

Who Suffers During Recessions?

by

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Abstract

In this paper we comprehensively examine how business cycles affect labor market outcomes in the United States. We conduct a detailed analysis of how cycles affect outcomes differentially across persons of differing age, education, race and gender and we compare the cyclical sensitivity during the Great Recession to that in the early 1980s recession. We present raw tabulations and estimate a state panel data model that leverages variation across US states in the timing and severity of business cycles. We find that the impacts of the Great Recession are not uniform across demographic groups and have been felt most strongly for men, black and Hispanic workers, youth, and low education workers. These dramatic differences in the cyclical sensitivity across demographic groups are remarkably stable across three decades of time and across recessionary periods versus expansionary periods.

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1. Introduction

The Great Recession, which officially began in December 2007, has generated large reductions in employment, earnings and income for workers and families in the United States. The seasonally adjusted unemployment rate increased from 5 percent in December 2007 to 9.5 percent in June 2009, the official end of the 2007 recession.¹ Over the same period, median real family income fell by 6 percent and the poverty rate increased to 15.1 percent (from 12.5 percent) between 2007 and 2010 (DeNavas-Walt et al 2011). The expansion has been slow by historical comparison and in the more than two years since the official start of the expansion, the unemployment rate has fallen by less than half of a percentage point - reaching 9.1 percent in August 2011. The impacts of the Great Recession, however, are not necessarily experienced by all workers to the same degree. National statistics can obscure dramatic differences in the severity of the cyclical impacts for different groups. For example, a recent analysis of labor market data shows that men experienced significantly larger job loss in the Great Recession (compared to women) yet in the expansion male employment is picking up more rapidly (Kochhar 2011).

Against the backdrop of the current recession, in this paper we comprehensively examine how business cycles affect labor market outcomes in the United States. We focus our analysis on two dimensions. First, we conduct a detailed analysis of how cycles affect outcomes differentially across persons of differing age, education, race and gender. Second, we compare the cyclical sensitivity during the Great Recession to that in its closest comparison, the recession of the early 1980s. We present both raw tabulations of the data as well as regression

¹ See <http://www.nber.org/cycles.html> for official NBER business cycle dating.

models that allow for us to abstract from general trends in the labor market, such as rising employment rates for women.

We begin with an overview of cyclical fluctuations in unemployment rates and employment from 1979 through 2011. Using national time series data, we compare the Great Recession to earlier recessions in terms of its severity, duration, and subsequent recovery. We then go on to use individual level data from January 1979 through July 2011 from the Current Population Survey Merged Outgoing Rotation Group (CPS MORG). Using the CPS MORG, we measure and illustrate how unemployment, employment, and earnings have changed in the Great Recession for persons of different ages, educational attainment, race, and gender. After establishing the basic descriptive findings, we estimate a state panel data model that leverages variation across US states in the timing and severity of business cycles. Using this simple model, we measure the responsiveness of different groups to the state-month unemployment rate. The labor market outcomes we analyze are the groups' employment, unemployment, and average weekly earnings.

Our study builds on a large existing literature in labor economics and macroeconomics on how business cycles affect outcomes for workers and families, including our own prior work (Bitler and Hoynes 2010, Hoynes 2000, Hoynes, Hines and Krueger 2001, Stevens et al 2011). Our study makes several contributions to this existing literature (which we review briefly below). First, our primary focus is identifying differences in the cyclicalities across demographic groups and we provide detailed graphical and regression analyses to comprehensively explore these differences. Second, we present the results of statistical tests for differences in the cyclicalities both across groups (for a given time period) and over time (for a given group). Third,

by using data through mid-2011 we highlight the results for the Great Recession, and compare them to the early 1980s recession. Finally, we examine how the recovery periods following the 1980s and 2007 recessions compare.

Our findings are summarized as follows. First, the labor market decline in the Great Recession is both deeper and longer than the early 1980s recession. Second, the impacts of the Great Recession are not uniform across demographic groups. They have been felt most strongly for men, black and Hispanic workers, youth, and low education workers. Third, these dramatic differences in the cyclicalities across demographic groups are remarkably stable across three decades of time and across recessionary periods versus expansionary periods.

2. Overview of Labor Market Fluctuations Since 1979

We begin, in Figure 1, by presenting our measure of the economic cycle—the unemployment rate—monthly from January 1979 to July 2011. For this and all subsequent analyses in the paper we present seasonally adjusted measures, which remove the typical variation that takes place within calendar year. The 1979 to 2011 period has seen five recessions, which are indicated with shading on the graph according to the official NBER dating (National Bureau of Economic Research, 2011). In the early 1980s, two recessions in quick succession led to an increase in the unemployment rate from 5.6 percent in May 1979 to 10.8 percent in November 1982. The 1990 and 2001 recessions were less severe. The current recession officially began in December 2007 and since that time the unemployment rate has risen from 5 percent in December 2007 to a high of 10.1 in October 2009. While the recession officially ended in July 2009, the unemployment rate remains high, at 9.1 percent in August

2011. Figure 2 presents aggregate monthly employment (seasonally adjusted) over this same period. This figure highlights the relatively weak recovery of 2010-2011.

To better facilitate comparisons across these business cycles, we convert the series to “event” time, where we plot the unemployment rate (Figure 3) and employment (Figure 4) by the number of months since the official start of the recession. We follow a common practice of combining the 1980 and 1981 recessions and the graphs therefore compare four cycles: 1980, 1990, 2001, and 2007. Figure 3 shows that the 2007 recession exhibits the steepest and largest increase in the unemployment rate among the four recessions. As of July 2011 (the last data point), unemployment rates are slightly higher than at a similar point of the 1980 recession; however a comparison to the 1981 recession separately would show much higher unemployment for the current recession at this point in the recovery. Figure 4 shows the percent change (since the beginning of the recession) in employment by months since the start of the recession for the four cycles. This figure highlights the weak job growth following the 1990, 2001 and, especially 2007 recessions. By 44 months since the beginning of the recession (where our data end for the current recession) the three earlier cycles had employment returning to its pre-recession level. We are far from that in the Great Recession.

3. Prior Work on Differential Sensitivity over Business Cycles

Given the importance of the business cycle, it is not surprising that many studies have examined the impact of cycles on labor market outcomes. Prior research has examined the effect of business cycles on employment outcomes (Bartik 1991, 1993a, 1993b, and 1996, Blanchard and Katz 1992, Holzer 1991, Hoynes 2000, Hines, Hoynes and Krueger 2001), real

wages (Bils 1985, Blank 1990, Hines, Hoynes and Krueger 2001, Keane et al 1988, Solon et al 1994), racial differences in labor market outcomes (Bound and Holzer 1993, 1995, Biddle and Hamermesh 2011), labor market outcomes of disadvantaged youths (Acs and Wissoker 1991, Bound and Freeman 1992, Cain and Finnie 1990, Freeman 1982, 1991a, 1991b, Freeman and Rodgers 2000), and family income, poverty and income inequality (Bartik 1994, Blank 1989, Blank 1993, Blank and Blinder 1986, Blank and Card 1993, Cutler and Katz 1991, Freeman 2001, Hines, Hoynes and Krueger 2001). These studies almost universally find that labor market outcomes are procyclical, with greater sensitivity among men, blacks, younger workers, and less educated workers.

Research on the Great Recession has shown that, across demographic groups, the decline in labor market outcomes since 2007 has been worse than any recession in the postwar period (Goodman and Mance (2011)). As in previous recessions, evidence suggests that the effects of the recent downturn have been born disproportionately by racial and ethnic minorities and by male, younger, and less-educated workers (Elsby et al (2010), Farber (2011), Kochhar et al (2011), Sierminska and Takhtamanova (2011), Verick (2009)). However, by contrast with previous recoveries, employment growth patterns have favored men since the official end of the recession in June 2009 (Kochhar (2011)). Since the recent recovery has been sluggish relative to previous recoveries, much attention has been paid to the possibility of increased structural unemployment due to job mismatch and the unprecedented extension of unemployment insurance benefits to 99 weeks (Daly et al. (2011), Howell and Azizoglu (2011), Reich (2010), Rothstein (2011)). However, the differential impacts of these factors across demographic groups remain largely unexplored. The recent crisis has also impacted various

dimensions of self-reported well-being. However, these measures are poorly correlated with national labor market trends, and instead are most closely correlated with the S&P 500 index (Deaton (2011)).

The approach we take is most similar to that of Hines, Hoynes and Krueger (2001) who use annual data from the March Current Population Survey for 1976-1996 to examine the impact of cycles on employment, hours, earnings, and income. They adopt a state panel approach where the impacts of the cycle are identified by variation in the timing and severity of cycles across states. They explore differences across education groups (finding greater sensitivity for less educated) and test for a structural break in sensitivity in 1990 (finding none).² As described below, we also use a state panel model in our analysis. We expand on their work by examining monthly data through July 2011, which enables a detailed analysis of the Great Recession and the start of the current expansion. Further, we examine differences across race, gender, age, and education groups and richly test for differences across groups and over time.

4. Data

To facilitate comparisons across groups, for the remaining analysis we utilize individual level data from the Current Population Survey (CPS) Merged Outgoing Rotation Group (MORG) covering the period from January 1979 to July 2011³. The CPS is a representative monthly household survey conducted by the US Bureau of Labor Statistics that collects information on unemployment, labor force participation, and demographic characteristics of the population. It

² Hines, Hoynes and Krueger (2001) also examine impacts of business cycles on wage growth, health and work injuries, and government finances.

³ We obtain the CPS MORG extracts from the National Bureau of Economic Research: <http://www.nber.org/morg/annual/>

is the official source of unemployment rates for the United States. A subset of the full CPS sample, the MORG contains detailed labor market information for 25,000 or more individuals per month, including their employment status, weekly work hours and usual weekly earnings. The data also provide information on the age, education, race, ethnicity, and gender of each recipient. Our sample includes individuals aged 16 to 60⁴.

