets—indeed, they often reflect the opposite—it may be time to consider other measures to limit them. These might include more stringent regulations on compensation in the financial markets as well as changes in corporate governance practices that might limit exorbitant levels of executive pay.

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<sup>34</sup>See Holzer et al. (2011) for a review of such efforts, including tax credits for incumbent worker training, technical assistance for firms trying to improve worker promotion possibilities, and the like.

<sup>35</sup>See Edelman et al. (2009) for a discussion of how the Earned Income Tax Credit might be expanded to improve coverage of low-income childless adults and especially noncustodial fathers paying child support.

**Appendix Table 1a**  
**Mean Hourly Wages (Ordinary Least Squares)**

Dependent Variable →	ln (Hourly Wage)			
↓ Regressor Dummy	1979	1989	2000	2007
Female	-0.398*** (0.002)	-0.306*** (0.002)	-0.263*** (0.002)	-0.247*** (0.002)
Black	-0.050*** (0.004)	-0.084*** (0.004)	-0.084*** (0.004)	-0.106*** (0.004)
Hispanic	-0.072*** (0.005)	-0.102*** (0.005)	-0.109*** (0.004)	-0.104*** (0.004)
Other Race	-0.070*** (0.007)	-0.069*** (0.007)	-0.058*** (0.006)	-0.064*** (0.005)
High School	0.223*** (0.003)	0.206*** (0.003)	0.252*** (0.004)	0.235*** (0.004)
Some College	0.282*** (0.003)	0.350*** (0.004)	0.394*** (0.004)	0.380*** (0.005)
College	0.508*** (0.004)	0.607*** (0.004)	0.707*** (0.005)	0.704*** (0.005)
Advanced Degree	0.596*** (0.006)	0.744*** (0.006)	0.876*** (0.006)	0.894*** (0.006)
Age 35–54	0.252*** (0.002)	0.238*** (0.002)	0.228*** (0.003)	0.258*** (0.003)
Age 55–69	0.205*** (0.004)	0.186*** (0.004)	0.165*** (0.004)	0.219*** (0.004)
<b>Census Region:</b>				
Midwest	0.014*** (0.003)	-0.115*** (0.003)	-0.045*** (0.004)	-0.073*** (0.004)
South	-0.040*** (0.003)	-0.134*** (0.003)	-0.074*** (0.004)	-0.044*** (0.004)
West	0.079*** (0.003)	-0.045*** (0.004)	-0.028*** (0.004)	0.018*** (0.004)
Constant	2.469*** (0.003)	2.477*** (0.004)	2.464*** (0.005)	2.466*** (0.005)
Number of observations	165,316	162,572	147,846	162,221
R <sup>2</sup>	0.32	0.31	0.31	0.30

*Notes:* Statistically significant at the \*\*\*1 percent level.  
Heteroskedasticity-robust standard errors are in parentheses.

**Appendix Table 1b**  
**Median Hourly Wages (Quantile Regression)**

Dependent Variable →	ln (Hourly Wage)			
↓ Regressor Dummy	1979	1989	2000	2007
Female	-0.429*** (0.002)	-0.325*** (0.003)	-0.276*** (0.003)	-0.258*** (0.003)
Black	-0.056*** (0.004)	-0.093*** (0.005)	-0.086*** (0.005)	-0.110*** (0.005)
Hispanic	-0.078*** (0.006)	-0.112*** (0.006)	-0.115*** (0.005)	-0.101*** (0.005)
Other Race	-0.076*** (0.007)	-0.067*** (0.008)	-0.045*** (0.007)	-0.059*** (0.006)
High School	0.226*** (0.003)	0.231*** (0.004)	0.262*** (0.006)	0.242*** (0.006)
Some College	0.292*** (0.004)	0.389*** (0.005)	0.422*** (0.006)	0.400*** (0.006)
College	0.532*** (0.004)	0.659*** (0.005)	0.754*** (0.006)	0.739*** (0.006)
Advanced Degree	0.623*** (0.006)	0.806*** (0.006)	0.932*** (0.007)	0.934*** (0.007)
Age 35–54	0.261*** (0.003)	0.250*** (0.003)	0.245*** (0.003)	0.272*** (0.003)
Age 55–69	0.214*** (0.004)	0.212*** (0.005)	0.190*** (0.005)	0.235*** (0.004)
<b>Census Region:</b>				
Midwest	0.014*** (0.003)	-0.115*** (0.004)	-0.049*** (0.004)	-0.074*** (0.004)
South	-0.053*** (0.003)	-0.139*** (0.004)	-0.084*** (0.004)	-0.050*** (0.004)
West	0.073*** (0.004)	-0.049*** (0.004)	-0.038*** (0.004)	0.017*** (0.004)
Constant	2.477*** (0.004)	2.456*** (0.005)	2.435*** (0.006)	2.436*** (0.007)
Number of observations	165,669	162,897	148,161	162,656
Pseudo R <sup>2</sup>	0.21	0.19	0.19	0.19

*Notes:* Statistically significant at the \*\*\*1 percent level.  
Heteroskedasticity-robust standard errors are in parentheses.

