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The U.S. Employment-Population Reversal in the 2000s: Facts and Explanations

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Abstract

The decline in the employment-population ratios for men and women over the period 2000-2007 prior to the Great Recession represents an historical turnaround in the evolution of U.S. employment. The decline is disproportionately concentrated among the less educated and younger groups within the male and female populations and, for women, disproportionately concentrated among the unmarried. For men, about half of the decline can be explained by declines in wage rates and changes in nonlabor income and family structure influences. Essentially all of the male decline for married men can be explained by these factors. However, these influences explain virtually none of the decline in employment among women, including that of unmarried women. Neither taxes nor transfers appear likely to explain the employment declines, nor do other influences such as the minimum wage or health factors.

The primary focus of recent policy and research discussions on the U.S. labor market has concerned its dismal performance during the Great Recession. The unemployment rate rose from 4.6 percent in 2007 to 8.9 percent in 2011 and the share of unemployment accounted for by those unemployed 27 weeks or longer rose from 18 percent to 44 percent. Aggregate employment fell by 5 percent even ignoring population growth. The labor force participation rate fell from 66 percent to 64.1 percent.

Also much discussed in the press and among researchers and policy-makers has been the decline in the employment-to-population ratio during the Recession. That ratio stood at 63 percent in 2007 and had fallen to 58 percent by 2011, a tremendous decline by historical standards. Many have noted the slow rate of recovery of this ratio after the official trough of the Recession in June 2009, when it stood at 59.4 percent. In fact, the ratio continued to decline for several months thereafter, bottoming out at 58.2 percent in December, 2009. Since that time, it has risen only slightly and has remained stationary at a little over 58 percent, and standing at 58.6 percent in June, 2012. Behind this trend is a decline in the labor force participation rate, constituting a contribution to the decline in the unemployment rate but not a particularly welcome one (Stock and Watson, 2012).

This study examines the employment-to-population ratio as well but focuses on another fact also noticed by some others, namely, the decline in the ratio even prior to the Recession. The aggregate ratio stood at 64.4 percent in 2000 and at 63 percent in 2007. As will be shown below, the decline was greater among younger and less educated men and women. This decline

represents an historical reversal in what has been an upward trend in the ratio over the prior 30 years and hence constitutes a major change in the U.S. labor market. This reversal may very well continue after the Great Recession and is probably connected with the slow recovery of the ratio since 2009.

There has been very little formal study of this reversal. In a session at the American Economic Association meetings in January, 2012, Henry Farber found that changes in the age-gender-education composition of the population could explain no more than a quarter of the decline, and Robert Shimer noted the greater rate of decline among youth and speculated that rigid wages or intertemporal substitution between the pre-2000 and post-2000 periods could be partly responsible.[1] Autor (2010) found that changes in the employment-to-population ratio over the 1979-2007 period as well as the subperiod after 2000 are positively correlated with changes in wages, suggesting a conventional labor supply explanation for the trend. Macunovich (2010) found a significant decline in female labor supply from 1999-2001 to 2007-2009, particularly among unmarried women without children, but also found that conventional observables (wage rates, numbers of children, etc.) could explain very little of the change over time. Aaronson et al. (2009) examined the aggregate labor force participation rate through 2005, finding that demographic, cyclical, and structural factors probably contributed to the recent downturn in that rate.

Trends in the labor supply of women have been extensively studied. The recent literature in this area has focused on whether wage elasticities of labor supply and other coefficients in female labor supply equations have changed over time. Blau and Kahn (2007) found that the

wage elasticity for married women declined noticeably from the 1980s to the 1990s, bringing their wage elasticities closer to those of men. More relevant to the post-2000 period are studies by Bishop et al. (2009), Heim (2007), and Macunovich (2010), who examined whether wage elasticities were falling after 2000, with some studies going through 2002, others through 2003, and one through 2007-2009. Those ending in 2002 or 2003 found falling wage elasticities while the study ending in 2007-2009 found a slight increase. A problem with these studies is that the ending years were all at a different point in the business cycle than the beginning points, complicating the inferences to be drawn. More relevant for present purposes, the question to be pursued here is whether trends in one aspect of labor supply—the employment-population ratio—can be explained by changes in observed variables rather than changes in coefficients.[2]

Another strand of the literature for women has focused on a so-called "opt-out" revolution among well-educated and professional married women, whose labor force participation rates fell in the 2000s (Walls et al., 2010). The speculation in this line of argument is that more-educated women are increasingly deciding to stay at home to engage in child-rearing rather than engage in market work. There has been some research on this hypothesis but very little focuses on the 2000-2007 period and very little of that attempts to search specifically for variables and causes of the decline (Antecol (2010), Bousey (2008), Macunovich (2010)).

Here I conduct an analysis of the decline in the employment-population ratio through 2007 with two parts. First, I describe the patterns of decline in the employment-to-population

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[1] http://www.aeaweb.org/webcasts/2012/index.php

[2] As noted above, Macunovich (2010) found that little of the change for women through 2007-2009 could be explained by observables. Hotchkiss (2006), using a model without wages in the labor supply equation, likewise found that observables could explain little of the change in

ratio in detail, examining the patterns by time period as well as by demographic group--age, gender, education, race, and other characteristics. This analysis reveals that the decline is disproportionately concentrated among the young and less educated, both for men and women. Second, I conduct an investigation for proximate causes of the decline. For men, about half of the decline can be explained by declines in wage rates and changes in nonlabor income and family structure influences. Essentially all of the male decline for married men can be explained by these factors. However, these influences explain virtually none of the decline in employment among women, including that of unmarried women. Neither taxes nor transfers appear likely to explain the employment declines, nor do other influences such as the minimum wage or health factors.

I. Trends and Patterns

The Bureau of Labor Statistics publishes statistics on the employment-population ratio drawn from the monthly interviews of the Current Population Survey, asking employment status during the week preceding the interview of all individuals 16 and over. The middle line in Figure 1 shows the trend for the civilian noninstitutional population 16-64 from 1970 to 2011 (those over 64 will not be examined in this study). The trend in the ratio was positive, with intermittent cyclical variation, from 1970 to about 1999 or 2000. At that point it reversed course and began the decline which is the object of interest here. The ratio declined from 74.1 percent

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female labor force participation through 2005.

to 71.8 percent between 2000 and 2007, over two-and-a-half percentage points.[3] It plummeted further thereafter as the Great Recession began. The departure from the historical trend is dramatic and clear from the figure.

The trend in the overall ratio masks quite different trends by gender, as shown in the Figure. The ratio for men declined, on average, between 1970 and 1983, after which it remained stable until 2000, before beginning a decline after that. Its decline from 2000 to 2007 was 2.7 percentage points. However, for women, the employment-population ratio secularly increased from 1970 to 2000, consistent with the well-known trend growth of female employment in the U.S. over this period. After 2000, it stopped growing and declined slightly, falling by 1.7 percentage points by 2007. The decline was therefore smaller in magnitude for women, but their deviation from pre-2000 trend was greater.

The focus of this study will be on the period 2000-2007 as compared to the preceding period of the 1990s and will investigate causes of the reversal of the trend in the employment-population ratio from the first period to the second. An immediate issue in conducting such an investigation is whether to attempt to explain both the trend and the cycles in the ratio, for it is clear from Figure 1 that the ratio behaves procyclically. Here, the focus will be restricted to an investigation of the trend and not the cycle, at least to the greatest extent possible. To this end, I shall select years where the economy was roughly at the same point in the cycle—in fact, as closely as possible to a peak. Figure 2 shows the unemployment rate along with the trend in the overall employment-population ratio we have already seen in Figure 1. The unemployment rate

[3] These figures differ from those published by the BLS for the whole population, which includes those 65 and over. The employment-population ratio for the elderly increased over the

in 2007 stood at 4.60 percent in March 2007 and was closest to this rate in March 1999 (4.61 percent).[4] Therefore, I shall focus on the change in the ratio between those points in time, which exhibit the same magnitude of declines as those discussed above for 2000 to 2007 (2.7 percentage points for me and 1.7 percentage points for women). For the period of the late 1980s and the 1990s, the lowest March unemployment rate was recorded in 1989, when it stood at 5.41 percent (it was even higher for all prior years in the 1980s). This is slightly higher than it was in March 1999. Nevertheless, the period from March 1989 to March 1999 will be taken as illustrating the trend over the "1990s." Over that period, the employment-population ratio for men fell by a small 0.9 percentage points and that of women rose by 3.6 percent points.[5]

Movements in the employment-population ratio can be a result of shifts in the demographic composition of the population as well as shifts in the employment-population ratio for groups of the population with the same characteristics. While composition is likely to be more important over longer periods of time than 8 years, it could also be of some importance over the 1989-2007 period and could affect the interpretation of the trends in the aggregate ratio I have thus far shown. To this end, I use the March Current Population Survey (CPS) in each of the years 1989 to 2007, which collected information on the employment and labor force status of all individuals 16 and over as well as their age, level of education, race, and gender. Classifying

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period.

[4] These figures differ slightly from BLS figures for the 16-64 population because they are computed on the sample used for model estimation below, which has some exclusions.

[5] I should refer again, at this point, to some of the studies mentioned in the Introduction which studied labor supply trends through 2002, 2003,or even 2005. Clearly the unemployment rate was much higher, and the employment-population ratio much lower, in those years but partly for cyclical reasons. This makes it difficult to make inferences about trends from those studies.

the population into four age groups (16-24, 25-39, 40-54, and 55-64), four education groups (less than high school, high school graduates, some college, college degree or more), and three race groups (White, Black, and Other), allows a determination of how the proportions of the population in the resulting 48 demographic groups for each gender affected their aggregate employment-population ratio trends with a standard shift-share decomposition. As can be seen in Figure 3, which plots the ratio from 1989 and after holding composition constant at its 1999 value, only small fractions of the changes in the ratios were a result of changes in composition. There was only a slight compositional change for men during the 2000s downturn and only a small change for women from 1989 to 1999.

With it established that most of the decline in the employment-population ratio from 1999 to 2007 was not a result of changes in composition, the March CPS can now be used to describe the patterns of the decline in the ratio by demographic characteristic. Table 1 shows the patterns of change for this period by age, education, and gender, using the same four categories of age and education used for the composition exercise. The largest employment-population declines occurred, with some exceptions, among those less than 40 years old for both men and women and, among those, the declines were usually sharper for those less than 25. There is also a correlation with education levels, with declines generally larger for those with high school degrees or less than among those with at least some college. The combination of being younger and less educated generally result in the largest declines (e.g., over 4 percentage points). On the other hand, declines in the ratio, even if smaller in magnitude, often occurred for those 40-54 and for those with college degrees or more, particularly for women in the latter case (perhaps

consistent with the "opt-out" revolution). Thus the decline did not occur exclusively among the young and less educated.

The patterns for 1989-1999 are different, as should be expected. For men, there were generally declines in the ratio but most were smaller in magnitude than for the later 1999-2007 period and there was a slight tendency for the magnitude of the difference to be greater for the younger and less educated. For women, the contrast is greater, with almost all categories showing positive trends in the ratio for the earlier period. The difference in trends is particularly strong for those younger and less educated.

Comparisons by race (Appendix Table A-1) show roughly the same patterns of decline for White, Black, and Other Race groups. The magnitudes vary considerably across the racial groups, although smaller sample sizes for some categories may play a role. Some of the largest declines occurred among Black men and women, but for many age-education groups, they were smaller than for White men and women than for Blacks.

For the very young, it is possible that some of the declines in employment could simply reflect increases in school attendance. The CPS asks young individuals (16-24) who report they are not employed if they are attending school. Table 2 shows that there were increases in school attendance from 1999 to 2007 for men with a high school degree or less and for all women. However, with only a couple of exceptions, the increases were smaller than those that had occurred during the 1989-1999 period.