We collapse the MORG into cells based on state, year-month, and demographic group. Our demographic groups are defined by single year of age, gender, race/ethnicity (white, black, Hispanic, other)⁵ and education (less than high school, high school, some college, college graduate or more)⁶. For each cell, we calculate the percent employed, the percent unemployed, and the average real weekly earnings using the CPS-provided weights. Following the standard definitions, the percent unemployed is among those in the labor force, while the percent employed is among the entire population. We analyze both to capture different margins of behavior. Because of endogenous changes in the composition of workers over the business cycle, we choose to calculate average earnings over the entire population (rather than for workers only) thus averaging zero earnings for nonworkers with positive earnings for workers. This measure, therefore, captures changes in the employment, hours, and wages. We multiply earnings by 1.5 for the CPS topcode (following Autor et al (2008)), and convert to real (2010)

⁴ We drop those over age 60 to abstract from retirement decisions. We also drop observations missing ethnicity (pre-2002).

⁵ White, black and other races are all non-Hispanic. Because of small population shares, we do not present results for the “other” race group. For the remainder of the paper we will refer to these as “race” groups even though they are more accurately race/ethnicity groups.

⁶ Beginning in January 1992, the BLS and the Census Bureau changed the focus of the CPS educational-attainment question from years of attainment to degree-receipt. We follow the matching procedure outlined in Jaeger (1997) to create categories that are comparable over time. However, the redesign of the education question creates a discontinuity in the categorization of educational attainment that we cannot fully correct for.

dollars using the personal consumption expenditures price index (Bureau of Economic Analysis (2011)). We drop self-employed individuals from the earnings calculations.

We supplement the CPS MORG data with national and state unemployment statistics compiled from the Current Population Survey by the Bureau of Labor Statistics (Bureau of Labor Statistics (2011a), Bureau of Labor Statistics (2011b)). In our analyses of the MORG data below, we define the recessions by identifying the low and high points of the seasonally adjusted national unemployment rate; the subsequent high to low points of the unemployment rate identifies the expansion.⁷ Thus for 2007, we have the recession of May 2007 to October 2009 and the expansion of October 2009 to July 2011 (the last month in our data). For the 1980 cycle, we have the recession of May 1979 to November 1982 and the expansion of November 1982 to August 1984 (we use 22 months of expansion to match the data availability for the current expansion).

5. Raw Changes by Group and Comparisons across 1980 and 2007 Recessions

We begin with a snapshot of the labor market outcomes by demographic group in May 2007, on the eve of the Great Recession. Table 1 shows the employment, unemployment, hours and earnings of individuals by age, race, sex, and education. Employment, hours and earnings are higher for men, whites, prime age workers and those with higher education levels. The opposite pattern is found for unemployment. These differences can be substantial. For example less than half of individuals with no high school degree are working (at the peak of the cycle)

⁷ Our qualitative conclusions are unchanged if we use the NBER dating. We prefer using the unemployment rates to date the cycles because the NBER dating depends largely on GDP growth and labor market measures tend to lag changes in GDP.

compared to 86 percent of college graduates. Fifty-nine percent of black women are working compared to 71 percent of white women.

Next we turn to exploring the “raw” changes in labor market outcomes for these groups during the 2007 recession. In Figure 5 we show the change in the unemployment rate for the race/sex, age and education subgroups over the 2007 recession. As stated above, we compute this change from May 2007 (when the national unemployment rate was at its minimum) to October 2010 (when unemployment peaked). The figure also shows the changes that happened over the 1980-1983 recessions for the same groups. To construct this graph (and all subsequent calculations in this section) we first compute monthly unemployment rates for each demographic group from the micro CPS MORG data. We then do a simple seasonal adjustment to this data, regressing each time series on a set of month dummies (with December omitted), and using the constant and residuals from this regression to create the adjusted series.

We focus first on the recent recession, shown with the darkly shaded bars. The Figure shows that the demographic groups who have high baseline unemployment rates also had the greatest increase in unemployment over the recession. Men had larger increases than women; blacks and Hispanics had larger increases than whites; youth had larger increases than the middle aged; and low education groups were also hit the hardest.

Comparing the current recession (dark bars) to the 1980s recession (light bars), several patterns emerge. First, for most groups, the increase in unemployment is greater in the current recession. The largest increases (relative to the 1980s recession) are for Hispanic women and those with a high school degree. The exceptions include black men, Hispanic men, and those with less than a high school degree, all groups that experienced a smaller increase in

unemployment rates compared to the 1980s recession. Note, though, that over time the educational distribution has shifted toward the higher educational categories— so although all but the least educated did worse, on average people have moved into the better-faring groups.

Figure 6 shows results focusing on changes (in percentage point terms) in the employment rate. Comparing results across groups for the Great Recession, the patterns are fairly similar to those of the unemployment rate: men, black and young workers, and low education groups all experienced greater reductions in employment in the current recession. Comparing the two recessions presents a noticeably different pattern than the one for the unemployment rate. For all groups except Hispanic men, the employment rate fell more during the recent recession than during 1980s. One possible reason for this is that the 1980s recession happened while women's labor force participation rates were undergoing their secular increase; that increase leveled out (and even slightly reversed) at the start of the 21st century (Juhn and Potter (2006)). For example, white women experienced **increases** in employment rates during the 1980s recession, but decreases during the current recession.

The crude changes over time across recessions are informative about the cross-group and cross-recession patterns, but they are limited. Cross-group comparisons may be confounded by changes in other determinants of labor market success. For example, if the composition of low education groups is shifting over time to racial, ethnic, or age groups that fare worse in the labor market, then the measured change over time for low education groups will be confounded with those changes. Separately, if there are (non-recession based) over-time changes in the labor market patterns, then these will also be wrapped up in the measured changes. The secular increase in women's labor market participation is an example of one such

change. To address both of these issues we next turn to a regression-adjusted measure of sensitivity.

6. Regression Approach

Our data is collapsed into state-month-year-demographic cells. The demographic cells are based on age (single year), race/sex (white men, white women, black men, black women, Hispanic men, Hispanic women, other men, other women), and education category (less than high school, high school, some college, and college graduate). The time periods covered in this collapsed monthly data run from January 1979 to July 2011. We then use this data to estimate models of the form:

$$(1) \quad y_{gst} = \beta \cdot UN_{st} + RaceSex_g + Age_g + Educ_g + \alpha_s + \delta_t + year_t \cdot \gamma_s + \varepsilon_{gst}$$

where subscripts refer to demographic cell g (race/sex x age x education), state s , and time (month-by-year) t . UN_{st} is the state unemployment rate in month-year t , $RaceSex_g$, Age_g , and $Educ_g$ are group-specific intercepts, and we include state (α_s) and month-year (δ_t) fixed effects and state-specific time trends (γ_s). The coefficient of interest is β , which gives the sensitivity to the state unemployment rate. We weight by the CPS population weights for each cell, and we conduct statistical inference clustering on U.S. states.

To begin, we estimate (1) separately for each of our demographic groups. For example, we estimate (1) for all 16 year olds, and preserve the coefficient β_{16} (for this regression the age dummies are excluded from the estimation). We then estimate (1) for 17 year olds, and so on. After estimating for each age, we re-estimate (1) separately for each of our six main race/sex groups, and for our four education categories.

This regression analysis embodies three changes to our analysis, compared to the raw differences presented in the previous section. Most importantly, it changes the type of variation used to estimate the sensitivity to the business cycle. In Figures 5 and 6, the variation is driven by national over-time changes; that is, we present changes in labor market outcomes by group between the peak and trough of the recession. This captures the overall US business cycle (*as well as* any other time varying changes to the labor market). In our regressions, the inclusion of time fixed effects means that we do not use this variation in estimating our coefficients. We also include state fixed effects so that our coefficients will not be influenced by states that, on average, have extreme unemployment. Instead, our coefficients are based on how the timing and severity of the business cycle impacts states differently. When a state enters a recession (or recovery) earlier than the national average, or when a state's change in overall unemployment is greater than the national average, that is the type of variation used to identify the coefficients in our regression. Another important difference between the regression analysis and the over-time comparisons is that in the regressions we are able to control for demographic characteristics, thereby statistically adjusting for any differences in the composition of groups. For example, the group of workers with less than a high school degree is becoming more Hispanic over time. The raw differences for education groups, shown above, may in part reflect this composition change. In the simple regression setting, we can control for these changes directly by including separate intercepts for each group. A final important difference is that the regression results are not only estimated over the recession periods, but instead are estimated using data from both contractions and expansions.

7. Regression Results: Cyclical Responses across Demographic Groups

We begin by presenting results estimating (1) above where the dependent variable is the group unemployment rate. We present results stratifying the regression by single year of age in Figure 7. Each point on the graph represents estimates from a separate regression, and the x-axis gives the age and on the y-axis we plot the estimated coefficient and the 95% confidence interval. For example, the first point on the graph is interpreted as “when a state year experiences a percentage point higher unemployment rate, 16 year olds in that state experience a 2.8 percentage point higher unemployment rate.” Figure 7 shows that the labor market cycle hits especially hard for youth, with responsiveness for 16-19 year olds more than twice that of those in their mid-20’s. The coefficients continue to decline, at a more modest rate, until ages in the mid-50’s.

In Figure 8 we present results from stratifying on race-sex demographic groups and on education. The results here suggest that men are more responsive than women; that blacks are more responsive than Hispanics, who in turn are more responsive than whites; and that low-education groups are more responsive than high-education groups. The differences are large: an increase of one percentage point in the state unemployment rate leads to almost a two percentage point increase in unemployment for workers with less than a high school degree compared to less than a half a percentage point increase for those with a college degree. Black men have almost double the responsiveness of white men, and black women almost triple the responsiveness of white women.