**Appendix Table 2a**  
**Mean Annual Earnings (Ordinary Least Squares)**

Dependent Variable →	ln (ANNUAL EARNINGS)			
↓ Regressor Dummy	1979	1989	2000	2007
Female	-0.742*** (0.006)	-0.584*** (0.006)	-0.495*** (0.007)	-0.463*** (0.005)
Black	-0.062*** (0.012)	-0.097*** (0.011)	-0.082*** (0.012)	-0.086*** (0.009)
Hispanic	0.007 (0.012)	-0.095*** (0.011)	-0.114*** (0.010)	-0.098*** (0.008)
Other Race	-0.093*** (0.020)	-0.103*** (0.018)	-0.088*** (0.017)	-0.069*** (0.012)
High School	0.588*** (0.009)	0.358*** (0.010)	0.344*** (0.012)	0.338*** (0.011)
Some College	0.525*** (0.010)	0.528*** (0.011)	0.549*** (0.013)	0.559*** (0.011)
College	0.961*** (0.011)	0.858*** (0.012)	0.913*** (0.014)	0.913*** (0.012)
Advanced Degree	1.071*** (0.014)	1.014*** (0.014)	1.180*** (0.016)	1.203*** (0.013)
Age 35–54	0.588*** (0.006)	0.365*** (0.007)	0.353*** (0.007)	0.403*** (0.006)
Age 55–69	0.479*** (0.010)	0.191*** (0.011)	0.182*** (0.012)	0.277*** (0.009)
<b>Census Region:</b>				
Midwest	0.026*** (0.009)	-0.143*** (0.009)	-0.061*** (0.010)	-0.058*** (0.008)
South	-0.010 (0.009)	-0.146*** (0.008)	-0.049*** (0.010)	-0.022*** (0.008)
West	0.031*** (0.009)	-0.114*** (0.010)	-0.050*** (0.010)	0.006 (0.008)
Constant	9.482*** (0.011)	9.974*** (0.012)	9.866*** (0.015)	9.801*** (0.013)
Number of observations	78,665	63,893	54,391	83,322
R <sup>2</sup>	0.30	0.25	0.26	0.26

*Notes:* Statistically significant at the \*\*\*1 percent level.  
Heteroskedasticity-robust standard errors are in parentheses.

**Appendix Table 2b**  
**Median Annual Earnings (Quantile Regression)**

Dependent Variable →	ln (ANNUAL EARNINGS)			
↓ Regressor Dummy	1979	1989	2000	2007
Female	-0.771*** (0.006)	-0.546*** (0.005)	-0.446*** (0.005)	-0.416*** (0.005)
Black	-0.073*** (0.011)	-0.117*** (0.009)	-0.077*** (0.009)	-0.102*** (0.008)
Hispanic	-0.011 (0.011)	-0.133*** (0.008)	-0.122*** (0.008)	-0.131*** (0.007)
Other Race	-0.067*** (0.018)	-0.109*** (0.014)	-0.070*** (0.013)	-0.073*** (0.010)
High School	0.616*** (0.008)	0.361*** (0.008)	0.345*** (0.010)	0.334*** (0.010)
Some College	0.604*** (0.008)	0.546*** (0.008)	0.559*** (0.010)	0.554*** (0.010)
College	0.983*** (0.010)	0.841*** (0.009)	0.898*** (0.011)	0.900*** (0.011)
Advanced Degree	1.076*** (0.014)	0.981*** (0.011)	1.139*** (0.013)	1.147*** (0.012)
Age 35–54	0.550*** (0.006)	0.340*** (0.005)	0.327*** (0.006)	0.351*** (0.006)
Age 55–69	0.491*** (0.009)	0.231*** (0.008)	0.229*** (0.009)	0.267*** (0.008)
<b>Census Region:</b>				
Midwest	0.011 (0.009)	-0.141*** (0.007)	-0.061*** (0.008)	-0.077*** (0.007)
South	-0.028*** (0.008)	-0.149*** (0.007)	-0.072*** (0.008)	-0.044*** (0.007)
West	0.004 (0.008)	-0.114*** (0.007)	-0.061*** (0.008)	-0.004 (0.007)
Constant	9.631 (0.009)	10.011*** (0.009)	9.973*** (0.011)	9.949*** (0.011)
Number of observations	81,742	64,996	54,951	84,066
Pseudo R <sup>2</sup>	0.17	0.16	0.16	0.16