Some of the papers in the literature referenced in the Introduction note the importance of marital status to labor supply trends, especially those of women, and the analysis below will also find major differences with respect to marital status. For men, the employment-population ratio

declined over the 1999-2007 period by 1.6 percentage points for married men but almost double that for unmarried men, 2.9 percentage points. For women, the contrast was even greater, with the ratio declining by only one-third of a percentage point for married women but by 2.9 percentage points for those unmarried. Thus the majority of the declines were among the unmarried, not the married. Table 3 shows the patterns of decline by marital status by age-education category. From 1999 to 2007, married men's employment-population ratios still declined more for the youngest (16-24) and less educated groups but the ratios for unmarried men declined more for older less educated men. For women, while the relatively greater concentration of declines in the younger and less educated groups occurred for those of both marital statuses, the magnitudes of the declines for those groups were almost always considerably greater for unmarried women. An additional indication in the data is that the greater declines for unmarried women are concentrated among those without children, for whom the ratio declined by 3.5 percentage points between 1999 to 2007, compared to a decline of only four-tenths of a percentage point among unmarried women with children.[6] However, unmarried women without children still constitute about one-third of all women 16-64.

II. Labor Supply Models and Evidence

The workhorse model in labor economics for explaining changes in individual employment and hours of work has been the static labor supply model, enshrined in textbooks.

[6] Again, Macunovich (2010) found this same result.

In that model, individuals choose whether to work at all, and how many hours to work, as a function of the market wage rate they face and the amount of nonlabor income available to them. The theoretical effect of the market wage rate on hours of work is ambiguous in sign but is unambiguously positive for the decision to work at all, while the prediction for the effect of nonlabor income on both hours and the decision to work is negative.

The empirical literature on the model is vast. Killingsworth (1983) exhaustively reviewed the literature from the 1960s and 1970s while Blundell and MaCurdy (1999) and Meghir and Phillips (2010) have conducted updated reviews. Unfortunately, the bulk of this literature focuses on hours of work and not on the employment decision. For hours of work, the conventional wisdom from this literature is that wage elasticities are zero or negative for prime-age men and significantly positive for women, and that income elasticities are negative for both but greater in magnitude for women, but often not very large for either. The conclusions for men have been challenged over the years (e.g., Juhn et al., 1991) and, most recently, by Keane (2011) and Keane and Rogerson (2012). The latter argued explicitly that wage elasticities for the employment decision (the "extensive margin") are likely larger than those for the hours decision (the "intensive margin"), and are very important for the aggregate labor supply elasticity (see also Rogerson and Wallenius (2009)). For women, it has long been recognized that the extensive margin is particularly important, going back to early labor supply work that separated it from the intensive margin (Mroz, 1987). Meghir and Phillips (2010) also examine wage elasticities for participation and find them to be larger for women than for men, albeit not that large even for women. Aside from the estimation of wage elasticities of participation, it is also

well known that the time-series increase in labor supply of women has been particularly strong on the extensive margin.

Another literature of relevance is the literature on separating demand from supply influences on trends in wage differentials among men and women in the U.S. (Katz and Autor, 1999; Acemoglu and Autor, 2011). While this literature is rarely referenced in the labor supply literature, its main focus on the correlation between wage changes and "quantity" changes--most often measured by total hours of work in a skill group--has implications for wage elasticities of labor supply. The main conclusion from that literature is that the last four or five decades have seen a trend-like expansion of the relative demand for more skilled workers and that, with the exception of the 1970s, relative supply has shifted outward only modestly--or has even shifted backward. This conclusion is based upon the general finding of a positive correlation of wage changes with hours changes across education and experience groups, implying a positive wage elasticity of labor supply, even for men. A recent paper focusing just on the employment-population ratio within the same framework (Autor, 2010) reaches the same conclusions for that ratio, finding a positive correlation between changes in wages and the employment-population ratio over the period 1979-2007 and also over the period of the 2000s.

The empirical literature on the standard labor supply has reached many other general conclusions as well. For married women, it has been established that the influence of the level of her spouse's earnings is an important factor in her labor supply decision. The presence of young children, which tends to depress labor supply of women, is important as well as marital status, with unmarried women tending to work more than those who are married. For men, marital status is also correlated with labor supply (at least hours of work), with married men working

longer than unmarried men. The presence of young children is generally found to have less impact, if any, on the labor supply decisions of men than for women.

A related but important literature focuses on the impact of tax and transfer programs on labor supply. The early literature on the effect of taxes was covered by Killingsworth (1983) and the later literature, by the reviews of Blundell and MaCurdy (1999) and Meghir and Phillips (2010). All of these studies concluded, to varying degrees, that tax responses were consistent with the literature on labor supply in general, namely, very modest responses for prime-age men and somewhat larger responses for women.[7] This view has been challenged recently by Keane (2011), who argues that properly specified life cycle models with returns to human capital incorporated into the model imply larger wage elasticities. As for transfer programs, there is a similarly large literature focusing on different programs. The review of the early literature by Moffitt (1992) found rather significant responses of single-mother labor supply to the Aid to Families with Dependent Children (AFDC) program, and research on later reforms of that program show even larger responses (Grogger and Karoly, 2005). But Moffitt found very small effects of most other means-tested transfer programs, and a recent, newer review is consistent with this view (Ben-Shalom et al., forthcoming). There is less consensus in the literature on the effects of social insurance programs, where very divergent estimates of the effects on work incentives of the Social Security Retirement program, the Disability Insurance program, and

[7] Two other related literatures are those explaining cross-country differences in labor supply with taxes and those examining tax effects on taxable income. For the former, see Prescott (2004), Rogerson and Wallenius (2009), and the recent contribution by Blundell et al. (2011), which focuses on the extensive margin across countries. For the latter, see the original contribution by Feldstein (1995), the recent review by Saez et al. (2012), and the recent

Unemployment Insurance (UI) appear. The effects of UI have figured prominently in the discussion of the Great Recession (e.g., Mulligan (2011)) but not as much in the discussion of labor supply trends prior to that.

III. Labor Supply Influences Without Taxes and Transfers

The approach taken here is to first examine the traditional determinants of labor supply appearing in the literature—wages and nonlabor income, but supplemented with demographic determinants (marital status, children, etc.)-- and to determine whether they can explain the reversal of the trend in the employment-population ratio from 1999 to 2007 relative to 1989-1999, including the patterns by age-education subgroup identified above. Taxes and transfers are considered subsequently. The primary data source for the analysis is again the March CPS data from 1989, 1999, and 2007, a random sample of approximately 145,000, 132,000 and 206,000 individuals in each of the respective years. The household interviews collected information on all individuals 16 and over, from which we select only those between the ages of 16 and 64. In addition to information in the survey week on employment status, which is used to construct a dichotomous variable for whether an individual is employed, and demographic characteristics, information was collected on earnings and weeks of work in the calendar year prior to the

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contribution of Romer and Romer (2012). Moffitt and Wilhelm (2000) apply the methodological framework initially developed by Feldstein to hours of work.

interview week as well as on all forms of nonlabor income and other labor income received by members of the family in the same prior year.[8]

The modeling approach is kept as simple as possible to increase transparency. Observations on individuals from the 1989, 1999 and 2007 surveys are pooled into one data set and ordinary least squares (OLS) regressions for employment-status are estimated as function of wages, nonlabor income, and demographic variables. Constant coefficients in the three years are imposed, for explaining the trends in employment by changes in preferences would not answer the question we are interested in (although I will test for changes in parameters over time). The ability of changes in the independent variables to explain changes in employment from 1989 to 1999, on the one hand, and 1999 to 2007, on the other, is then assessed.

All equations are estimated separately by gender. The equation estimated on the three years for each gender can be written as follows:

$$E_{it} = V_{it}\gamma + X_i\beta + \varepsilon_{it} \qquad (1)$$

where E_{it} is a dummy variable equal to 1 if individual i in year t (t=1989, 1999 or 2007) was employed and 0 if not; V_{it} is a vector of variables which change over time and whose explanatory power is being assessed (wages, nonlabor income, family structure); X_i is a vector of demographic control variables treated as fixed effects; and ε_{it} is an error term. The X_i vector will always consist of a full set of age-education-race dummies, fully interacted. The predicted

[8] Following most of the literature, individuals in group quarters and the military are excluded.

change in the employment-population ratio between years t and t+1 is therefore $[V_{t+1}(X_i = x) - V_t(X_i = x)]\gamma$ for age-education-race group x, and the predicted change for the population as a whole is the weighted sum of these changes over all age-education-race groups. This fixed effect model is equivalent to a first-differenced model, although estimated on individual data rather than grouped data. The predictions can be compared to actual changes in the employment-population ratio by group and overall.

Wages. The CPS interview asks respondents to report earnings in the past year as well as weeks worked in that year, plus average hours of work per week in that prior year. The third of these variables is particularly prone to measurement error and leads to the well-known problem of "division bias", so I use weekly wages by dividing earnings by weeks worked.[9] To lessen the problem that weekly wages will vary if hours of work change, and to lessen the problem that even weekly wages vary between part-year and full-year workers of the same skill, I restrict the wage sample to full-time full-year workers (40 or more weeks per year, 35 or more hours per week), following the literature in this area (e.g. Acemoglu and Autor, 2011). Those in group quarters, the military, the self-employed, and those with allocated earnings are also excluded from the wage sample, again following the studies just referenced.[10] Weekly wages are put into 2007 dollars using the Personal Consumption Expenditure deflator.

[9] The division bias problem is presumably less important here because hours of work are not used as the dependent variable. Nevertheless, measurement error in hours work could be correlated with the error term in the employment equation. I will report below how the results change when hourly wages are used.

[10] The exclusion of those with allocated earnings makes no difference to the results. In addition, following Acemoglu and Autor (2011, p.1162), weekly wages are trimmed at the top and bottom, both to eliminate outliers and to eliminate those affected by top-coding. However, rather than trim at fixed real weekly wages values for all years, as they do, I trim the top and

In addition, a well-known problem extensively addressed in the labor supply literature is that wage rates are not observed for nonworkers and must be imputed. I follow the fixed-effects approach described in equation (1) above by first regressing real log weekly wages on the X_i vector (age-education-race dummy variables, separately by gender) separately for the three years in question—1989, 1999, and 2007. Because the March CPS in those years reports earnings and weeks worked in the prior calendar year, I select the sample and estimate these regressions using the 1990, 2000 and 2008 CPS surveys, respectively. The regressions use the full-time full-year sample of workers discussed above. I then simply impute log weekly full-time full-year wages to all individuals in the March 1989, 1999 and 2007 CPS using the estimated equations from their respective years and enter this variable into the V_{it} vector. The coefficient on predicted log weekly wages is thus identified by the covariance between the change in employment probabilities and the change in predicted wages conditional on demographic group, averaged over the groups. Put differently, this is the individual-data equivalent of a first-differenced grouped-data regression in which means of the dependent variable, the log real weekly wage, and the other variables in the V_{it} vector (nonlabor income, demographic characteristics) are computed for each age-education-race group and a first-differenced regression for the changes in the dependent variable is estimated on the grouped data. Estimation on the individual data is more efficient because it makes use of within-group covariances of the variables in the V_{it} vector.[11]

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bottom 5 percent of the distribution. All wage regressions are estimated using March CPS Supplement weights. Finally, I also estimate the wage equations on the CPS Outgoing Rotation Group data, with results to be reported in the future, although Acemoglu and Autor (2011, n.9) note some serious problems with the consistency of the data before and after 1994.

[11] Formally, either the individual-data approach or the grouped-data approach is equivalent to an instrumental-variable procedure where "year" is the variable included in the

Another well-known problem since the work of Heckman (1974) is that wages of workers alone may be a biased measure of those of nonworkers and, for the issue studied here, changes in employment over time may result in biased measures of wage changes if only workers' wages are used because those who enter or exit employment may have systematically different wages than those who do not. Here a semiparametric version of the traditional Heckman (1979) approach is used, one not requiring the normality assumption. First-stage OLS estimates of the employment equation in each year (leaving out the wage) are used to predict probabilities of employment and a polynomial in those predicted probabilities is entered into the wage equation. The selection-bias effect is identified because the employment equation contains variables—nonlabor income and demographic variables—which are excluded from the wage equation. The model is estimated with and without this adjustment to determine the effect of the adjustment on the estimates.