These results are qualitatively similar to those in Figure 5 (the raw changes). This correspondence is remarkable, for two reasons. First, the two models are estimated using

fundamentally different sources of variation (state versus national cycles; the over-time variation in Figure 5 is explicitly removed by the time fixed effects of the regression model). Second, the model controls for time trends for each subgroup (e.g. tracking secular increases in employment rates for women). Third, the regression model is estimated over the full 1979-2011 time period, rather than just during the 2007 or 1980s recessions.

Moving on, in Figure 9 we consider the sensitivities of the age-specific employment rate to the overall state-month unemployment rate. The interpretation of the coefficients is similar to that discussed above; for example, a one percentage point increase in the state unemployment rate leads to a 1.7 percentage point reduction in the employment rate for 16 year olds. The patterns here are similar to Figure 7: the youngest are the most responsive, and by-age cyclicity declines with age. Figure 10 shows estimates of the impact of the overall state-month unemployment rate on the employment rate by race-sex and education groups. The patterns for the race/sex groups are somewhat different for employment compared to the unemployment rate in Figure 8. It is still the case that white individuals are less responsive than their black counterparts, women are less responsive than are men, and higher education groups less responsive than lower education groups. (In reading the graph, note that as one moves up the y-axis the sensitivity gets closer to 0 and is therefore less sensitive). However, in contrast to Figure 8, here the gender differences in responsiveness are much greater. The gender differences are large enough to dominate the race differences, so that the three least responsive groups (among the 6 race/sex groups) are the women. For this measure Hispanic women are the least responsive of all the demographic groups. It can be shown that the cyclical responsiveness of the employment rate, the unemployment rate, and the labor force

participation rate are related through an adding-up identity. The larger gender differences for cyclical responsiveness of the employment rate is consistent with women being more likely to act as added workers (labor force increasing in recessions) and men being more likely to act as discouraged workers (labor force decreasing in recessions). Hispanic women, with their high rates of marriage (compared to the other groups) may be most likely to behave as added workers; hence the very large widening for Hispanics.

Taken as a whole, these regression results largely reinforce the simple over-time patterns: men, nonwhites, youth, and those with lower education levels are the most responsive to cycles. Given the important differences in these two methodological approaches discussed above, we are impressed by the similarity of the findings. We interpret this as evidence of the robustness of the patterns that we document.

8. Regression Results: Do Cyclical Responses Differ in the Great Recession?

We next use our regression model to consider whether the Great Recession is different from earlier business cycle patterns. In particular, as above in our analysis of raw changes, we compare the Great Recession to the early-1980s recession. In so doing, we focus on two additional questions: (1) for each demographic group, is the pattern of business cycle responsiveness in the Great Recession similar to what it was in the early 1980s recession(s); (2) are the over-time changes in responsiveness similar across the demographic groups? The first question asks whether the current recession is different from the last significant recession (for a given group); the second question asks whether whatever changes happened are experienced similarly across groups.

To ask these questions, we implement a regression model of the form (here shown for testing the race-sex groups):

$$(2) \quad y_{gst} = \sum_{RaceSex\ j} \sum_{Time\ period\ w} [\beta_{w,j} \cdot UN_{st} \cdot D_w \cdot RaceSex_j] + RaceSex_g + Age_g + Educ_g + year_t \cdot \gamma_s + year_t \cdot \theta_j + year_t^2 \cdot \mu_j + \alpha_{s,j} + \delta_t + \varepsilon_{gst}$$

The coefficients $\beta_{w,j}$ measure the group-specific (j) cyclicity over a given recessionary period (w). The variable D_w is an indicator variable for each recession period. The periods are from May 1979 to November 1982 for the 1980s recessions and from May 2007 to October 2009 for the 2007 recession, based on the minimum to maximum of the national (seasonally adjusted) unemployment rate. To implement this regression we pool demographic groups (as illustrated here, pooling all race/sex groups) rather than estimating one model for each demographic group. This pooled regression is more restrictive than the stratified regressions behind Figures 7-10, because it imposes identical time dummies and state fixed effects for all demographic groups. In order to preserve the flexibility of the stratified regressions, we include as control variables group-specific quadratic time trends (θ_j, μ_j), and group-specific state fixed effects ($\alpha_{s,j}$). These controls allow us to recover similar coefficients to the stratified models.

In this specification, we focus on $\beta_{1980,j}$ and $\beta_{2007,j}$ for each group j. We present and discuss these coefficients directly, and we explore several statistical tests. Our primary test is for equality of coefficients across recessions for a given subgroup. This test examines whether the cyclical responsiveness to the Great Recession is *qualitatively* different for that subgroup than the 1980s recession. In addition, we test for the equality of coefficients for all demographic subgroups for a given recession. This test examines whether different groups are

impacted differently within a recession. The third test we examine is whether the difference in the coefficients across recessions $\beta_{2007,j} - \beta_{1980,j}$ is the same across demographic groups.

Table 2 presents results for the group-specific unemployment rate as an outcome variable. Columns 1 and 2 show the coefficients for the 1980s recession (column 1) and the 2007 recession (column 2). Column 3 presents p-values from group-by-group tests of equality across the recessions, with ***, **, and * indicating significance at the 1%, 5%, and 10% levels. In Columns 4-6, we repeat the exercise, only focusing on the “expansion” periods following the two recessions: November 1982 to August 1984 for the 1980s recession, and October 2009 to July 2011 for the 2007 recession. The 1980s expansion lasted throughout the remainder of the decade, but we limit our time period to match the time we have for the current expansion.

Focusing first on the recession periods (columns 1-3) we observe several results from Table 2. First, the cross-group patterns are similar to those of the stratified regression (Figures 7 and 8) and to those of the over-time changes (Figure 5). Men, nonwhites, youth and those with lower education levels are more responsive and women, prime aged workers, and higher education groups are less responsive. These findings are true for both recessions. For each of the race/sex groups, the cyclical responsiveness is very similar across recession periods, and we cannot reject the hypothesis of equality across recessions for any of these groups. Although not shown in the table, we find the cyclical responsiveness in the Great Recession for men (pooling all races) is statistically significantly higher than in the 1980s recession. The magnitude of the over-time differences however is fairly small. We also find that the Great Recession has relatively greater impacts for older workers, and for each education category. Our main punch line is thus

reinforced: the Great Recession is deeper than previous recessions, but otherwise is affecting groups more or less similarly.⁸

The story is somewhat different when we consider the expansion periods following the 1980s and current recessions (columns 4-6). The cyclicalities for the race/sex groups is lower (statistically significantly so) for the Great Recession, suggesting a weaker responsiveness to the recovery. For the age and education comparisons, the patterns for the 1980s expansion and the current expansion are relatively comparable.⁹

In Table 3 we present similar estimates for the employment rate as an outcome measure. Comparing the two recessions, group responsiveness is similar for each race/sex group (and race and sex alone), is more responsive in the 2007 recession for the youngest and oldest ages, and is more responsive in the 2007 recession for each education group. The patterns of responsiveness across groups are similar to what we have seen in earlier analyses. The most responsive groups are blacks, Hispanics, men, youth, and low education groups and these patterns hold during both recessions.

Looking at the expansion periods, the first order fact apparent from Table 3 is that employment is less responsive in the current expansion than that of the 1980s. The employment responsiveness is somewhat smaller in the current expansion for each race/sex

⁸ Tests for equality of coefficients across groups are not shown in the table, but are rejected with $p < 0.01$ in all cases. This is true for all demographic groups and all time periods, and so we do not report any of these tests in the tables nor do we refer to these further below.

⁹ Given that we are regressing group specific unemployment rates on the state aggregate unemployment rate, one might expect that the average across demographic subgroups (appropriately weighted by population shares) should average to 1. This is not necessarily the case because our group outcome measures come from our MORG sample where we limit the sample to those 16-60. The cycle measure, the state unemployment rate, is the aggregate unemployment rate published by BLS (Bureau of Labor Statistics 2011b).

group, and especially so for women. For the age and education groups, the by-group responsiveness is similar across expansions.

We finally consider earnings as a labor market outcome of interest in Table 4. Recall that the outcome variable is average earnings (including 0s for non-workers). We divide each coefficient by mean earnings for that group during the recession/expansion period. Thus the coefficient for white men in the 1980s recession of -0.016 implies that a 1 percentage point increase in the unemployment rate leads to a 1.6 percent reduction in earnings per person. Focusing first on the recession periods, we see that earnings are much more responsive for men than for women, for blacks and Hispanics than for whites, and for youth. In the current recession all of these patterns grew in magnitude, and also the overall responsiveness of earnings to the business cycle grew. In contrast to the patterns for unemployment and employment, when we consider the recovery periods we find that the earnings responsiveness is similar for all groups in the current recovery compared to the 1980s recovery. Additionally, the group-specific earnings responsiveness is similar across the recession and recovery periods.

9. Discussion

In this paper, we provide a detailed analysis of labor market fluctuations over the past 30 years and test for differences in the cyclical responses across demographic groups and over time. We have several headline results. First, the labor market decline in Great Recession is both deeper and longer than early 1980s recession. This comparison is salient because up until the current cycle, the 1980s recession was the most severe in the post-war period. Further, the

expansion coming out of the official end of the 2007 recession has been weak, with very slow employment gains.

Second, the impacts of the Great Recession are not uniform across demographic groups. Men, blacks, Hispanics, youth, and those with lower education levels experience more employment and earnings declines and unemployment increases compared to women, whites, prime aged workers, and those with high education levels. These differences are both economically and statistically significant. For example, the employment of high school dropouts is more than four times more cyclical than that of college graduates. The cyclical of white men is double that of white women and the cyclical of black men is 50 percent higher than white men.