*Notes:* Statistically significant at the \*\*\*1 percent level.  
Heteroskedasticity-robust standard errors are in parentheses.



## References

- Albrecht, James, Anders Bjorklund, and Susan Vroman. 2003. "Is There a Glass Ceiling in Sweden?" *Journal of Labor Economics* 21(1): 145–177.
- Autor, David. 2010. *The Polarization of the Job Opportunities in the U.S. Labor Market*. Washington, DC: Center for American Progress.
- Autor, David, Lawrence Katz, and Melissa Kearney. 2008. "Trends in U.S. Wage Inequality: Revising the Revisionists." *Review of Economics and Statistics* 90(2).
- Autor, David, Lawrence Katz, and Melissa Kearney. 2007. "The Polarization of the U.S. Labor Market." *American Economic Review* 96(2).
- Autor, David, Lawrence Katz, and Alan Krueger. 1998. "Computing Inequality: Have Computers Changed the U.S. Labor Market?" *Quarterly Journal of Economics* 113(4).
- Autor, David, Frank Levy, and Richard Murnane. 2003. "The Skill Content of Recent Technological Change: An Empirical Investigation." *Quarterly Journal of Economics* 118(4).
- Bebchuk, Lucian, and Jesse Fried. 2004. *Pay Without Performance: The Unfulfilled Promise of Executive Compensation*. Cambridge, MA: Harvard University Press.
- Berman, Eli, John Bound, and Zvi Griliches. 1994. "Changes in the Demand for Skilled Labor within U.S. Manufacturing: Evidence from the Annual Survey of Manufacturers." *Quarterly Journal of Economics* 109(2).
- Bernanke, Ben. 2004. "The Great Moderation." Remarks at the Annual Meetings of the Eastern Economic Association, Washington, DC, February 20.
- Bernstein, Jared. 2008. "Comments on Structural Demand Shifts and Potential Labor Supply Responses in the New Century." In *Labor Supply in the New Century*, edited by Katharine Bradbury et al. Boston, MA: Federal Reserve Bank of Boston.
- Bhagwati, Jagdish. 2007. *In Defense of Globalization*. Oxford: Oxford University Press.
- Blau, Francine, and Lawrence Kahn, 2000. "Gender Differences in Pay." *Journal of Economic Perspectives* 14(4).
- Blau, Francine, and Lawrence Kahn. 2006. "The U.S. Gender Pay Gap in the 1990s: Slowing Convergence." *Industrial and Labor Relations Review* 60(1): 45–66.
- Blank, Rebecca. 2002. "Evaluating Welfare Reform in the United States." *Journal of Economic Literature* 40(4): 1105–1066.
- Blinder, Alan. 2007. "How Many U.S. Jobs Might Be Offshorable?" Working Paper, Princeton University.
- Borjas, George. 2007. "Immigration Policy and Human Capital." In *Reshaping the American Workforce in a Changing Economy*, edited by H. Holzer and D. Nightingale. Washington, DC: Urban Institute Press.