Estimates of the wage equations in each year with and without selection bias adjustment are shown in Appendix Table A-2. The coefficient on the selection term is generally statistically significant.[12] The mean predicted log wage changes for the full male sample (i.e, all workers and nonworkers combined) are .064 and -.009 for 1989-1999 and 1999-2007, respectively, consistent with a wage explanation for the aggregate male change in the employment-population ratio between the periods. For women, the respective mean log wage

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wage equation--because it is estimated separately by year--but excluded from the employment-population regression--which restricts all parameters to be the same over all years. This equivalence is demonstrated by Moffitt (1993) in a discussion of the work of Browning, Deaton, and Irish (1985).

[12] A quadratic in the predicted probability was also estimated but was either insignificant or added no explanatory power.

changes were .115 and .074, consistent with a smaller growth of employment in the latter period but, still, the fact that mean log wages for women grew during 1999-2007 cannot explain a decline in employment if wage effects are positive.

Table 4 shows the values of the log wage changes by age-education group for men and women for the two periods. For men, while the 1999-2007 wage changes are almost always negative, and while they generally show greater wage declines for less educated men, the age gradient does not line up particularly well with the pattern of employment declines by age in Table 1. The same is true for the 1989-1999 period. On the other hand, wage declines in the 1999-2007 period were greater than in the 1989-1999 period in almost all age-education groups, and the gaps were often larger for the younger and less educated men. For women, 1999-2007 wage changes in Table 4 are more often positive rather than negative even for those less than 40 or with a high school degree or less, inconsistent with the employment declines for those groups shown in Table 1. On the other hand, once again, the magnitude of the negative, or smaller positive, wage changes in 1999-2007 compared to those for 1989-1999 were often largest among those 16-24, the group which experienced some of the largest changes in employment growth between the two periods as well. The regression results reported below will indicate the average correlation between the changes in wages and changes in employment across the groups.[13]

Nonlabor Income. The typical difficulty in constructing a variable for nonlabor income is that few types of such income are exogenous. Means-tested transfer income is inversely related to income and therefore to employment and hence is endogenous, and most social

[13] The wage regressions also contained race-interactions. Tables showing the wage changes for all age-education-race groups, which can be lined up with the employment changes

insurance program benefits, such as UI, DI, and Social Security are likewise negatively related to employment (Social Security at certain ages is an exception). The typical labor supply study restricts the nonlabor income variable to include interest, dividends, and rent, which are contemporaneously independent of labor market activity. However, these types of capital income are the result of past accumulation of capital, and that is no doubt related to earnings. Moreover, large fractions of the population receive no capital income at all. A third type of income sometimes included is earnings from members of the family other than the individual in question. The leading example is spousal earnings. However, this variable is also likely endogenous if the spouses coordinate their labor supply decisions.

Solving this old and difficult problem is beyond the scope of this study, so here I simply include interest and dividends in the measure of nonlabor income, excluding rent received for data reasons.[14] Some sensitivity tests are conducted including earnings received by other members of the family. The nonlabor income variable is converted to a weekly amount and put into 2007 PCE dollars.[15]

Demographic Variables. As noted in the review of labor supply models above, the presence of children, marital status, and other family structure variables have been shown in the literature to have strong effects on labor supply, albeit quite differently for men and women. Here I construct a three category marital status variable—Married, Single, or Divorced,

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in Table A-1, are available upon request.

[14] The Census imputes rent received for many observations, with the result that a large fraction of the data has negative values for this form of income. In addition, very few families receive any income at all from this source.

[15] Another sensitivity test is conducted by instrumenting nonlabor income to address possible endogeneity problems.

Widowed, or Separated—and include variables for the number of young children (0 to 5) and older children (6 to 18). In addition, variables indicating whether the individual is the head of the household or an unmarried parent (essentially an interaction between marital status and children) are included. These variables are potentially endogenous but this issue is not addressed.

Results. The employment-population equation is first estimated with only the log real weekly wage and nonlabor income—the two key variables in the theory—and then with the demographic variables added. Nonlabor income is represented in two variables: one, a dummy variable for having any nonlabor income and a second for the log of nonlabor income, if positive. This specification was adopted because a large fraction of the sample has no interest or dividends and preliminary testing indicated that there was a significant nonlinearity between the effects of those with zero and those with positive income amounts of this type.

Table 5 shows the results for models using selectivity-bias-adjusted wages and for models using wages predicted from equations not so adjusted. Without the demographic variables, the bias-adjusted wage coefficient for men is positive but insignificant at conventional levels while that for women is positive and significant. The estimates without bias adjustment are similar for women but stronger for men. However, when the demographic variables are entered, the difference in estimates for bias-adjusted and non-bias-adjusted effects are much smaller and essentially disappear for men. This is an indication that the demographic variables account for most of the selection into employment. All other coefficients in the table are similar in magnitude and significance whichever predicted wage is used.

The effect of the log of nonlabor income for those with positive income is negative, as predicted by the theory but the effect of having no nonlabor income is also negative, contrary to theory. No doubt having no nonlabor income is picking up some other determinant of employment status that is related to not working, if not a simple reverse causality working through lack of past saving. The coefficients on the demographic variables are mostly as expected from prior work: young children have no effect on men's labor supply but a negative effect for women; older children have a smaller negative effect for women but now a positive one for men; being married lowers female labor supply but raises that of men; and heads of household and unmarried parents tend to work more than non-heads and those who are unmarried but have no children.[16]

Separate estimates for the periods 1989-1999 and 1999-2007 yield very different results. For the 1989-1999 period, the male wage elasticity is negative and insignificant but, for the 1999-2007 period it is much larger than in Table 5. The model therefore explains the male employment declines in the first period considerably less well because it removes an explanation for the employment declines in that period but explains the employment declines in the second period better because the wage declines that occurred then lead to greater predicted employment declines. But why the male wage elasticity should grow over time is unclear. For women, the wage elasticity in the 1989-1999 period is positive and much larger than in Table 5, contributing to an explanation for the employment increases in that period, but the wage elasticity in the

[16] Two sensitivity tests to these results are worth reporting. Including earnings of other members of the family in N had no effect on the estimated coefficients or on any results reported below. Second, using the log hourly wage instead of the log weekly wage reduced the male wage elasticity to insignificance and lowered the female wage elasticity by a small amount.

second period is negative and significant. The latter result occurs simply because most female wages rose from 1999 to 2007 while most employment declined. These results are, taken as a whole, implausible.

Table 6 compares the actual mean changes in the employment-population ratios in the two periods to those predicted by the estimated models. For men, the model explains only a small amount of the decline in the 1989-1999 period (though a bit more with the Extended model) but explains about half of the decline in the 1999-2007 period. For women, the models explain a little over half the growth of the ratio in the first period but none of the decline in the second. Table 7 shows how the variables in the model changed between the periods, providing the source of the model predictions. Focusing only on the 1999-2007 period, the decline in the male employment-population ratio is accounted for the decline in wages, growth in the fraction with zero nonlabor income, and a decline in the number of older children and in the percent married. For women, while there was also a growth in the fraction with zero nonlabor income, the changes in the wage rate and in most of the demographic variables pushed the female employment rate up, not down, over the period.

A finer look at the models' modest success for men but failure for women is shown in Table 8, which reports the predictions for employment change in the different age-education groups and which can be compared to the actuals in Table 1. For men, the model predicts employment declines from 1999 to 2007 for all groups and captures, in a mild way, the greater declines for the less educated. However, it misses the greater declines among younger men almost entirely. For women, the model predicts employment growth from 1999 to 2007 for

many groups where actual employment declined, and captures very little of either the education or age gradient in actual employment declines.

As noted in the descriptive results previously, the declines in the employment-population ratio were considerably greater among the unmarried than among the married, especially for women. To attempt to explain this pattern, the Extended model is estimated separately for the two groups, necessarily omitting the variables for Married and Unmarried Parent from the regressions but retaining all other variables. The explanatory power of the model for the employment declines in the two groups is shown in Table 9. For married men, the model provides a complete explanation of the 1.6 percentage point decline in the 1999-2007 period. For married women, the model again fails to predict the decline but the decline was also very small. The more important unexplained declines are those for unmarried men and women, where employment declines were much greater and where the model explains none of the decline for men and only a small portion for women. The wage elasticities for unmarried men and women are both negative (and significant for women) which, unless it is presumed that income effects dominate substitution effects for these groups or there was a supply shift over the period, constitutes another implausible result.[17]

The greater unexplained decline among unmarried men and women should be qualified by the recognition that the pattern of greater declines among the less educated and younger individuals occurred in both groups. The greater mean declines among the unmarried only reflects a somewhat greater magnitude of decline, or declines among somewhat older and more

[17] Detailed results for the model coefficient estimates, changes in the regressor variables, and age-education-group employment change predictions for married and unmarried men and

educated groups, among the unmarried. To the extent that unmarried men and women are also less skilled along unobservable dimensions within each age-education group, their employment declines are not different in character than those for married men and women. The model captures this pattern of declines of employment for married men somewhat better than for unmarried men but there may still be determinants that commonly affect both less skilled married and unmarried men that are unaccounted for.

IV. Taxes and Transfers

As noted in the literature review above, taxes and transfers are often hypothesized to reduce labor supply and employment. The question addressed in this section is whether there is prima facie evidence for the effects of those policies on employment specifically between the 2000 to 2007 period.

Taxes. There were no federal income tax changes during the period 2000-2007 that would induce declines in labor supply over the period and, in fact, many would suggest the opposite. The Economic Growth and Tax Relief Reconciliation Act of 2001 passed by Congress provided for lower marginal tax rates at all income levels to be phased in gradually over the period 2001-2006, repealed the phaseout of the itemized deduction and personal exemption by 2008, and made some tax rate reductions retroactive. The Jobs and Growth Tax Relief Reconciliation Act of 2003 accelerated some of those reductions and reduced capital gains tax

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women separately are available upon request.

rates, and the Working Families Tax Relief Act of 2004 accelerated the provisions of both prior Acts.

The relevant tax rate for the employment decision, rather than the marginal hours-worked decision, is the average tax rate (ATR). Table 10 shows the ATR for all returns in each of the years 2000 to 2007 as well as the ATR for selected nominal income ranges. The ATR fell both overall and for all income ranges almost monotonically over time, which should have led to an increase in the employment rate rather than its opposite.

Other taxes during this period either did not change, increased only slightly, or fell. The payroll tax (FICA) below the taxable maximum remained at 7.65 percent over the period, unchanged from its value in 1990. The taxable maximum did rise, however, leading to a slight increase in the ATR for those at higher income levels, although this rise was because the taxable maximum level is indexed. The phase-in and phase-out tax rates for the Earned Income Tax Credit were unchanged from 1996 to 2008, although the income level for the maximum credit and for the complete phaseout moved up, increasing work incentives for lower earnings and decreasing them for higher earners. Capital gains and dividend tax rates have generally fallen, and estate and gift tax rates have been reduced and exemption levels raised.

Transfers. The U.S. system of transfers includes both programs which provide means-tested transfers--that is, transfers based directly on the income of the recipient and which require low income and/or low assets for eligibility--and social insurance programs, where eligibility and benefits are based on past earnings contributions. The leading means-tested programs in terms of expenditure and caseloads are the Medicaid, Supplemental Security Income (SSI), Temporary Assistance for Needy Families (TANF), Supplemental Nutritional Assistance (SNAP, formerly

known as Food Stamps), and Housing programs. The leading social insurance programs are the Old Age and Survivors Insurance, Medicare, UI, and Disability Insurance programs.

Theoretically, most of the programs can be expected to reduce work incentives and hence to lead to lower levels of work effort, although there are many specific provisions that could go either way which will not be discussed here. More important is the empirical literature on the existence and size of those disincentives, and here the literature is quite large for some programs and quite small for many others. The literature was recently reviewed by Ben-Shalom et al. (forthcoming), who found the evidence on work disincentives to be modest for most programs and very sparse for some. There is virtually no research evidence on the work disincentives of the current TANF program, for example, and very little for the SSI program. However, the TANF caseload is extremely small and is very unlikely to contribute to the widespread employment-population declines in the data, and the SSI program only affects the aged and disabled. There have been a few studies of the work disincentives of expansions of the Medicaid program which have shown zero or negligible effects (Gruber, 2003; Ham and Shore-Sheppard, 2005). The SNAP program appears to have work disincentives that are quite small, primarily because the benefit in question (food coupons) is not sufficiently large to provide much additional income as a result of reduced work effort. A recent study of the work disincentives of U.S. housing programs shows those programs to have significant work disincentives, about 4 percent points in employment (Jacob and Ludwig, 2012). However, once again, housing subsidy recipients are a restricted set of the population.