Third, these dramatic differences in the cyclical across demographic groups are remarkably stable across time and across recessionary periods versus expansionary periods. That is, these “socioeconomic status gradients” in responsiveness to the business cycle are large and present in the 1980s recession and the Great Recession. Further, any changes in responsiveness over time for a given group are small by comparison to the persistent differences across groups. This might be surprising given much emphasis in the press on the “man-cession.” Furthermore, it is perhaps surprising that these gradients persist despite the dramatic changes in the labor market over the past 30 years, including the increase in labor force attachment for women, Hispanic immigration, the decline of manufacturing, and so on.

Fourth, the differential cyclical across demographic groups in the current recession is also stable across the estimates we present in the paper. In particular, the patterns are revealed in the simple over time comparisons as well as in the regression estimates that rely on

variation in the timing and severity of state cycles. These two estimation methods rely on different sources of variation in the data, and we interpret the similarity of their results as evidence in favor of the robustness of our findings.

One explanation for these persistent differences in the impacts of cycles across demographic groups derives from the variation in cyclicalities across industries. It is well known that construction and manufacturing are more cyclical industries while services and government are less cyclical. As a simple illustration of the importance of industry in the context of demographic comparisons, Figure 11 presents a scatterplot of the percent decline in industry employment between the peak and trough of the current recession. We show the differences in the severity of the labor market shock on the y-axis and on the x-axis is the share male in the industry (measured at the peak). We have added a univariate regression line for guidance.¹⁰ The figure shows that the higher the share male in the industry the larger the employment decline in the current recession. This appears to be an industry effect (as opposed to a “male” effect) as the employment pattern persists if we decompose the employment loss into the loss for women and the loss for men. Similarly, Figure 12 shows that the larger the share of workers without a high school degree, the larger the employment decline.

These two graphs are only suggestive. However, if the main question of our paper is “who loses during recessions?” we interpret these graphs as offering evidence on the follow up question of “why?” In particular, they suggest that an important part of the demographic

¹⁰ The percent change in employment is calculated between May 2007 and October 2009 and we collapse the data to industry using the “2-digit” NAICS industry codes. The regression line is calculated using a weighted regression, with industry employment at the peak as the weights. There are a total of 52 industries and while we include all observations to calculate the regression line, in the figure we drop the few observations outside the -50%, +50% range on the y-axis to improve the scaling.

patterns of sensitivity to the business cycle is due to which industries different groups tend to work in.

In addition to our “headline” findings, we have several other results in this paper. These mostly reflect various minor exceptions to the main patterns discussed in the paragraphs above. So although overall the 2007 recession appears similar to the 1980s recession, it did have somewhat greater responsiveness for women’s employment, and for the youngest and oldest workers. And while men’s labor market outcomes are more responsive than women’s for all measures, they are somewhat closer when looking at unemployment than when looking at employment. The extent to which the current recovery is being experienced more by men than women is stronger than in the 1980s recovery, largely due to a drop in women’s cyclicalitv during the current recovery. Finally, worker’s earnings responsiveness to the cycle was meaningfully larger in the 2007 recession than in the 1980s recession. This was especially true for youth and for low education groups.

Despite these nuances, the overarching picture is one of stability in the demographic patterns of response to the business cycle over time. Who loses in the Great Recession? The same groups who lost in the recessions of the 1980s, and who experience weaker labor market outcomes even in the good times. Viewed through the lens of these demographic patterns, the Great Recession is different from business cycles over the three decades earlier in size and length, but not in type.

References

- Acs, Gregory and Douglas Wissoker. 1991. "The Impact of Local Labor Markets on the Employment Patterns of Young Inner-City Males." Mimeo, Urban Institute.
- Autor, David H., Lawrence F. Katz, and Melissa S. Kearney. 2008. "Trends in U.S. Wage Inequality: Revising the Revisionists." *The Review of Economics and Statistics*, 90(2): 300-323.
- Bartik, Timothy J. 1991. "Who Benefits from State and Local Economic Development Policies?" W.E. Upjohn Institute for Employment Research. Kalamazoo Michigan.
- Bartik, Timothy J. 1993a. "The Effects of Local Labor Markets on Individual Labor Market Outcomes for Different Demographic Groups and the Poor." W.E. Upjohn Institute Working Paper 93-23.
- Bartik, Timothy J. 1993b. "Economic Development and Black Economic Success." Upjohn Institute Technical Report No. 93-001.
- Bartik, Timothy J. 1994 "The Effects of Metropolitan Job Growth on the Size Distribution of Family Income." *Journal of Regional Science* 34(4):483-501.
- Bartik, Timothy J. 1996. "The Distributional Effects of Local Labor Demand and Industrial Mix: Estimates Using Individual Panel Data." *Journal of Urban Economics* 40(2):150-178.
- Biddle, Jeff, and Daniel S. Hamermesh. 2011 "Cycles of Wage Discrimination." NBER working paper No. 17326.
- Bils, Mark. 1985. "Real Wages over the Business Cycle: Evidence from Panel Data." *Journal of Political Economy* 93(4): 666-689.
- Bitler, Marianne and Hilary Hoynes. 2010. "The State of the Safety Net in the Post-Welfare Reform Era." *Brookings Papers on Economic Activity* Fall 2010, pp. 71-127.
- Blanchard, Olivier J. and Lawrence F. Katz. 1992. "Regional Evolutions." *Brookings Papers on Economic Activity* 1:1992.
- Blank, Rebecca. 1989. "Disaggregating the Effect of the Business Cycle on the Distribution of Income." *Economica* 56:141-163.
- Blank, Rebecca. 1990 "Why are Wages Cyclical in the 1970s?" *Journal of Labor Economics* 8(1):16-47.

- Blank, Rebecca. 1993. "Why Were Poverty Rates So High in the 1980s?" In *Poverty and Prosperity in the Late Twentieth Century*, ed. Dimitri Papadimitriou and Edward Wolff. New York: St. Martin's Press.
- Blank, Rebecca and Alan Blinder. 1986. "Macroeconomics, Income Distribution, and Poverty." In *Fighting Poverty: What Works and What Doesn't*, ed. Sheldon Danziger and Daniel Weinberg. Cambridge, MA: Harvard University Press.
- Blank, Rebecca and David Card. 1993. "Poverty, Income Distribution and Growth: Are They Still Related?" *Brookings Papers on Economic Activity*, 2:1993.
- Bound, John and Richard Freeman. 1992. "What Went Wrong? The Erosion of Relative Earnings and Employment Among Young Black men in the 1980s" *The Quarterly Journal of Economics*, 107:201-232.
- Bound, John and Harry Holzer. 1993. "Industrial Shifts, Skill Levels, and the Labor Market for White and Black Males". *The Review of Economics and Statistics*, August.
- Bound, John and Harry Holzer. 1995. "Structural Changes, Employment Outcomes, and Population Adjustments Among Whites and Blacks: 1980-1990." Institute for Research on Poverty Discussion Paper #1057-95.
- Bureau of Economic Analysis. 2011. Personal Consumption Expenditures: Chain Type Price Index. Obtained from the Federal Reserve Economic Data (FRED) on 9/9/11.
<http://research.stlouisfed.org/fred2/series/PCECTPI>
- Bureau of Labor Statistics. 2011a. Labor Force Statistics from the Current Population Survey.
<http://www.bls.gov/cps/>, accessed 8/15/11.
- Bureau of Labor Statistics. 2011b. Local Area Unemployment Statistics from the Current Population Survey. <http://www.bls.gov/lau/>, accessed 8/15/11.
- Bureau of Labor Statistics. 2011c. Current Employment Statistics - CES (National).
<http://www.bls.gov/ces/>, accessed 8/15/11.
- Cain, Glen and Ross Finnie. 1990. "The Black-White Difference in Youth Employment: Evidence from Demand Side Factors." *Journal of Labor Economics* 8:S364-95.
- Cutler, David M. and Lawrence F. Katz. 1991. "Macroeconomic Performance and the Disadvantaged." *Brookings Papers on Economic Activity*, 1:1991, 1-74.
- Daly, Mary, Bart Hobijn, and Rob Valletta. 2011. "The Recent Evolution of the Natural Rate of Unemployment." Federal Reserve Bank of San Francisco, Working Paper 2011-05.

Deaton, Angus. 2011. "The financial crisis and the well-being of Americans," The Hicks Lecture, Oxford, May 16th, 2011.

DeNavas-Walt, Carmen, Bernadette D. Proctor, and Jessica C. Smith. 2011. Current Population Reports, P60-239, Income, Poverty, and Health Insurance Coverage in the United States: 2010, U.S. Census Bureau, U.S. Government Printing Office, Washington, DC.

Elsby, Michael, Bart Hobijn, and Aysegül Sahin. 2010. "The Labor Market in the Great Recession." *Brookings Papers on Economic Activity*, 2:2010, 1-48.

Farber, Henry. 2011. "Job Loss in the Great Recession: Historical Perspective from the Displaced Workers Survey, 1984-2010." NBER Working Paper No. 17040.

Freeman, Richard. 1982. "Economic Determinants of Geographic and Individual Variation in the Labor Market Position of Young Persons." In *The Youth Labor Market Problem: Its Nature, Causes, and Consequences*, ed. R. Freeman and D. Wise. Chicago: University of Chicago Press.

Freeman, Richard. 1991a. "Labour Market Tightness and the Mismatch Between Demand and Supply of Less-Educated Young Men in the United States in the 1980s." In *Mismatch and Labour Mobility*, ed. P. Schioppa. Cambridge: Cambridge University Press.

Freeman, Richard. 1991b. "Employment and Earnings of Disadvantaged Young Men in a Labor Shortage Economy." In *The Urban Underclass*, ed. C. Jencks and Peterson. Washington DC: Brookings Institution Press.

Freeman, Richard. 2001. "The Rising Tide Lifts...?" NBER Working Paper 8155.

Freeman, Richard and William Rodgers III. 2000. "Area Economic Conditions and the Labor Market Outcomes of Young Men in the 1990s Expansion", in Robert Cherry and William Rodgers III, eds., *Prosperity for All*, New York: Russell Sage Foundation, pp. 50-87.