- Bound, John, and Richard Freeman. 1992. "What Went Wrong? The Erosion of Relative Earnings and Employment among Blacks." *Quarterly Journal of Economics* 107(1): 201–232.
- Bound, John, and Harry J. Holzer. 1993. "Industrial Structure, Skill Levels, and the Labor Market for White and Black Men." *Review of Economics and Statistics* 75(3): 387–396.
- Card, David. 2005. "Is the New Immigration Really So Bad?" *Economic Journal* 115: 300–335.
- Card, David, Raj Chetty, and Andrea Weber. 2007. "The Spike at Benefit Exhaustion: Leaving the Unemployment System or Starting a New Job?" Discussion Paper, IZA.
- Card, David, and Jonathan Dinardo. 2002. "Skill-Biased Technological Change and Rising Wage Inequality: Some Problems and Puzzles." *Journal of Labor Economics* 20(4).
- Card, David, and Jonathan Dinardo. 2007. "The Impact of Technological Change on Low-Wage Workers: A Review." In *Working and Poor: How Economic and Policy Changes are Affecting Low-Wage Workers*, edited by R. Blank, S. Danziger, and R. Schoeni. New York: Russell Sage Foundation.
- Card, David, Thomas Lemieux, and Craig Riddell. 2003. "Unionization and Wage Inequality: A Comparative Study of the U.S., UK, and Canada." Working Paper No. 9473, National Bureau of Economic Research.
- Center for Economic and Policy Research. 2010. *Extract of Current Population Survey Outgoing Rotation Group*, Version 1.5. Available at: [www.ceprdata.org](http://www.ceprdata.org).
- Congressional Budget Office. 2010. *The Budget and Economic Outlook: An Update*. Washington, DC: U.S. Government Printing Office.
- Dao, Mai, and Prakash Loungani. 2010. "The Tragedy of Unemployment." Washington, DC: International Monetary Fund.
- Duncan, Greg, and Richard Murnane, eds. 2011. *Whither Opportunity?* New York: Russell Sage Foundation.
- Edelman, Peter, Mark Greenberg, and Harry Holzer. 2009. "Expanding the EITC to Help More Low-Wage Workers." Georgetown Center on Poverty, Inequality and Public Policy, Georgetown University.
- Elsby, Michael, Bart Hobijn, and Aysegul Sahin. 2010. "The Labor Market Consequences of the Great Recession." Working Paper, National Bureau of Economic Research.
- Feenstra, Robert, and Gordon Hanson. 1998. "The Impact of Outsourcing and High-Technology Capital on the United States." *Quarterly Journal of Economics* 114(3).
- Fletcher, Michael. 2011. "Why Does Fresno Have Thousands of Job Openings – and High Unemployment?" *Washington Post*, February 2.
- Freeman, Richard. 1995. "Are Your Wages Set in Beijing?" *Journal of Economic Perspectives* 9(3).
- Freeman, Richard. 2007. *America Works: Critical Thoughts on the Exceptional U.S. Labor Market*. New York: Russell Sage Foundation.

- Freeman, Richard. 2007a. "Is a Great Labor Shortage Coming?" In *Reshaping the American Workforce in a Changing Economy*, edited by H. Holzer and D. Nightingale. Washington, DC: Urban Institute Press.
- Furchtgott-Roth, Diana, Louis Jacobson, and Christine Moker. 2009. *Strengthening Community College's Influence on Economic Mobility*. Washington, DC: Pew Trusts Economic Mobility Project.
- Goldin, Claudia, and Lawrence Katz. 2008. *The Race between Education and Technology*. Cambridge, MA: Harvard University Press.
- Haskins, Ron, Harry Holzer, and Robert Lerman. 2009. *Promoting Economic Mobility by Increasing Postsecondary Education*. Washington, DC: Pew Trusts Economic Mobility Project.
- Hines, James, Hilary Hoynes, and Alan Krueger. 2001. "Another Look at Whether a Rising Tide Lifts All Boats." In *The Roaring Nineties*, edited by A. Krueger and R. Solow. New York: Russell Sage Foundation.
- Hirsch, Barry T. 2008. "Sluggish Institutions in a Dynamic World: Can Unions and Industrial Competition Coexist?" *Journal of Economic Perspectives* 22(1): 153–176.
- Holzer, Harry. 2010. *Is the Middle of the Job Market Really Disappearing?* Washington, DC: Center for American Progress.
- Holzer, Harry J. 2009. "The Labor Market and Young Black Men: Updating Moynihan's Perspective." *Annals of the Academy of Political and Social Science*.
- Holzer, Harry J., and Marek Hlavac. 2011. *An Uneven Road and Then a Cliff: U.S. Labor Markets, 2000–10*. US2010 Policy Brief, Russell Sage Foundation.
- Holzer, Harry J., Paul Offner, and Elaine Sorensen. 2005. "Declining Employment among Young Black Men: The Role of Incarceration and Child Support." *Journal of Policy Analysis and Management* 24(2): 329–350.
- Holzer, Harry, Julia Lane, David Rosenblum, and Fredrik Andersson. 2011. *Where Are All the Good Jobs Going? What National and Local Job Quality and Dynamics Mean for U.S. Workers*. New York: Russell Sage Foundation.
- Houseman, Susan, et al. 2010. "Offshoring and the State of American Manufacturing." Research Paper, W.E. Upjohn Institute for Employment Research, Kalamazoo, MI.
- Juhn, Chinhui. 1992. "Decline of Male Labor Market Participation: The Role of Declining Market Opportunities." *Quarterly Journal of Economics* 107(1).
- Kahn, Lisa. 2010. "The Long-Term Labor Market Consequences of Graduating from College in a Bad Economy." *Labour Economics* 17(2).
- Katz, Lawrence, and Kevin Murphy. 1992. "Changes in Relative Wages, 1963–87: Supply and Demand Factors." *Quarterly Journal of Economics* 107(1).
- Kemple, James, with Cynthia Willner. 2008. *Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood*. New York: MDRC.