As for social insurance programs, there is a vast literature on the effects of the Social Security Retirement program on retirement ages and the labor supply of the elderly, but this is

not germane to the employment-declines of the non-elderly studied here. Evidence on the impact of the program on work levels of the non-aged is too sparse to reach any reliable conclusions. There have been a few recent studies of the effect of Medicare on labor supply (e.g., French and Jones, 2011) which suggest that there may be non-trivial work incentives but, once again, only for those 55 or older. Research on the disincentive effects of the Disability Insurance program has been increasing because of the growth of caseloads and expenditures in the program. There is no consensus on its work disincentive effects, with studies using traditional benefit-employment correlations (e.g., Autor and Duggan, 2000) showing larger disincentives than studies using rejected applicants as a control group, which show much smaller effects (Bound et al., 2010).[18] There is a very large literature on the work disincentives of the UI program but very little consensus on the magnitude of the effects. Restricting ourselves to the effects of the basic UI program itself and not considering the effects of extensions--there was no difference in UI Extended Benefits in 2000 and 2007--the most cited study is that recent work of Chetty (2008), which implies non-trivial work disincentives on the program on unemployment spell lengths.

More important for present purposes is whether any of these programs grew in size over the 1999-2007 period and, if so, whether there was any significant change in the structure, eligibility, or benefits of those programs over that period. Figure 4 shows the growth of the per capita caseloads of the major means-tested transfer programs since 1970. The figure demonstrates that there was little or no growth in those caseloads between 1999 and 2007 except

[18] However, Von Wachter et al. (2011) have found that even the rejected-applicant methodology shows growing work disincentives over time as a result of changes in the

for the Medicaid and SNAP programs; there was very little growth in the SSI or Housing caseloads over the 2000-2007 period, and the TANF caseload actually declined. The growth of Medicaid was a result of 1999 legislation creating the Children's Health Insurance Program (CHIP, later renamed SCHIP) which expanded coverage to children. This expansion should have had only an indirect impact on adult work effort. In addition, the growth of the Medicaid program began much earlier, in the late 1980s as a result of expansionary reforms for coverage of children and pregnant women which continued to have an impact over succeeding years.

The program whose per capita caseload increase is more relevant is the SNAP program, which began growing around 2000 and continued to grow thereafter (and has accelerated during the Recession). The reason for the growth of the program in this period were administrative reforms in the program intended to increase the participation rate of eligible families, which historically had been only around 60 percent. Beginning in the late 1990s and early 2000s, the U.S. Department of Agriculture began strongly encouraging steps to make it easier to participate in the program. These activities included extensive outreach programs to inform low income communities about the program; simplified eligibility criteria which reduced paperwork requirements for application; reduced recertification requirements requiring less reporting and less frequent reestablishment of eligibility; and relaxed the asset test requirements for the program (Leftin and Wolkwitz, 2009). These reforms have been found to be a major cause of the increase in the caseload (Klerman and Danielson, 2009). Nevertheless, as noted previously, the work disincentives of the program have been found to be quite small and it is unlikely that

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composition of the caseload.

the major employment declines over the period could have resulted from the small increase in income generated by the program.

Figure 5 shows the growth in the per capita caseloads of the two social insurance programs for the nonelderly, UI and DI. The UI caseload was approximately the same in 2000 and 2007, not surprisingly since the unemployment rate was the same in those years as well and no structural reforms of the program took place between those years. The DI program, on the other hand, continued growth which began in 1990 (and which has continued into the Recession). Much research has been conducted on the causes of this growth; declining wages for the low-skilled population may be one factor responsible, but changes in administrative procedures that effectively allow more eligibles onto the program are thought to be another (Bound et al., 2010). A new study of the disincentive effects of the DI program is beyond the scope of this paper, but a relevant piece of evidence that can be gleaned from the CPS is whether the magnitudes and pattern of increases in DI receipt across the age-education groups—receipt of DI benefits is reported in the survey—matches up with the patterns of employment declines. Table 11 shows how DI receipt reported in the CPS changed between 1999 and 2007 for the different groups of men and women and provides little basis for concluding that DI has played much of a role in employment declines. Some of the least skilled groups have seen declines rather than gains in receipt, some of the largest gains have been among older individuals, and none of the increases in receipt probability are anywhere close to the magnitudes of employment declines reported in Table 1.[19]

[19] DI receipt is endogenous and can be as much a result of employment declines as its cause. Therefore, if the pattern of receipt were to match up well with the pattern of employment

In summary, there have been few changes in the tax and transfer system that are likely to have contributed to the decline in employment-population ratios. Changes in income tax rates fell rather than increased and there were no other significant changes in the tax systems. Most transfer programs did not experience programmatic reforms and those that experienced significant caseload growth over the 1999-2007 period are unlikely to have played a major role in the employment declines.

V. Other Possible Factors

Several other possible factors in influencing the decline in employment-population ratios are worthy of consideration. These include changes in time use, in health status, in other factors affecting unmarried men and women disproportionately, and the minimum wage.

Time use could be a contributing explanation to the decline in the employment-population ratio if that decline was accompanied by an increase in nonmarket work, household production, or time devoted to child care. While such a shift would itself require an explanation, it would obviously suggest a concrete direction for exploration. Unfortunately, examining this hypothesis specifically for the 1999-2007 period is severely limited by the data. Modern analyses of time use begin with the American Time Use Survey (ATUS), whose first year was 2003. As emphasized repeatedly here, 2003 was at the trough of a business cycle and

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declines, no causal conclusions could be drawn. However, the failure of them to match up well constitutes legitimate evidence in the opposite direction, that the program is unlikely to have

unemployment was at a peak (see Figure 2) and, consequently, one should expect declines in employment and probable increases in nonmarket work between 1999 or 2000 and that year. However, no time use survey is available in 1999 or 2000 in any case. Prior to the 2003 ATUS, the most reliable recent survey was conducted in 1985, far too early to draw conclusions for the time period under consideration here. Further, over that period, Aguiar and Hurst (2007) have shown that nonmarket work time actually declined, which would not go in the right direction for explaining downward trends in employment. A 1994 survey exists but is widely regarded as fairly unreliable, often providing counterfactual results, and its time use categories are not completely comparable to those used in the ATUS. Aguiar and Hurst also analyzed that survey, however, and also found that nonmarket work declined from 1994 to 2003, albeit by a smaller amount than from 1985 to 2003.

Aguiar et al. (2011) used the ATUS to chart nonmarket work time from 2003 to 2007 and beyond (their paper was more focused on trends in the Recession). Their data showed that there were strong increases in market work and declines in nonmarket time from 2003 to 2007. Again, however, this was unquestionably a cyclical recovery period and this direction of effect is exactly what one would expect for that phase of a cycle.

There is somewhat better data specifically on time spent in child care time, with some data available in 2000 as well as later years. Analyzed by Ramey and Ramey (2010), the authors found an upward trend in child care time among parents in the U.S. This is some evidence in support of the hypothesis of the decline in employment. However, the educational pattern in the child care trend was exactly the opposite of that in the employment-population

played a major role.

ratio, as demonstrated previously: while the declines in employment were disproportionately concentrated among the less educated--and, as we have learned in the previous section, among the unmarried--the increases in child care time were concentrated among the higher educated, married individuals.

A decline in health is another possible factor that could contribute to declines in employment. Although one would naturally expect health to improve for a population with growing income per capita over time, it need not necessarily improve over shorter periods of time, particularly for particularly disadvantaged subgroups within the population. Measurement is a difficult issue in measuring health status as well, because the use of medical records to determine trends in specific morbidity rates is subject to bias because improved medical procedures generally result in greater detection of disease. The most common measure of health status is a self-rated measure from survey questions asking whether an individual's health is excellent, good, fair, or poor. This question is used in the CPS as well as in the National Health Interview Survey and others. Unfortunately, time trends in the fraction of the population reporting different categories is dramatically different in different surveys--rising in some, falling in others, and stationary in others, including over the period 2000-2007 (Salomon et al., 2009). The CPS, in particular, shows improvements in health in almost all age, education, and race categories, so it is unlikely that this factor is a significant one in the employment-population trends under study here.

There may be factors which disproportionately affect unmarried men and women which remain to be explored. A prominent possible factor is the rate of births among unmarried men and women, although Vital Statistics only measure it for women. The birth rate among

unmarried women 15-44, after a long increase from the mid-1970s to around 1990, flattened out from 1990 to 2000 and has since dramatically increased once again (Ventura, 2009). This could be a major factor for women. The price of formal child care has also risen over time, and government subsidies for child care among disadvantaged women, although increasing overall in the late 1990s, have been increasingly difficult to obtain. Another possible factor is income support from parents, relatives, and even ex-spouses for unmarried women, which could easily have declined given the growing income inequality in the U.S. and absolute declines in real family income in some subgroups of the population. For unmarried men, it is probable that they are concentrated in the more disadvantaged strata of the male population and may have experienced employment constraints over and above those proxied by the market wage, but it is unclear why this should not affect married men as well as unmarried men. This puzzle needs further study as well.

Finally, it is possible that wage rigidities could account for some of the 1999-2007 employment decline, which would also explain why wages are not playing a more important role in the labor supply models estimated in this paper.[20] Low wage labor markets, at least those for the very unskilled, are typically non-unionized and fairly competitive, so it is unclear whether wage rigidities are important for the groups that have been shown here to have experienced the largest employment declines. The only significant source of such rigidities is the minimum wage. However, trends in the national real minimum go in exactly the opposite direction as would be needed as a source explanation for the differential employment trends in the 1990s and

[20] Shimer (2011) has, in this and other papers, suggested that wage rigidities could play an important role in labor force participation movements. However, his emphasis is on

the 2000s prior to 2007. The real minimum declined from 1974 to 1989, rose from 1989 to 1997, and then declined from 1997 to 2006. The minimum wage has risen dramatically since then, beginning with an increase in the minimum from $5.15 per hour to $5.85 per hour in July, 2007. This increase is after the March 2007 CPS and too late to have had any effect on trends prior to that time in any case.

VI. Summary

The decline in the employment-population ratios for men and women over the period 2000-2007 prior to the Great Recession represents an historical turnaround in the evolution of U.S. employment. The decline is disproportionately concentrated in the less educated and younger groups within both the male and female populations and, for women, disproportionately concentrated among the unmarried. For men, about half of the decline can be explained by declines in wage rates and changes in nonlabor income and family structure influences. Essentially all of the male decline for married men can be explained by these factors. However, these influences explain virtually none of the decline in employment among women. Real wage rates for women rose over the early 2000s rather than fell, and the pattern of increases by skill group do not line up with the patterns of employment declines. Neither changes in nonlabor income nor family structure variables explain these declines as well and, in fact, many work in

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explaining cyclical movements rather than trends, which is not quite the same as the focus here.

the wrong direction. The greater concentration of employment declines among unmarried women is also not explained by this set of variables.

Most other possible influences on employment rates also appear unlikely to have contributed to the 2000-2007 decline. Federal income tax rates fell rather than rose, other tax rates did not rise, and transfer programs did not change in structure or in patterns of growth that line up with the employment declines, although further study of the Supplemental Nutrition Assistance Program and the Disability Insurance Program would be worthwhile. Changes in health status, the minimum wage, and other factors also appear to have not played a role. Whether changes in time use and home production accompanied the employment declines is not discernible with the available data, but could have occurred.

Further analysis of possible contributors to the employment decline, particularly that of women, are clearly needed. Factors that disproportionately affect unmarried men and women are one avenue of study; factors affecting labor demand are another.