Goodman, Christopher J. and Steven M. Mance. 2011. "Employment loss and the 2007-09 recession: an overview." *Monthly Labor Review*. 134 (4): 3-12.

Hines, James, Hilary Hoynes and Alan Krueger. 2001. "Another Look at Whether a Rising Tide Lifts all Boats." In *The Roaring Nineties: Can Full Employment Be Sustained*, Alan Krueger and Robert Solow, editors. Russell Sage Foundation: New York.

Holzer, Harry J. 1991. "Employment, Unemployment, and Demand Shifts in Local Labor Markets." *The Review of Economics and Statistics*.

Howell, David R. and Bert M. Azizoglu. 2011. "Unemployment Benefits and Work Incentives: The U.S. Labor Market in the Great Recession." Political Economy Research Institute, Working Paper No. 257.

Hoynes, Hilary W. 2000. "The Employment and Earnings of Less Skilled Workers Over the Business Cycle", in *Finding Jobs: Work and Welfare Reform*, edited by Rebecca Blank and David Card. Russell Sage Foundation: New York, pp. 23-71.

Juhn, Chinhui and Simon Potter. 2006. "Changes in Labor Force Participation in the United States." *Journal of Economic Perspectives*, 20 (3): 27-46.

Keane, Michael, Robert Moffitt and David Runkle. 1988. "Real Wages over the Business cycles: Estimating the Impact of Heterogeneity with Micro Data." *Journal of Political Economy* 96:1232-1266.

Kochhar, Rakesh. 2011. "In Two Years of Economic Recovery, Women Lost Jobs, Men Found Them," *Pew Social & Demographic Trends*, Washington, D.C.

Kochhar, Rakesh, Richard Fry, and Paul Taylor. 2011. "Wealth Gaps Rise to Record Highs Between Whites, Blacks, and Hispanics." *Pew Social & Demographic Trends*, Washington, D.C.

National Bureau of Economic Research (2011). "U.S. Business Cycle Expansions and Contractions." <http://www.nber.org/cycles.html>, accessed 9/1/2011.

Reich, Michael. 2010. "High Unemployment after the Great Recession: Why? What Can We Do?" *Center on Wage and Employment Dynamics Policy Brief*.

Rothstein, Jesse. 2011. "Unemployment and Job Search in the Great Recession," mimeo.

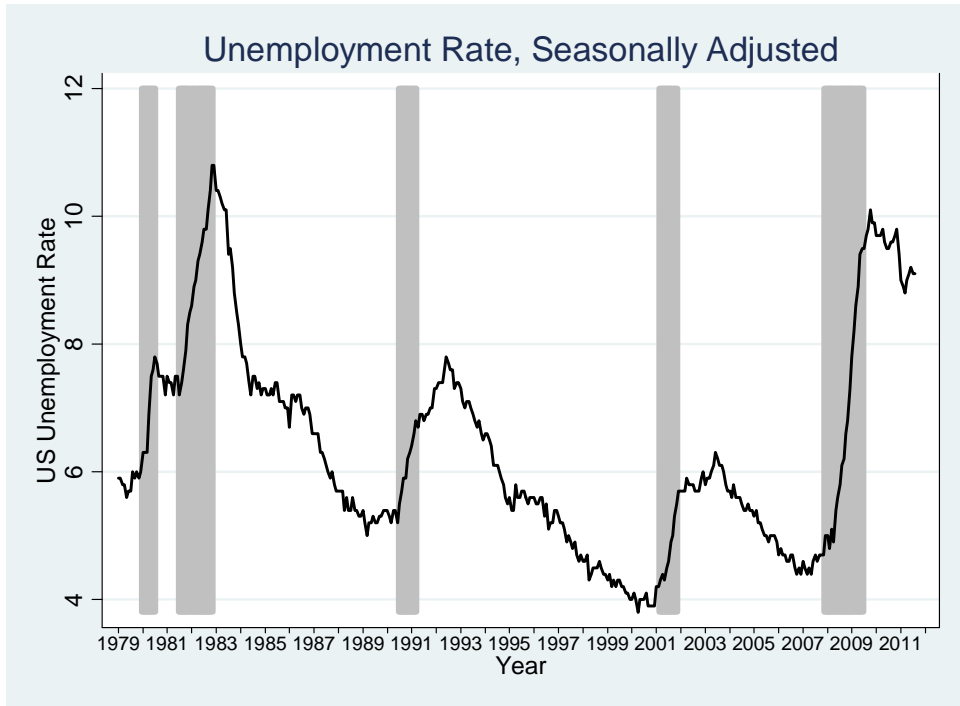
Sierminska, Eva, and Yelena Takhtamanova. 2011. "Job Flows, Demographics, and the Great Recession," in: *Who Loses in the Downturn? Economic Crisis, Employment, and Income Distribution*, Immervoll, Peichl, Tatsiramos and Polachek, Eds. *Research in Labor Economics*, Vol. 32: 115-154.

Solon, Gary, Robert Barsky, and Jonathan Parker. 1994. "Measuring the Cyclicalities of Real Wages: How Important Is Composition Bias?" *Quarterly Journal of Economics* 109(1): 1-26.

Stevens, Ann Huff, Douglas L. Miller, Marianne Page, and Mateusz Filipowski. 2011. "The Best of Times, the Worst of Times: Understanding Pro-cyclical Mortality," mimeo.

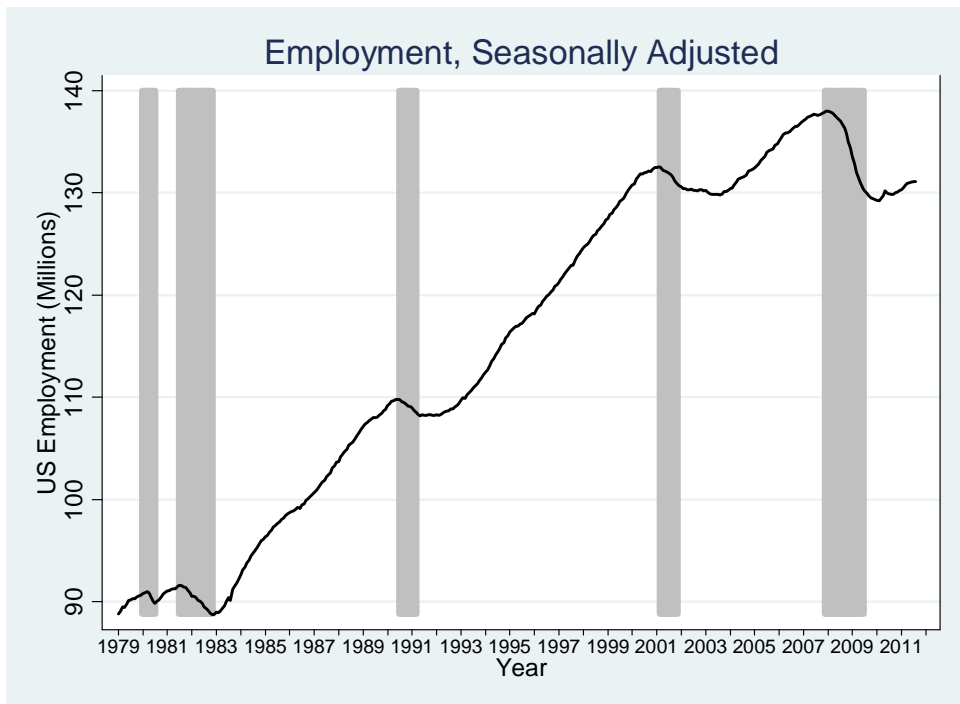
Verick, Sher. 2009. "Who is Hit Hardest During a Financial Crisis? The Vulnerability of Young Men and Women to Unemployment in and Economic Downturn." *Institute for the Study of Labor (IZA) Discussion Paper No. 4359*.

Figure 1: US Monthly Unemployment Rate, Seasonally Adjusted



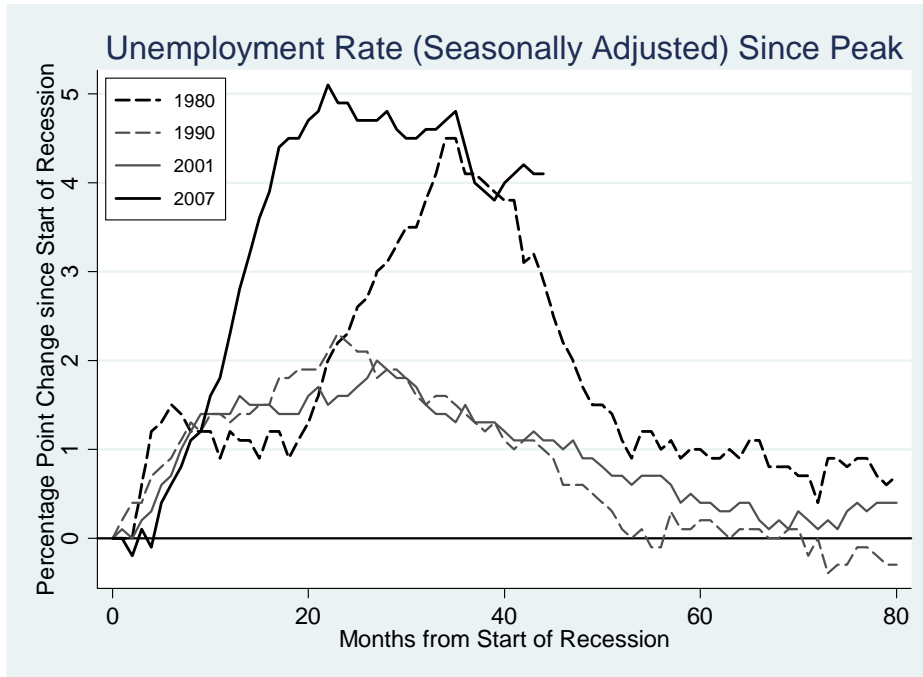
Source: Current Population Survey (Bureau of Labor Statistics (2011a)).