- Krueger, Alan, and Robert Solow, eds. 2002. *The Roaring Nineties*. New York: Russell Sage Foundation.
- Krugman, Paul, and Robin Wells. 2009. *Macroeconomics*. New York: Worth Publishers.
- Larrimore, Jeff, Richard V. Burkhauser, Shuaizhang Feng, and Laura Zayatz. 2008. "Consistent Cell Means for Topcoded Incomes in the Public Use March CPS (1976–2007)." *Journal of Economic and Social Measurement* 33: 89–128.
- Lawrence, Robert. 2008. *Blue Collar Blues: Is Trade to Blame for Rising U.S. Inequality?* Washington, DC: Peterson Institute for International Economics.
- Lee, David. 1998. "Wage Inequality in the U.S. in the 1980's: Rising Dispersion of Falling Minimum Wage?" *Quarterly Journal of Economics* 114(3).
- Lemieux, Thomas. 2006. "Increased Residual Wage Inequality: Composition Effects, Noisy Data, or Rising Demand for Skill." *American Economic Review* 96(3).
- Lerman, Robert. 2007. "Career-Focused Training for Youth." In *Reshaping the American Workforce for a Changing Economy*, edited by H. Holzer and D. Nightingale. Washington, DC: Urban Institute Press.
- Levy, Frank, and Richard Murnane. 2004. *The New Division of Labor*. New York: Russell Sage Foundation.
- Levy, Frank, and Peter Temin. 2007. "Inequality and Institutions in 20th Century America." Working Paper, MIT Economics Department.
- Maguire, Sheila, Joshua Freely, Carol Clymer, Maureen Conway, and Deena Schwartz. 2010. *Tuning In to Local Labor Markets: Findings From the Sectoral Employment Impact Study*. Philadelphia: PPV.
- Magnuson, Katherine, and Jane Waldfogel, eds. 2008. *Steady Gains and Stalled Progress: Inequality and the Black-White Test Score Gap*. New York: Russell Sage Foundation.
- Mishel, Lawrence, and Heidi Shierholz. 2011. *State of Working America*. Washington, D.: Economic Policy Institute.
- McKinsey Global Institute. 2011. *An Economy That Works: Job Creation and America's Future*. New York.
- Munnell, Alicia 2007. "Policies to Promote Labor Force Participation of Older People." In *Reshaping the American Workforce in a Changing Economy* edited by H. Holzer and D. Nightingale. Washington, DC: Urban Institute Press.
- Reardon, Sean. 2011. "The Widening Socioeconomic Status Achievement Gap: New Evidence and Possible Explanations." In *Social and Inequality and Economic Disadvantage*, edited by Richard Murnane and Greg Duncan. Washington, DC: Brookings Institution.
- Reinhart, Carmen, and Kenneth Rogoff. 2009. *This Time is Different: Eight Centuries of Financial Folly*. Princeton, NJ: Princeton University Press.
- Roubini, Nouriel, and Stephen Mihm. 2010. *Crisis Economics*. New York: The Penguin Press.

- Schmitt, John. 2003. "Creating a Consistent Hourly Wage Series from the Current Population Survey's Outgoing Rotation Group, 1979–2002." Center for Economic and Policy Research: Washington, DC.
- Spence, A. Michael. 2011. "Globalization and Unemployment." *Foreign Affairs*, July/August.
- Stiglitz, Joseph. 2003. *The Roaring Nineties*. New York: Norton.
- Uchitelle, Louis. 2009. "Despite Recession, High Demand for Skilled Labor." *New York Times*, June 24.
- Von Wachter, Till. 2010. Testimony before Joint Economic Committee, U.S. Congress. May 26.
- Waldfogel, Jane. 1998. "Understanding the Family Gap in Pay for Women with Children." *Journal of Economic Perspectives* 12(1): 137–156.