VII. References

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Figure 1: Employment to Population Ratio, 1970-2011

U.S. Civilian Noninstitutional Population ages 16-64

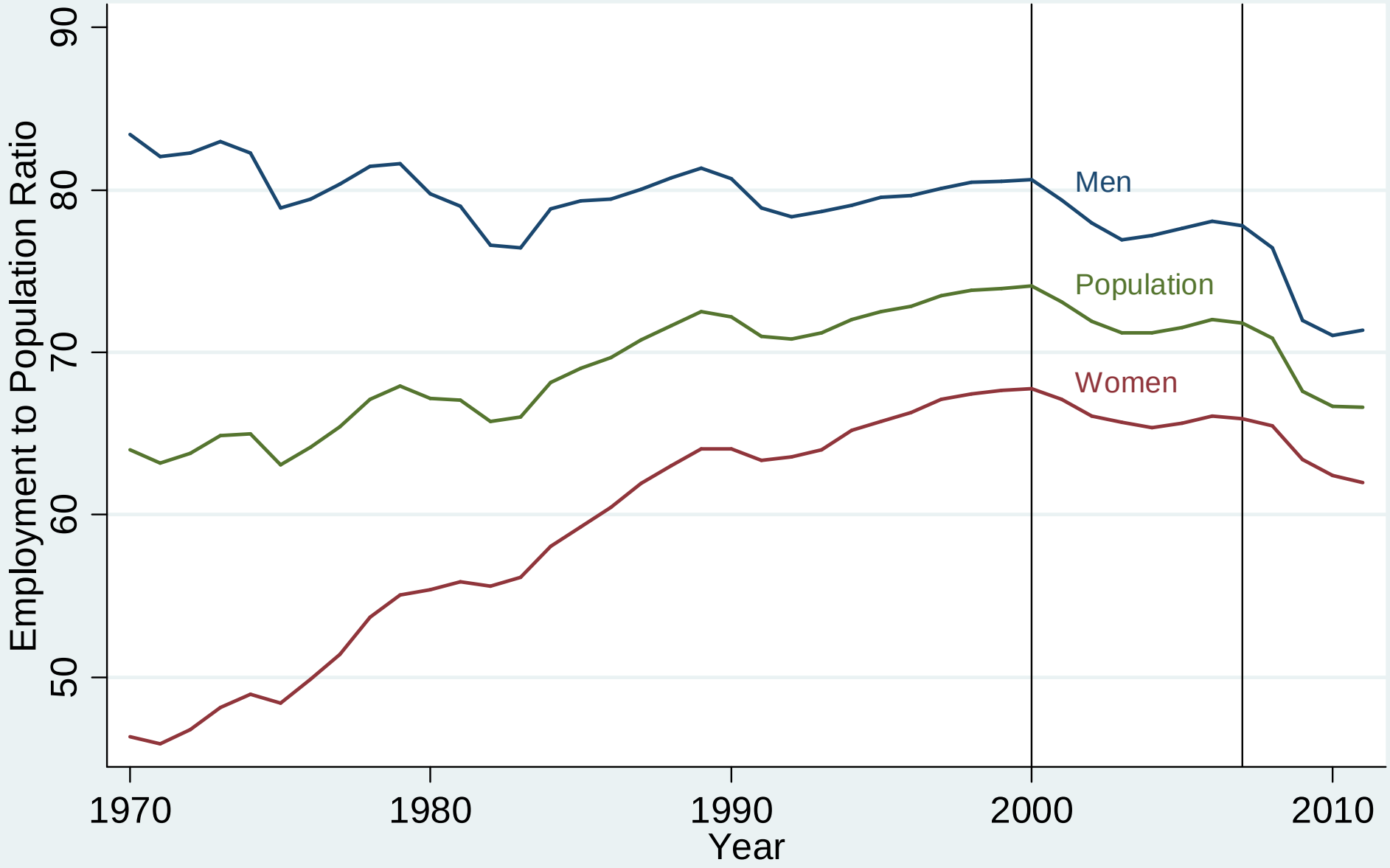
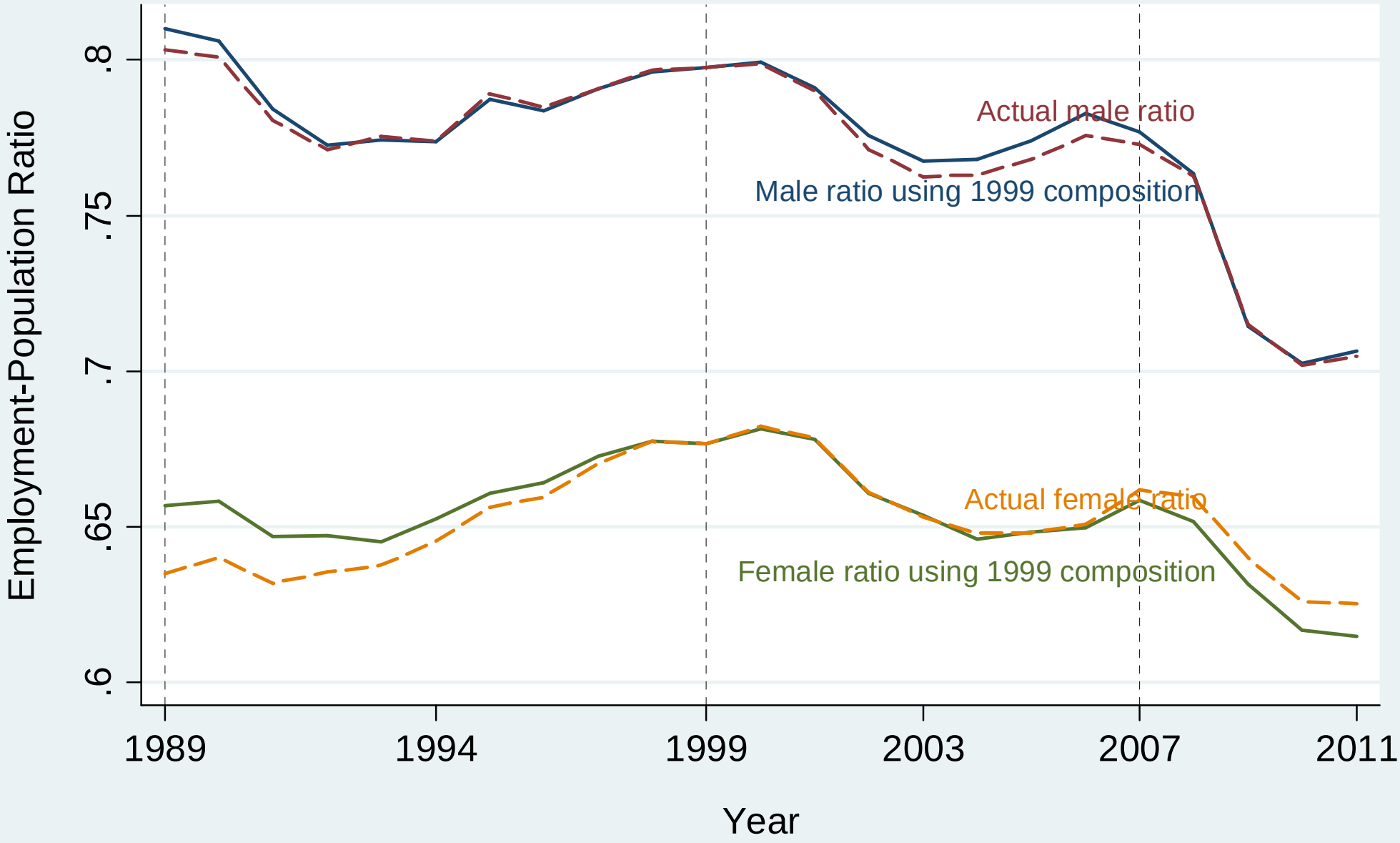


Figure 2: Employment-Population Ratio and National Unemployment Rate

1989-2011, U.S. Civilian Noninstitutional Population Age16-64

Figure 3: Actual and Hypothetical Employment-Population Ratio

1989-2011, Fixed 1999 Demographic Composition



Fixed-Composition calculated by fixing 1999 age, gender, education, and race proportions

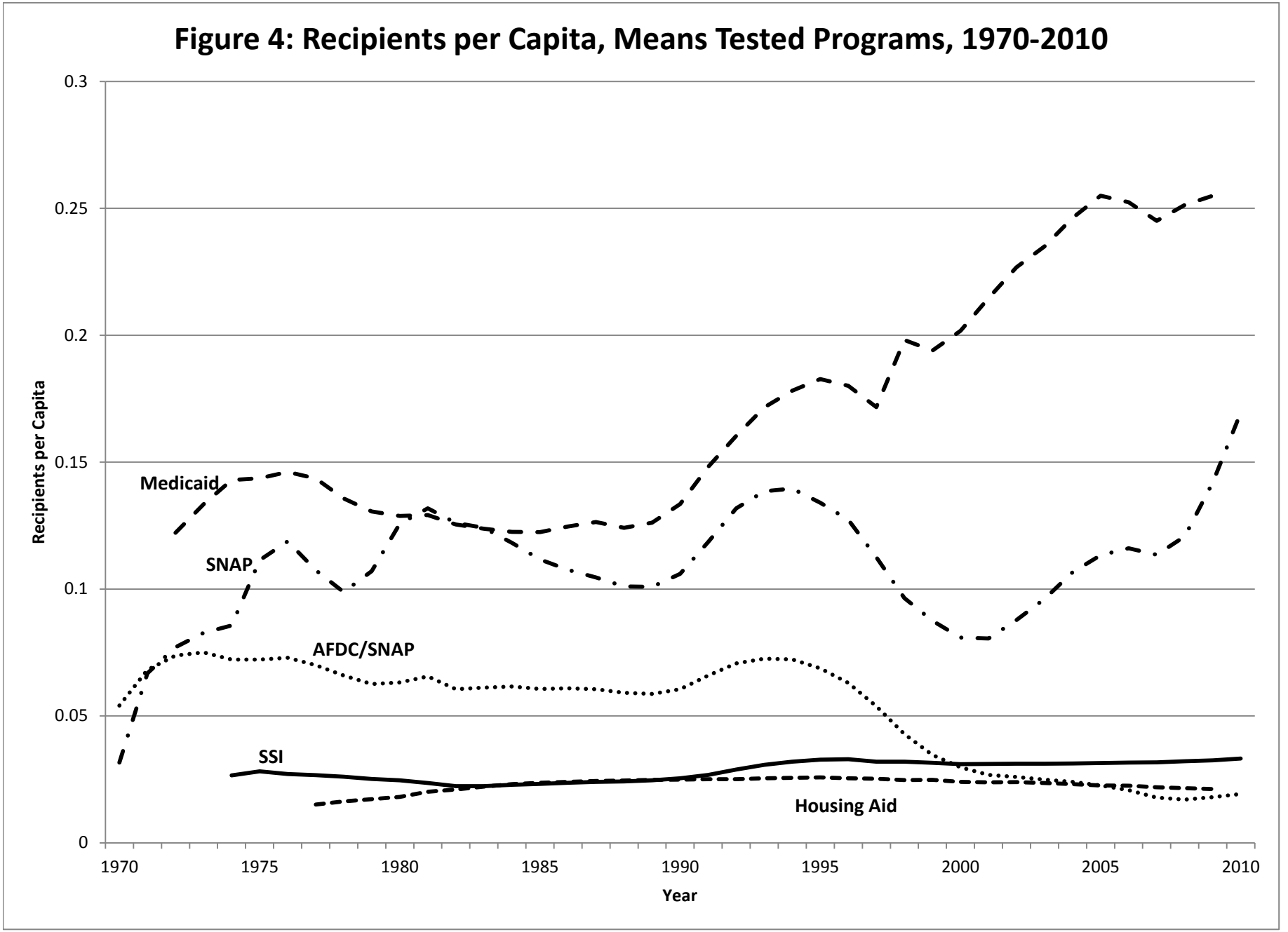


Figure 4: Recipients per Capita, Means Tested Programs, 1970-2010
Recipients per Capita
0.3
0.25
0.2
0.15
0.1
0.05
0
1970
1975
1980
1985
1990
1995
2000
2005
2010
Year
Medicaid
SNAP
AFDC/SNAP
SSI
Housing Aid