Figure 2: US Monthly Employment, Seasonally Adjusted (in thousands)



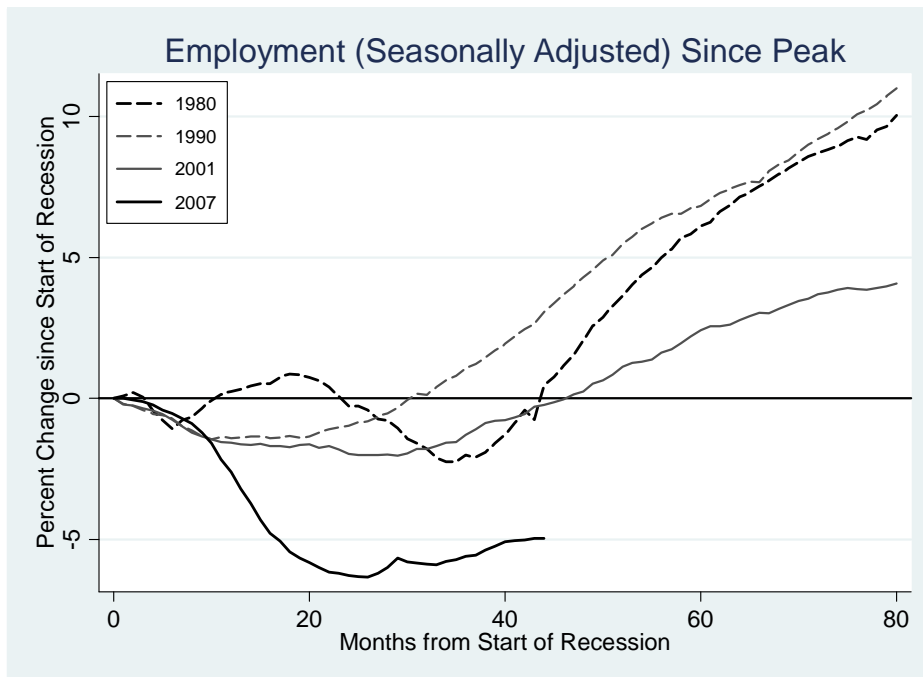
Source: Current Employment Statistics (Bureau of Labor Statistics (2011c)).

Figure 3: US Seasonally Adjusted Unemployment Rate, Months Since Peak



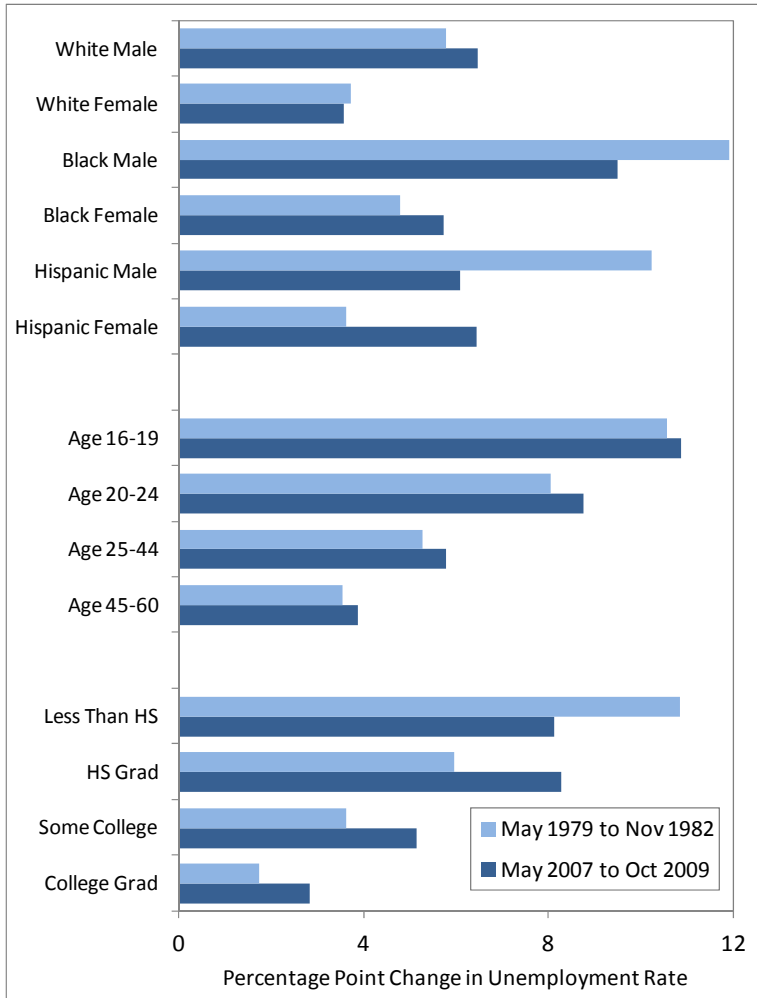
Source: Current Population Survey (Bureau of Labor Statistics (2011a)). Labor market peaks come from NBER (2011). 1980 recession combines the recessions beginning in 1/80 and 7/81 into one cycle.

Figure 4: US Seasonally Adjusted Employment, Months Since Peak



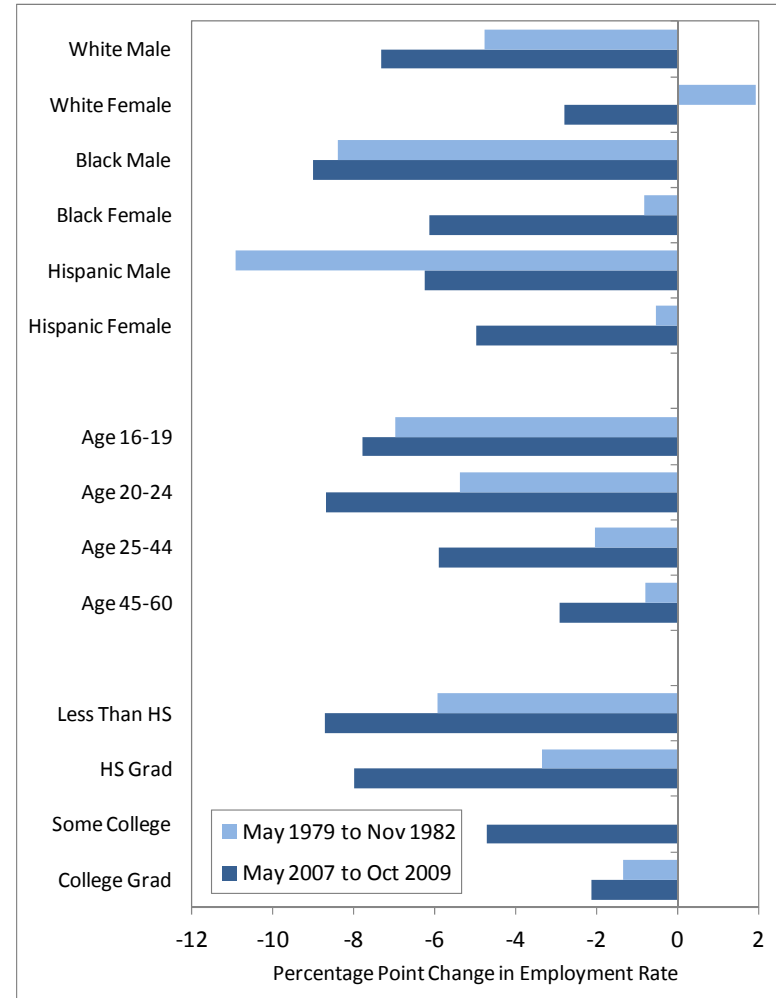
Source: Current Employment Statistics (Bureau of Labor Statistics (2011c)). Labor market peaks come from NBER (2011). 1980 recession combines the recessions beginning in 1/80 and 7/81 into one cycle.

Figure 5: Peak to Trough Changes in Unemployment Rate by Group, 1980 and 2007 recessions



Source: Authors' tabulations of MORG. Peak to trough dated using minimum and maximum seasonally adjusted US unemployment rates.

Figure 6: Peak to Trough Changes in Employment Rate by Group, 1980 and 2007 recessions



Source: Authors' tabulations of MORG. Peak to trough dated using minimum and maximum seasonally adjusted US unemployment rates.

Figure 7: Impact of State Unemployment Rate on Group Unemployment Rate, by Single Year of Age

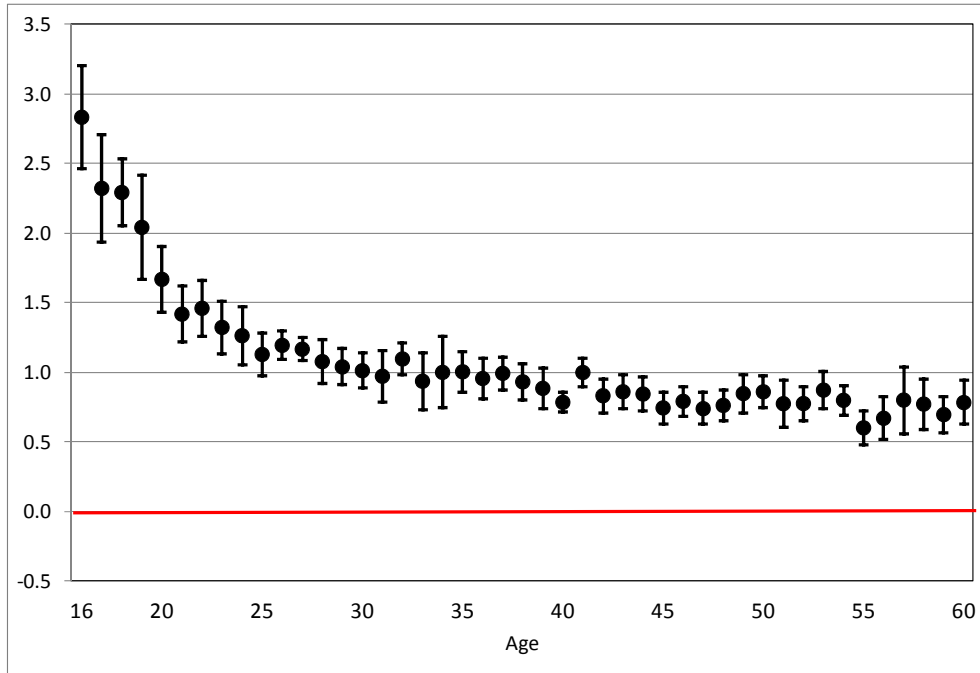
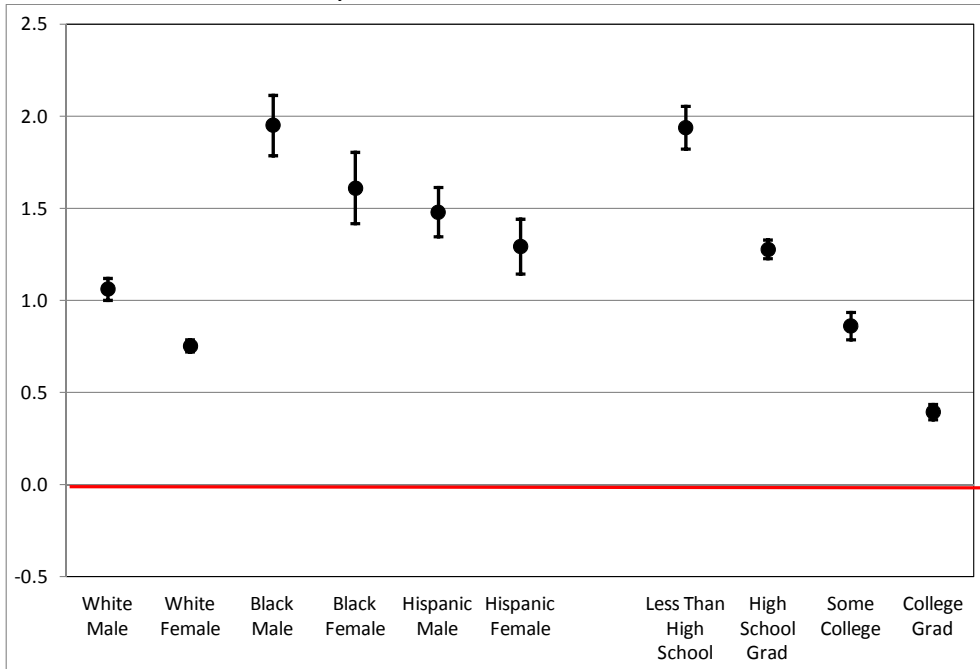


Figure 8: Impact of State Unemployment Rate on Group Unemployment Rate, by Race/Sex, and Education



Source: Authors' tabulations of the MORG for 1/1979-7/2011. Each point is the estimate on state unemployment rate from a separate regression (along with the 95% confidence interval) for a given demographic group. The model also includes fixed effects for demographic group, state, and state-month, as well as state linear time trends. See text for details.

Figure 9: Impact of State Unemployment Rate on Group Employment Rate, by Single Year of Age

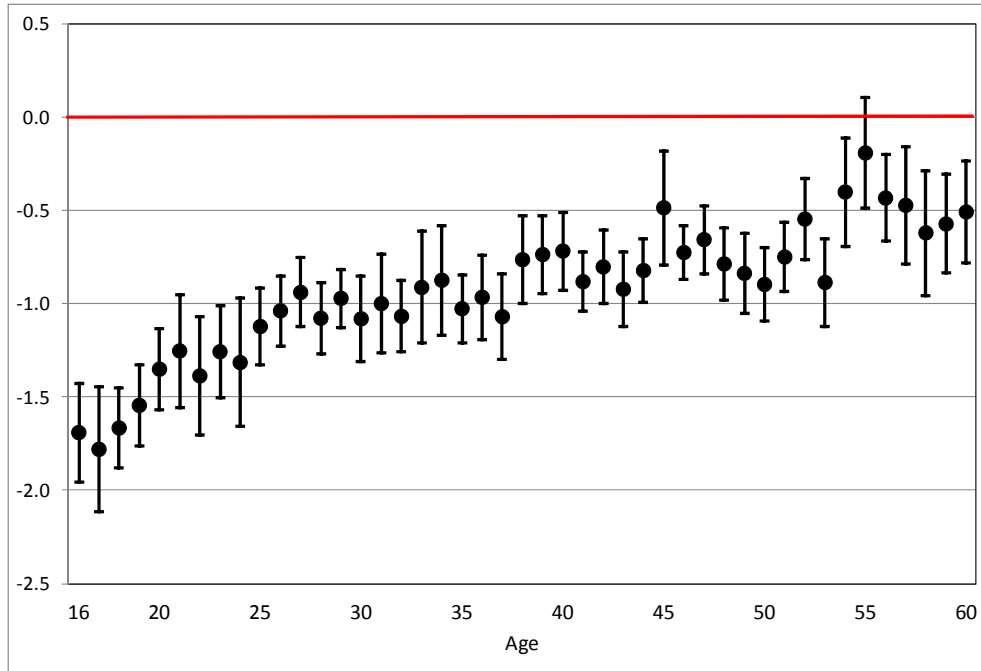
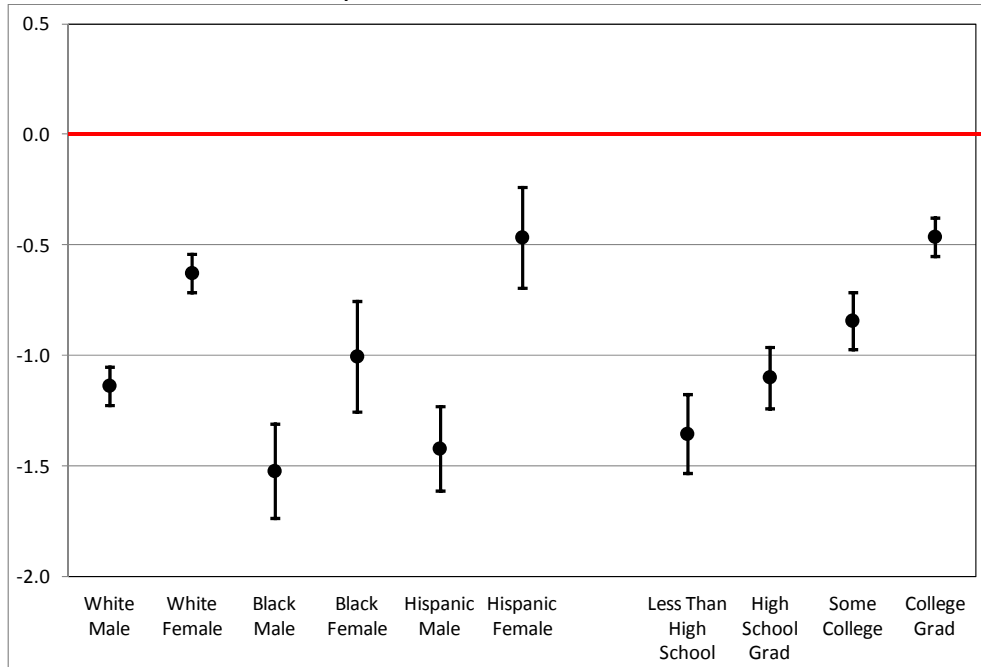


Figure 10: Impact of State Unemployment Rate on Group Employment Rate, By Race/Sex and Education



Source: Authors' tabulations of the MORG for 1/1979-7/2011. Each point is the estimate on state unemployment rate from a separate regression (along with the 95% confidence interval) for a given demographic group. The model also includes fixed effects for demographic group, state, and state-month, as well as state linear time trends. See text for details.

Figure 11: Percent Change in Employment over 2007 Recession Versus Share Male, by Industry

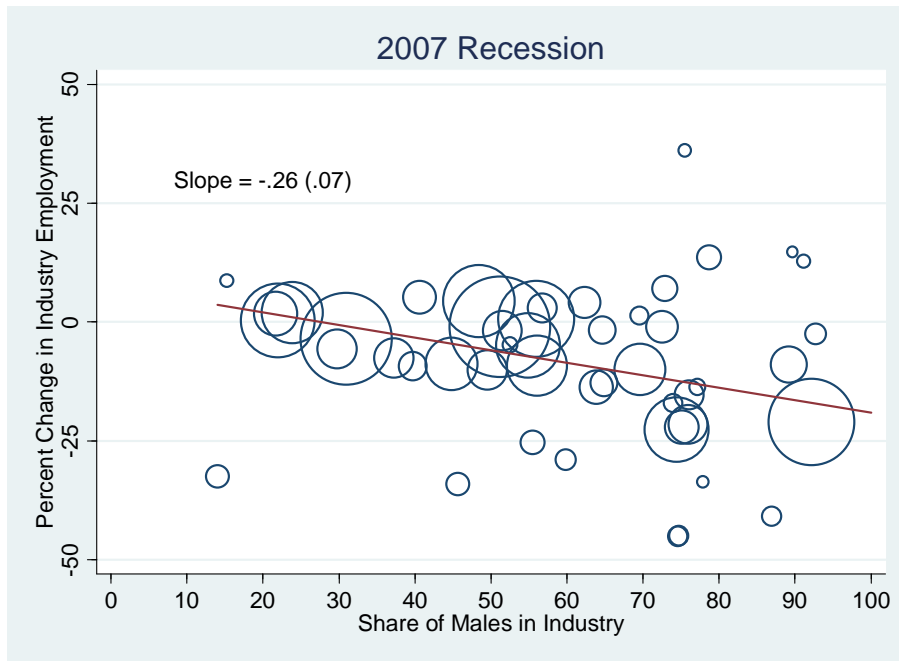


Figure 12: Percent Change in Employment over 2007 Recession Versus Share High School Dropout, by Industry



Source: Authors' tabulations of the MORG for 5/2007 and 10/2009 using 2-digit NAICS codes. The x axis is share male (Figure 11) in the industry and share less than high school graduate (Figure 12) in the peak (5/2007). The y axis is the percent change in employment between 5/2007 and 10/2009 by industry. Points weighted by industry employment in 5/2007.