Figure 5: Recipients per Capita, Unemployment and Disability Insurance, 1970-2010

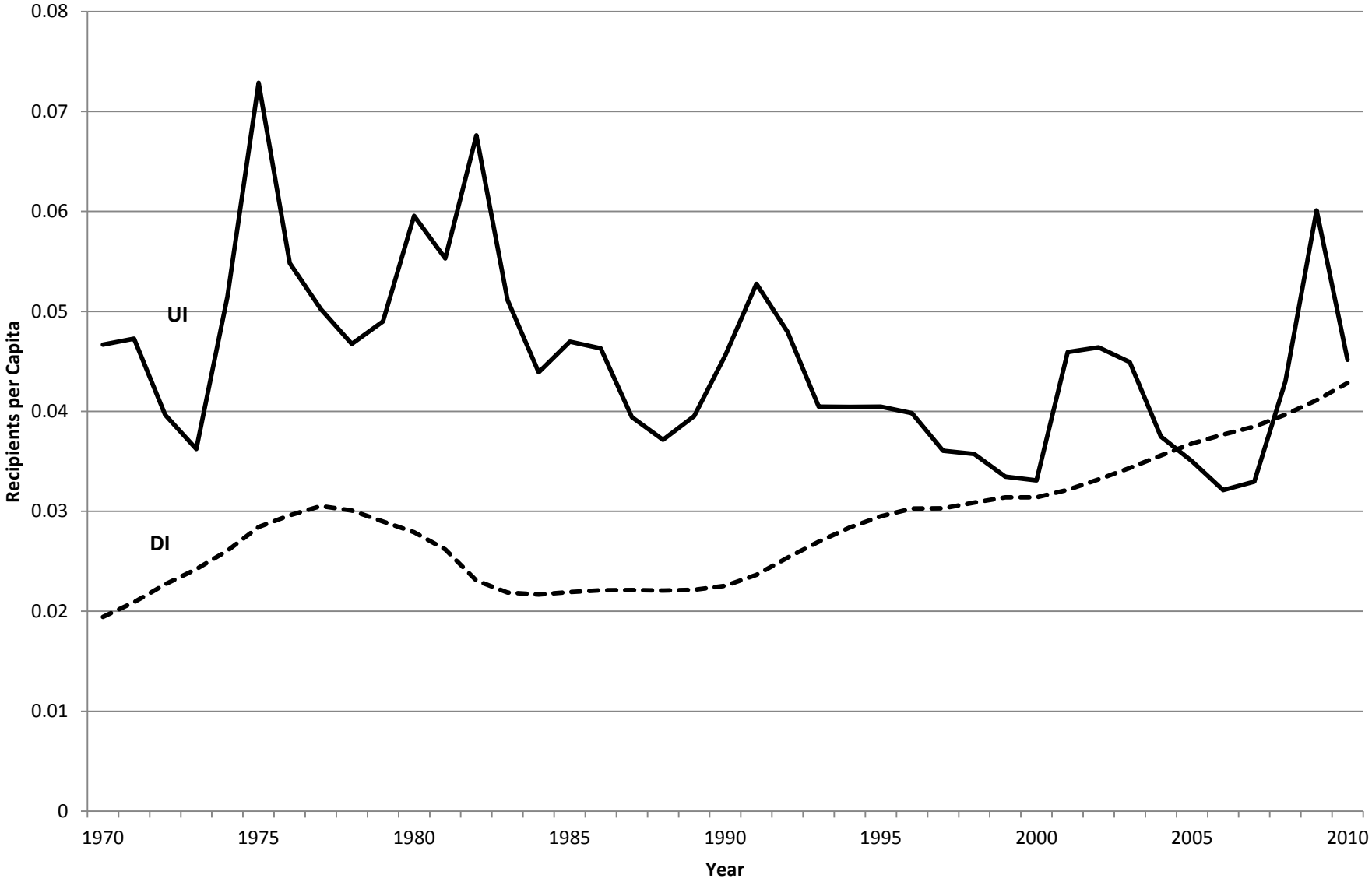


Table 1(a)

Changes in the Male Employment-Population Ratio,
1999-2007 and 1989-1999, by Age and Education

Age	Education			
	Less than HS	HS Graduate	Some College	College or More
1999-2007				
16-24	-.079	-.041	-.009	-.037
25-39	-.004	-.036	-.023	.010
40-54	-.037	-.026	-.007	-.002
55-64	-.016	-.036	-.023	.005
1989-1999				
16-24	-.037	-.014	-.015	.031
25-39	.012	.005	-.007	-.011
40-54	-.026	-.032	-.038	-.012
55-64	-.021	-.023	.005	.017

Table 1(b)

Changes in the Female Employment-Population Ratio,
1999-2007 and 1989-1999, by Age and Education

Age	Education			
	Less than HS	HS Graduate	Some College	College or More
1999-2007				
16-24	-.077	-.074	-.018	-.043
25-39	-.057	-.042	-.019	-.030
40-54	.016	-.004	-.018	-.019
55-64	.032	.029	.042	.070
1989-1999				
16-24	.010	.041	-.015	-.000
25-39	.071	.022	.024	-.001
40-54	.010	.012	.019	.027
55-64	.006	.044	.038	.025

Note: This and all CPS figures in this paper are weighted using the CPS Basic Weight.

Table 2

Changes in Rates of School Attendance by Gender and Completed Education, 16-24 Age Group, 1999-2007 and 1989-1999

Education	1999-2007	1989-1999
Men		
Less than HS	.009	.047
HS Graduate	.015	-.055
Some College	-.010	-.013
College or more	-.003	.021
Women		
Less than HS	.036	.059
HS Graduate	.046	-.029
Some College	.018	.055
College or More	.060	.033

Table 3(a)

Changes in the Male Employment-Population Ratio,
by Marital Status, Age and Education, 1999-2007

Age	Education			
	Less than HS	HS Graduate	Some College	College or More
Married				
16-24	-.068	-.039	-.034	-.128
25-39	.006	-.019	-.002	-.002
40-54	-.023	-.010	-.010	.001
55-64	-.009	-.033	-.020	-.004
Unmarried				
16-24	-.073	-.035	-.002	-.021
25-39	-.015	-.047	-.042	.027
40-54	-.046	-.046	.005	-.006
55-64	-.006	-.022	-.007	.067

Table 3(b)

Changes in the Female Employment-Population Ratio,
by Marital Status, Age and Education,1999-2007

Age	Education			
	Less than HS	HS Graduate	Some College	College or More
Married				
16-24	-.046	-.111	.010	-.009
25-39	-.061	-.044	.006	-.029
40-54	.036	.010	-.013	-.019
55-64	.048	.011	.033	.077
Unmarried				
16-24	-.079	-.069	-.021	-.052
25-39	-.047	-.050	-.060	-.023
40-54	-.014	-.034	-.026	-.018
55-64	.014	.062	.060	.053

Table 4(a)

Changes in the Male Real Log Weekly Wage for Full-Time Full-Year Workers, 1999-2007 and 1989-1999, by Age and Education

Age	Education			
	Less than HS	HS Graduate	Some College	College or More
1999-2007				
16-24	-.021	-.003	-.001	.093
25-39	-.050	-.033	-.037	.002
40-54	-.035	-.044	-.011	-.003
55-64	-.027	-.057	-.027	-.023
1989-1999				
16-24	.015	.024	.051	-.003
25-39	-.005	.011	.028	.090
40-54	-.045	-.022	.009	.097
55-64	-.042	.032	-.012	.105

Table 4(b)

Changes in the Female Real Log Weekly Wage for Full-Time Full-Year Workers, 1999-2007 and 1989-1999, by Age and Education

Age	Education			
	Less than HS	HS Graduate	Some College	College or More
1999-2007				
16-24	-.055	.071	.127	-.015
25-39	-.033	.023	.027	.024
40-54	.028	.028	.044	.068
55-64	.060	.053	.030	.075
1989-1999				
16-24	.165	.043	-.021	.091
25-39	-.007	.029	.028	.107
40-54	-.041	.058	.062	.124
55-64	.057	.073	.098	.133

Table 5

Selected Estimated OLS Coefficients for Employment Regressions,
Pooled 1989, 1999, 2007 Observations

	With Wage Selection Adjustment		Without Wage Selection Adjustment	
	Men	Women	Men	Women
Basic Model				
Log Real Weekly Wage	.015	.106*	.094*	.109*
	(.031)	(.023)	(.037)	(.026)
N=0 dummy	-.075*	-.098*	-.078*	-.110*
	(.006)	(.004)	(.003)	(.004)
ln(N) for N>0	-.006*	-.012*	-.006*	-.013*
	(.001)	(.001)	(.001)	(.001)
Extended Model				
Log Real Weekly Wage	.072*	.172*	.075*	.130*
	(.031)	(.024)	(.037)	(.026)
N=0 dummy	-.057*	-.101*	-.063*	-.110*
	(.004)	(.004)	(.003)	(.004)
ln(N) for N>0	-.004*	-.010*	-.004*	-.011*
	(.001)	(.001)	(.001)	(.001)
No. Own Children 0-5	.001	-.107*	.002	-.116*
	(.002)	(.003)	(.002)	(.003)
No. Own Children 6-18	.006*	-.024*	.007*	-.026*
	(.001)	(.002)	(.001)	(.002)
Married	.072*	-.044*	.081*	-.048*
	(.001)	(.005)	(.004)	(.005)
Divorced, Widowed, Separated[1]	.028*	.007	.031*	.007
	(.001)	(.005)	(.005)	(.005)
Head of Household	.094*	.083*	.105*	.091*
	(.001)	(.005)	(.005)	(.045)
Unmarried Parent	.029*	.042*	.033*	.046*
	(.001)	(.006)	(.001)	(.006)

Notes: Standard errors in parentheses. *: significant at the 10 percent level. Equations contain a full set of age-education-race interactions. N=interest and dividend income.

[1] The omitted marital-status category is Single.

Table 6

Actual and Predicted Changes in Employment-Population Ratio,
by Gender, Time Period, and Model

	1989-1999		1999-2007	
	Actual	Predicted	Actual	Predicted
Men				
Basic Model	-.006	.001	-.025	-.011
Extended Model	-.006	-.001	-.025	-.013
Women				
Basic Model	.042	.023	-.015	.001
Extended Model	.042	.026	-.015	.001

Table 7

Changes in Mean Determinants of Employment-Population Ratio,
by Gender and Time Period

	1989-1999	1999-2007
Men		
Log Real Weekly Wage	.064	-.009
Fraction N=0	.060	.106
Ln(N), N>0	-.071	-.388
No. Own Children 0-5	-.031	-.008
No. Own Children 6-18	.004	-.027
Married	-.028	-.014
Divorced, Widowed, or Separated	.016	-.002
Head of Household	-.014	-.006
Unmarried Parent	.007	-.000
Women		
Log Real Weekly Wage	.115	.074
Fraction N=0	.056	.097
Ln(N), N>0	-.097	-.319
No. Own Children 0-5	-.034	-.007
No. Own Children 6-18	.008	-.026
Married	-.031	-.012
Divorced, Widowed, or Separated	.008	-.003
Head of Household	-.012	-.007
Unmarried Parent	.006	-.001

Table 8(a)
Predicted Changes in the Male Employment-Population Ratio,
1999-2007 and 1989-1999, by Age and Education (Extended Model)

Age	Education			
	Less than HS	HS Graduate	Some College	College or More
1999-2007				
16-24	-.008	-.015	-.008	-.007
25-39	-.007	-.017	-.012	-.006
40-54	-.010	-.013	-.007	-.004
55-64	-.011	-.017	-.012	-.007
1989-1999				
16-24	-.005	-.010	-.004	-.006
25-39	-.005	-.015	-.012	-.003
40-54	-.016	-.021	-.012	.002
55-64	-.025	-.007	-.007	.007

Table 8(b)

Predicted Changes in the Female Employment-Population Ratio,
1999-2007 and 1989-1999, by Age and Education (Extended Model)

Age	Education			
	Less than HS	HS Graduate	Some College	College or More
1999-2007				
16-24	-.011	-.001	.007	-.004
25-39	-.006	-.007	-.006	-.015
40-54	.010	-.006	.005	.002
55-64	-.008	.007	.004	.007
1989-1999				
16-24	.028	-.001	-.021	.004
25-39	-.005	-.001	-.002	.010
40-54	-.021	.003	.005	.013
55-64	.006	.010	.014	.020

Table 9

Actual and Predicted Changes in Employment-Population Ratio,
by Gender, Time Period, and Marital Status

	1989-1999		1999-2007	
	Actual	Predicted	Actual	Predicted
Men				
Married	.002	.003	-.016	-.015
Unmarried	-.004	-.008	-.029	-.001
Women				
Married	.052	.040	-.003	.002
Unmarried	.028	.008	-.029	-.007

Table 10

Average Tax Rates in the Federal Income Tax, 2000-2007

	All Returns	Adjusted Gross Income			
		$1-$10,000	$30,000-$50,000	$50,000-$100,000	$100,000-$200,000
2000	16.1	4.5	9.4	12.2	17.3
2001	15.2	2.8	9.1	11.7	16.6
2002	14.1	2.5	8.0	10.6	158.
2003	13.0	2.5	7.6	9.6	14.0
2004	13.3	2.4	7.6	9.2	13.6
2005	13.6	2.5	7.5	9.1	13.3
2006	13.8	2.7	7.4	9.0	13.1
2007	13.8	2.7	7.3	9.0	12.8

Source: SOI Bulletin, Selected Issues. Nominal dollars.