Table 1: Labor Market Outcomes by Race, Gender, Education, and Age, May 2007

	Employment Rate	Unemployment Rate	Usual Weekly Earnings (2010\$)	Hours Last Week
White Male	81	3.6	\$830	34
White Female	71	3.2	499	25
Black Male	66	9.1	448	26
Black Female	59	6.5	401	24
Hispanic Male	79	6.2	524	32
Hispanic Female	58	4.9	298	20
Less Than HS	48	10.1	187	16
HS Grad	72	5.4	306	28
Some College	76	3.6	545	29
College Grad	86	1.6	1037	35
Age 16-19	33	14.4	69	8
Age 20-24	68	6.4	306	23
Age 25-44	81	3.7	679	32
Age 45-60	75	3.3	707	30

Source: Authors' tabulations of MORG.

Table 2: Impact of State Unemployment Rate on Group Unemployment Rate, By Race/Sex, Age and Education

	Estimates Across Recessions			Estimates Across Expansions		
	1980s	2007	p-value for equality	1980s	2007	p-value for equality
White Men	1.09 (0.03)	1.14 (0.07)	0.47	1.13 (0.04)	0.97 (0.03)	0.00***
White Women	0.76 (0.03)	0.76 (0.05)	0.99	0.76 (0.03)	0.61 (0.03)	0.00***
Black Men	2.00 (0.09)	2.00 (0.14)	0.99	2.14 (0.09)	1.89 (0.10)	0.01***
Black Women	1.45 (0.07)	1.39 (0.09)	0.54	1.58 (0.07)	1.34 (0.06)	0.00***
Hispanic Men	1.59 (0.06)	1.72 (0.08)	0.22	1.69 (0.06)	1.45 (0.05)	0.00***
Hispanic Women	1.40 (0.05)	1.33 (0.05)	0.38	1.31 (0.05)	1.18 (0.05)	0.10*
Age 16 to 19	2.11 (0.11)	2.24 (0.11)	0.17	2.04 (0.09)	2.17 (0.12)	0.08*
Age 20 to 24	1.51 (0.04)	1.54 (0.05)	0.41	1.46 (0.04)	1.41 (0.04)	0.28
Age 25 to 44	0.97 (0.03)	1.10 (0.05)	0.01**	1.02 (0.03)	0.99 (0.03)	0.20
Age 45 to 60	0.70 (0.02)	0.85 (0.04)	0.01***	0.79 (0.03)	0.79 (0.03)	0.93
Less than HS	1.74 (0.06)	2.01 (0.09)	0.00***	1.84 (0.04)	1.86 (0.09)	0.76
HS Grad	1.21 (0.03)	1.40 (0.04)	0.00***	1.23 (0.02)	1.30 (0.03)	0.04**
Some College	0.80 (0.04)	0.97 (0.04)	0.01***	0.84 (0.03)	0.88 (0.06)	0.44
College Grad	0.37 (0.03)	0.53 (0.04)	0.01***	0.39 (0.02)	0.41 (0.04)	0.58

Source: Authors' tabulations of the MORG for 1/1979-7/2011. Each panel are estimates from pooled regression across demographic groups (e.g. the 4 age groups) and three periods (1980s recession, 2007 recession, rest of period). The regression includes the state unemployment rate, and the impact of the state unemployment rate is allowed to vary across the three periods and the demographic groups (e.g. 4 age groups). The model also includes fixed effects for demographic group and state-month, state linear time trends, as well as quadratic time trends and state fixed effects for each demographic subgroup.

Table 3: Impact of State Unemployment Rate on Group Employment Rate, By Race/Sex, Age and Education

	Estimates Across Recessions			Estimates Across Expansions		
	1980s	2007	p-value for equality	1980s	2007	p-value for equality
White Men	-0.88 (0.08)	-1.03 (0.14)	0.21	-0.99 (0.06)	-0.90 (0.08)	0.29
White Women	-0.48 (0.07)	-0.50 (0.11)	0.81	-0.59 (0.05)	-0.34 (0.06)	0.01***
Black Men	-1.56 (0.10)	-1.53 (0.18)	0.80	-1.57 (0.10)	-1.43 (0.12)	0.19
Black Women	-1.07 (0.10)	-1.24 (0.15)	0.19	-1.22 (0.08)	-1.15 (0.10)	0.60
Hispanic Men	-1.52 (0.09)	-1.68 (0.13)	0.16	-1.59 (0.08)	-1.48 (0.08)	0.40
Hispanic Women	-0.67 (0.11)	-0.90 (0.13)	0.12	-0.90 (0.10)	-0.71 (0.09)	0.02**
Age 16 to 19	-1.44 (0.08)	-1.69 (0.14)	0.05**	-1.63 (0.08)	-1.56 (0.08)	0.45
Age 20 to 24	-1.29 (0.11)	-1.32 (0.14)	0.74	-1.24 (0.07)	-1.28 (0.07)	0.63
Age 25 to 44	-0.80 (0.06)	-0.88 (0.12)	0.48	-0.83 (0.04)	-0.75 (0.08)	0.33
Age 45 to 60	-0.34 (0.06)	-0.61 (0.13)	0.02**	-0.60 (0.04)	-0.50 (0.08)	0.29
Less than HS	-1.14 (0.10)	-1.48 (0.17)	0.01***	-1.32 (0.08)	-1.34 (0.16)	0.93
HS Grad	-0.94 (0.08)	-1.13 (0.12)	0.10*	-1.01 (0.05)	-0.99 (0.06)	0.81
Some College	-0.61 (0.09)	-0.74 (0.11)	0.26	-0.70 (0.06)	-0.69 (0.05)	0.86
College Grad	-0.25 (0.07)	-0.32 (0.12)	0.56	-0.28 (0.04)	-0.16 (0.06)	0.14

Source: Authors' tabulations of the MORG for 1/1979-7/2011. Each panel are estimates from pooled regression across demographic groups (e.g. the 4 age groups) and three periods (1980s recession, 2007 recession, rest of period). The regression includes the state unemployment rate, and the impact of the state unemployment rate is allowed to vary across the three periods and the demographic groups (e.g. 4 age groups). The model also includes fixed effects for demographic group and state-month, state linear time trends, as well as quadratic time trends and state fixed effects for each demographic subgroup.

Table 4: Impact of State Unemployment Rate on Group Average Weekly Earnings, By Race/Sex, Age and Education, Percent Impacts (estimates divided by group mean)

	Estimates Across Recessions			Estimates Across Expansions		
	1980s	2007	p-value for equality	1980s	2007	p-value for equality
White Men	-0.016 (0.002)	-0.022 (0.002)	0.02**	-0.017 (0.002)	-0.021 (0.001)	0.06*
White Women	-0.004 (0.005)	-0.012 (0.004)	0.04**	-0.008 (0.004)	-0.006 (0.002)	0.65
Black Men	-0.027 (0.003)	-0.035 (0.004)	0.04**	-0.029 (0.004)	-0.034 (0.003)	0.11
Black Women	-0.016 (0.006)	-0.023 (0.005)	0.14	-0.020 (0.006)	-0.019 (0.003)	0.74
Hispanic Men	-0.025 (0.003)	-0.031 (0.003)	0.06*	-0.026 (0.003)	-0.030 (0.002)	0.16
Hispanic Women	-0.007 (0.007)	-0.020 (0.006)	0.04**	-0.013 (0.007)	-0.012 (0.003)	0.89
Age 16 to 19	-0.031 (0.011)	-0.137 (0.027)	0.00***	-0.073 (0.014)	-0.101 (0.025)	0.26
Age 20 to 24	-0.024 (0.004)	-0.046 (0.007)	0.00***	-0.033 (0.004)	-0.044 (0.005)	0.04**
Age 25 to 44	-0.014 (0.002)	-0.019 (0.003)	0.10*	-0.015 (0.003)	-0.017 (0.002)	0.42
Age 45 to 60	-0.009 (0.002)	-0.013 (0.003)	0.19	-0.010 (0.003)	-0.010 (0.002)	0.95
Less than HS	-0.018 (0.005)	-0.056 (0.012)	0.00***	-0.030 (0.006)	-0.044 (0.010)	0.15
HS Grad	-0.019 (0.003)	-0.030 (0.005)	0.03**	-0.021 (0.003)	-0.026 (0.003)	0.16
Some College	-0.017 (0.002)	-0.021 (0.004)	0.28	-0.016 (0.003)	-0.019 (0.002)	0.40
College Grad	-0.009 (0.002)	-0.010 (0.002)	0.51	-0.008 (0.002)	-0.008 (0.002)	0.99

Source: Authors' tabulations of the MORG for 1/1979-7/2011. Each panel are estimates from pooled regression across demographic groups (e.g. the 4 age groups) and three periods (1980s recession, 2007 recession, rest of period). The regression includes the state unemployment rate, and the impact of the state unemployment rate is allowed to vary across the three periods and the demographic groups (e.g. 4 age groups). The model also includes fixed effects for demographic group and state-month, state linear time trends, as well as quadratic time trends and state fixed effects for each demographic subgroup.