Table 11

Changes in the Fraction Receiving Disability Income,
1999-2007, by Age, Education, and Gender

Age	Education			
	Less than HS	HS Graduate	Some College	College or More
Men				
16-24	-.0004	-.0019	.0003	.0000
25-39	.0018	.0009	.0007	.0008
40-54	.0014	-.00033	.0006	-.0008
55-64	-.0041	.0021	-.0070	.0062
Women				
16-24	-.0006	-.0017	.0008	.0000
25-39	.0006	.0017	-.0001	.0024
40-54	-.0028	-.0009	-.0017	-.0011
55-64	-.0022	-.0059	-.0011	-.0014

Table A-1: Changes in Employment to Population Ratio by Age, Education, Race and Gender

1999 to 2007

Men

	White				Black				Other			
	Less HS	HS	SC	Col+	Less HS	HS	SC	Col+	Less HS	HS	SC	Col+
16-24	-0.0783	-0.0430	-0.0175	-0.0153	-0.0680	-0.0066	0.0427	0.0177	-0.1131	0.0498	0.0339	-0.1319
25-39	-0.0123	-0.0282	-0.0159	0.0093	0.0420	-0.0591	-0.0814	0.0263	-0.1057	-0.0441	0.0394	0.0374
40-54	-0.0225	-0.0195	-0.0102	-0.0014	-0.1161	-0.0785	0.0343	-0.0081	-0.0720	-0.0025	-0.0075	0.0103
55-64	-0.0110	-0.0252	-0.0102	0.0034	-0.0247	-0.0664	-0.1245	0.0493	-0.0522	-0.1323	-0.0351	0.0152

Women

	White				Black							
	Less HS	HS	SC	Col+	Less HS	HS	SC	Col+	Less HS	HS	SC	Col+
16-24	-0.0885	-0.0656	-0.0133	-0.0479	-0.0343	-0.1166	-0.0696	0.0910	-0.0171	0.0005	0.0364	-0.0440
25-39	-0.0739	-0.0419	-0.0098	-0.0254	-0.0059	-0.0335	-0.0661	-0.0305	-0.0076	-0.0035	0.0147	-0.0091
40-54	0.0103	0.0037	-0.0209	-0.0258	-0.0041	-0.0352	0.0331	0.0286	0.0964	-0.0100	-0.0870	0.0167
55-64	0.0288	0.0234	0.0299	0.0794	0.0229	0.0551	0.1106	0.0992	0.0873	0.1495	0.1850	-0.1053

1989 to 1999

Men

	White				Black				Other			
	Less HS	HS	Some Col	Col +	Less HS	HS	Some Col	Col +	Less HS	HS	Some Col	Col +
16-24	-0.0463	0.0036	-0.0048	0.0468	-0.0043	-0.1075	-0.0777	-0.2986	0.0534	0.0311	0.0188	0.0634
25-39	0.0099	0.0041	0.0005	-0.0086	-0.0587	0.0247	-0.0173	0.0138	0.1625	0.0337	-0.0448	-0.0129
40-54	-0.0291	-0.0279	-0.0306	-0.0115	-0.0468	-0.0125	-0.0850	-0.0243	0.0726	-0.0700	-0.0409	0.0035
55-64	-0.0069	-0.0211	0.0079	0.0192	-0.0523	-0.0623	0.0364	0.0361	-0.0528	0.0688	-0.1785	-0.1038

Women

	White				Black				Other			
	Less HS	HS	Some Col	Col +	Less HS	HS	Some Col	Col +	Less HS	HS	Some Col	Col +
16-24	0.0065	0.0154	-0.0010	0.0371	0.0610	0.1574	-0.0905	-0.2884	-0.0931	0.1678	0.0864	-0.1274
25-39	0.0495	0.0224	0.0160	0.0084	0.1505	0.0414	0.0782	0.0130	0.1190	-0.0232	-0.0521	-0.0966
40-54	0.0044	0.0168	0.0176	0.0336	0.0000	-0.0363	0.0404	-0.0169	0.1214	0.0548	-0.0002	-0.0204
55-64	-0.0011	0.0590	0.0555	0.0181	0.0365	-0.0348	-0.0546	0.0409	-0.0380	-0.3655	-0.2314	0.1638

Table A-2(a): Estimates of Log Weekly Wage Equations for Basic Model with and without selection bias adjustment

	Men, without adjustment				
	1989		**1999**		**2007**
age16to24lessHSwhite	-0.7987	(0.1180)	-0.8751	(0.0916)	-0.8597
age16to24lessHSblack	-0.8593	(0.1470)	-0.9605	(0.1063)	-0.8876
age16to24lessHSother	-0.5900	(0.1527)	-0.8816	(0.1245)	-0.8478
age16to24HSwhite	-0.7055	(0.1166)	-0.7869	(0.0902)	-0.7392
age16to24HSblack	-0.8036	(0.1194)	-0.8340	(0.0981)	-0.8098
age16to24HSother	-0.6974	(0.1368)	-0.7073	(0.1121)	-0.6390
age16to24SCwhite	-0.6487	(0.1189)	-0.6899	(0.0912)	-0.6548
age16to24SCblack	-0.7163	(0.1314)	-0.8703	(0.1001)	-0.7331
age16to24SCother	-0.7699	(0.1345)	-0.6138	(0.1638)	-0.6229
age16to24Colwhite	-0.4167	(0.1198)	-0.5191	(0.1010)	-0.3742
age16to24Colblack	-0.5667	(0.1525)	-0.6264	(0.1738)	-0.3506
age16to24Colother	-0.4188	(0.2159)	-0.4464	(0.1615)	-0.3869
age25to39lessHSwhite	-0.5851	(0.1169)	-0.6998	(0.0900)	-0.6880
age25to39lessHSblack	-0.7452	(0.1212)	-0.7023	(0.1104)	-0.8240
age25to39lessHSother	-0.5031	(0.1299)	-0.7612	(0.1116)	-0.8108
age25to39HSwhite	-0.3356	(0.1162)	-0.4324	(0.0887)	-0.4166
age25to39HSblack	-0.5654	(0.1179)	-0.5258	(0.0931)	-0.4798
age25to39HSother	-0.4088	(0.1276)	-0.6350	(0.1013)	-0.6133
age25to39SCwhite	-0.2154	(0.1164)	-0.2891	(0.0888)	-0.2899
age25to39SCblack	-0.4198	(0.1196)	-0.4350	(0.0941)	-0.3809
age25to39SCother	-0.3305	(0.1253)	-0.4079	(0.1037)	-0.3370
age25to39Colwhite	-0.0445	(0.1163)	-0.0588	(0.0889)	-0.0257
age25to39Colblack	-0.2700	(0.1225)	-0.2505	(0.0990)	-0.1865
age25to39Colother	-0.1335	(0.1220)	-0.0271	(0.0951)	0.0951
age40to54lessHSwhite	-0.3887	(0.1173)	-0.5233	(0.0906)	-0.5162
age40to54lessHSblack	-0.5562	(0.1235)	-0.7014	(0.1083)	-0.6969
age40to54lessHSother	-0.4308	(0.1331)	-0.7804	(0.1047)	-0.6620
age40to54HSwhite	-0.1445	(0.1163)	-0.2587	(0.0888)	-0.2568
age40to54HSblack	-0.3438	(0.1206)	-0.4491	(0.0948)	-0.4632
age40to54HSother	-0.3199	(0.1342)	-0.5526	(0.1086)	-0.4001
age40to54SCwhite	-0.0242	(0.1166)	-0.1077	(0.0889)	-0.0688
age40to54SCblack	-0.2075	(0.1273)	-0.3171	(0.0981)	-0.2919
age40to54SCother	-0.2265	(0.1367)	-0.3110	(0.1088)	-0.1983
age40to54Colwhite	0.1334	(0.1164)	0.1338	(0.0888)	0.1862
age40to54Colblack	0.0280	(0.1248)	-0.0303	(0.1008)	-0.0312
age40to54Colother	-0.0307	(0.1260)	0.0330	(0.1041)	0.0951
age55to64lessHSwhite	-0.3640	(0.1183)	-0.5207	(0.0938)	-0.4918
age55to64lessHSblack	-0.5016	(0.1273)	-0.5764	(0.1273)	-0.6220
age55to64lessHSother	-0.4663	(0.1887)	-0.5705	(0.1608)	-0.4789
age55to64HSwhite	-0.1675	(0.1172)	-0.2550	(0.0906)	-0.2466
age55to64HSblack	-0.4802	(0.1327)	-0.3676	(0.1323)	-0.4602
age55to64HSother	-0.3483	(0.1346)	-0.4907	(0.1238)	-0.5049
age55to64SCwhite	-0.0386	(0.1191)	-0.1632	(0.0918)	-0.1294
age55to64SCblack	-0.1647	(0.1741)	-0.1923	(0.1110)	-0.2529
age55to64SCother	-0.3151	(0.1369)	-0.0286	(0.1378)	-0.1357
age55to64Colwhite	0.1152	(0.1177)	0.1343	(0.0916)	0.1596
age55to64Colblack	0.0304	(0.1658)	-0.0787	(0.1196)	0.0138
_cons	6.8987	(0.1159)	6.9972	(0.0881)	6.9498
N	20934		16861		17527

Standard errors in parentheses

Table A-2(b): Estimates of Log Weekly Wage Equations for Basic Model with and without selection bias adjustment

	Men, with adjustment				
	1989		**1999**		**2007**
EPOPNid89_select	1.2993	(0.0927)			
age16to24lessHSwhite	-0.2580	(0.1217)	0.0281	(0.0962)	0.5458
age16to24lessHSblack	-0.0179	(0.1583)	0.4374	(0.1157)	1.1144
age16to24lessHSother	0.1919	(0.1579)	0.2951	(0.1248)	1.0218
age16to24HSwhite	-0.5613	(0.1144)	-0.7799	(0.0868)	-0.5208
age16to24HSblack	-0.5183	(0.1186)	-0.2909	(0.0976)	-0.0019
age16to24HSother	-0.3696	(0.1344)	-0.3733	(0.1108)	-0.3546
age16to24SCwhite	-0.3472	(0.1182)	-0.3392	(0.0889)	-0.1082
age16to24SCblack	-0.3357	(0.1325)	-0.2239	(0.0995)	0.0554
age16to24SCother	-0.2028	(0.1376)	0.1374	(0.1626)	0.3201
age16to24Colwhite	-0.2973	(0.1175)	-0.6717	(0.0971)	-0.4701
age16to24Colblack	-0.6132	(0.1515)	-0.3204	(0.1863)	0.1364
age16to24Colother	-0.2302	(0.2012)	-0.5821	(0.1586)	0.0337
age25to39lessHSwhite	-0.4664	(0.1145)	-0.7520	(0.0863)	-0.6367
age25to39lessHSblack	-0.3851	(0.1210)	-0.1639	(0.1072)	-0.1782
age25to39lessHSother	-0.1314	(0.1295)	-0.6958	(0.1120)	-0.2962
age25to39HSwhite	-0.3327	(0.1134)	-0.6891	(0.0859)	-0.5815
age25to39HSblack	-0.4247	(0.1156)	-0.5665	(0.0896)	-0.2670
age25to39HSother	-0.3234	(0.1248)	-0.7839	(0.0989)	-0.6137
age25to39SCwhite	-0.2361	(0.1137)	-0.5884	(0.0863)	-0.5370
age25to39SCblack	-0.4015	(0.1170)	-0.6217	(0.0907)	-0.2826
age25to39SCother	-0.2081	(0.1225)	-0.3519	(0.0993)	-0.2875
age25to39Colwhite	-0.1063	(0.1137)	-0.4079	(0.0868)	-0.4262
age25to39Colblack	-0.2266	(0.1197)	-0.4572	(0.0957)	-0.4456
age25to39Colother	-0.0823	(0.1194)	-0.1665	(0.0917)	-0.1232
age40to54lessHSwhite	-0.2328	(0.1151)	-0.4172	(0.0870)	-0.2196
age40to54lessHSblack	-0.2482	(0.1232)	-0.2422	(0.1049)	0.3190
age40to54lessHSother	-0.1110	(0.1320)	-0.5592	(0.1026)	-0.1314
age40to54HSwhite	-0.1308	(0.1136)	-0.4204	(0.0855)	-0.3341
age40to54HSblack	-0.2113	(0.1182)	-0.4139	(0.0909)	-0.1031
age40to54HSother	-0.3285	(0.1318)	-0.6651	(0.1038)	-0.4427
age40to54SCwhite	-0.0482	(0.1139)	-0.3398	(0.0860)	-0.2535
age40to54SCblack	-0.1631	(0.1250)	-0.3023	(0.0940)	-0.2872
age40to54SCother	-0.2137	(0.1335)	-0.4550	(0.1049)	-0.2929
age40to54Colwhite	0.0716	(0.1138)	-0.2071	(0.0866)	-0.1680
age40to54Colblack	-0.0125	(0.1222)	-0.3059	(0.0972)	-0.2803
age40to54Colother	-0.0528	(0.1238)	-0.2900	(0.1015)	-0.2617
age55to64lessHSwhite	0.0942	(0.1199)	0.1062	(0.0941)	0.3977
age55to64lessHSblack	0.0608	(0.1304)	0.3685	(0.1338)	0.7673
age55to64lessHSother	0.0816	(0.1883)	0.2974	(0.1824)	0.8158
age55to64HSwhite	0.1436	(0.1166)	0.1387	(0.0887)	0.3820
age55to64HSblack	-0.0754	(0.1326)	0.2748	(0.1295)	0.6406
age55to64HSother	0.0328	(0.1344)	-0.2233	(0.1211)	0.3051
age55to64SCwhite	0.2347	(0.1180)	0.0763	(0.0890)	0.2619
age55to64SCblack	0.2405	(0.1752)	0.2762	(0.1089)	0.8043
age55to64SCother	-0.3039	(0.1352)	0.1934	(0.1267)	0.3185
age55to64Colwhite	0.2841	(0.1157)	0.1616	(0.0880)	0.2501
age55to64Colblack	0.3961	(0.1626)	0.2996	(0.1162)	0.3662
EPOPNid99_select			2.4703	(0.1074)	
EPOPNid07_select					3.0816
_cons	5.7162	(0.1412)	5.0046	(0.1207)	4.3988
N	20934		16861		17527

Standard errors in parentheses

Table A-2(c): Estimates of Log Weekly Wage Equations for Basic Model with and without selection bias adjustment

	Women, without adjustment				
	1989		**1999**		**2007**
age16to24lessHSwhite	-0.7603	(0.1543)	-0.8954	(0.1126)	-0.8974
age16to24lessHSblack	-0.7912	(0.1716)	-0.6760	(0.1782)	-1.0518
age16to24lessHSother	-0.7303	(0.1710)	-0.7902	(0.1082)	-0.7911
age16to24HSwhite	-0.6388	(0.1510)	-0.8484	(0.1025)	-0.7487
age16to24HSblack	-0.5946	(0.1565)	-0.7793	(0.1145)	-0.8438
age16to24HSother	-0.4571	(0.1768)	-0.9682	(0.1179)	-0.8601
age16to24SCwhite	-0.5087	(0.1519)	-0.7934	(0.1034)	-0.7176
age16to24SCblack	-0.4296	(0.1660)	-0.7288	(0.1163)	-0.7928
age16to24SCother	-0.5235	(0.1740)	-0.7381	(0.1148)	-0.6761
age16to24Colwhite	-0.2759	(0.1528)	-0.4704	(0.1055)	-0.4349
age16to24Colblack	-0.2437	(0.1804)	-0.3114	(0.1466)	-0.3642
age16to24Colother	-0.3976	(0.1692)	-0.2693	(0.1293)	-0.1966
age25to39lessHSwhite	-0.6097	(0.1520)	-0.8781	(0.1040)	-0.8357
age25to39lessHSblack	-0.5733	(0.1568)	-0.8666	(0.1079)	-0.8093
age25to39lessHSother	-0.5896	(0.1592)	-0.7661	(0.1285)	-0.8569
age25to39HSwhite	-0.3910	(0.1507)	-0.6136	(0.1015)	-0.5724
age25to39HSblack	-0.4295	(0.1520)	-0.6537	(0.1045)	-0.6729
age25to39HSother	-0.3744	(0.1574)	-0.7483	(0.1160)	-0.5793
age25to39SCwhite	-0.2355	(0.1508)	-0.4619	(0.1016)	-0.4162
age25to39SCblack	-0.2906	(0.1527)	-0.5026	(0.1037)	-0.5047
age25to39SCother	-0.1881	(0.1574)	-0.5329	(0.1124)	-0.4182
age25to39Colwhite	-0.0120	(0.1507)	-0.1548	(0.1014)	-0.1361
age25to39Colblack	-0.0490	(0.1538)	-0.2526	(0.1052)	-0.2321
age25to39Colother	0.0087	(0.1551)	-0.1512	(0.1090)	-0.0551
age40to54lessHSwhite	-0.5086	(0.1521)	-0.8310	(0.1036)	-0.7404
age40to54lessHSblack	-0.4962	(0.1568)	-0.7869	(0.1184)	-0.6954
age40to54lessHSother	-0.6539	(0.1577)	-0.7093	(0.1266)	-0.8560
age40to54HSwhite	-0.3216	(0.1508)	-0.5001	(0.1015)	-0.4791
age40to54HSblack	-0.3225	(0.1527)	-0.6395	(0.1050)	-0.5831
age40to54HSother	-0.3601	(0.1608)	-0.5769	(0.1190)	-0.5637
age40to54SCwhite	-0.1471	(0.1511)	-0.3369	(0.1016)	-0.2751
age40to54SCblack	-0.1192	(0.1544)	-0.3635	(0.1058)	-0.3531
age40to54SCother	-0.1359	(0.1628)	-0.2894	(0.1204)	-0.4027
age40to54Colwhite	0.0619	(0.1509)	-0.0633	(0.1014)	-0.0156
age40to54Colblack	0.1523	(0.1550)	-0.0327	(0.1051)	-0.0446
age40to54Colother	0.0082	(0.1630)	-0.1736	(0.1110)	-0.0608
age55to64lessHSwhite	-0.5315	(0.1527)	-0.7237	(0.1092)	-0.7597
age55to64lessHSblack	-0.6036	(0.1625)	-0.8259	(0.1137)	-0.6781
age55to64lessHSother	-0.7458	(0.2071)	-0.7919	(0.1437)	-0.7299
age55to64HSwhite	-0.3594	(0.1514)	-0.5346	(0.1029)	-0.4702
age55to64HSblack	-0.4005	(0.1598)	-0.6019	(0.1181)	-0.6394
age55to64HSother	-0.3208	(0.1753)	-0.7135	(0.1656)	-0.5366
age55to64SCwhite	-0.1788	(0.1534)	-0.3447	(0.1034)	-0.2951
age55to64SCblack	-0.1860	(0.1766)	-0.3248	(0.1252)	-0.3620
age55to64SCother	-0.2045	(0.1731)	-0.2917	(0.1801)	-0.3109
age55to64Colwhite	0.0991	(0.1532)	-0.0429	(0.1041)	-0.0053
age55to64Colblack	0.1364	(0.1729)	0.0695	(0.1254)	0.0311
_cons	6.5732	(0.1504)	6.8316	(0.1008)	6.8433
N	15998		13594		14700

Standard errors in parentheses

Table A-2(d): Estimates of Log Weekly Wage Equations for Basic Model with and without selection bias adjustment

	Women, with adjustment				
	1989		**1999**		**2007**
EPOPNid89_select	0.6692	(0.0672)			
age16to24lessHSwhite	-0.6286	(0.1509)	-0.3731	(0.1159)	-0.5668
age16to24lessHSblack	-0.5137	(0.1688)	0.0320	(0.1684)	-0.6042
age16to24lessHSother	-0.5598	(0.1623)	-0.0563	(0.1097)	-0.3790
age16to24HSwhite	-0.6983	(0.1468)	-0.7291	(0.1030)	-0.7320
age16to24HSblack	-0.5190	(0.1525)	-0.5590	(0.1158)	-0.7038
age16to24HSother	-0.3389	(0.1751)	-0.6592	(0.1223)	-0.7996
age16to24SCwhite	-0.5710	(0.1479)	-0.6450	(0.1042)	-0.7374
age16to24SCblack	-0.4983	(0.1624)	-0.4838	(0.1166)	-0.6752
age16to24SCother	-0.4620	(0.1684)	-0.4755	(0.1151)	-0.6616
age16to24Colwhite	-0.4514	(0.1495)	-0.6300	(0.1064)	-0.6262
age16to24Colblack	-0.4794	(0.1791)	-0.1228	(0.1395)	-0.4541
age16to24Colother	-0.5563	(0.1647)	-0.1758	(0.1326)	-0.2685
age25to39lessHSwhite	-0.5380	(0.1481)	-0.5298	(0.1060)	-0.6415
age25to39lessHSblack	-0.4254	(0.1534)	-0.4946	(0.1099)	-0.6653
age25to39lessHSother	-0.5292	(0.1545)	-0.5031	(0.1277)	-0.8088
age25to39HSwhite	-0.4686	(0.1466)	-0.5421	(0.1019)	-0.6084
age25to39HSblack	-0.4920	(0.1478)	-0.5921	(0.1046)	-0.7112
age25to39HSother	-0.3963	(0.1533)	-0.5075	(0.1157)	-0.5216
age25to39SCwhite	-0.3371	(0.1468)	-0.4383	(0.1019)	-0.5205
age25to39SCblack	-0.4052	(0.1488)	-0.5856	(0.1040)	-0.6178
age25to39SCother	-0.2981	(0.1537)	-0.4426	(0.1121)	-0.4932
age25to39Colwhite	-0.1659	(0.1471)	-0.2257	(0.1018)	-0.2940
age25to39Colblack	-0.2453	(0.1507)	-0.4258	(0.1062)	-0.4361
age25to39Colother	-0.1103	(0.1512)	-0.0114	(0.1102)	-0.0799
age40to54lessHSwhite	-0.4524	(0.1482)	-0.4580	(0.1060)	-0.6037
age40to54lessHSblack	-0.4627	(0.1527)	-0.4323	(0.1189)	-0.5686
age40to54lessHSother	-0.5560	(0.1550)	-0.3772	(0.1296)	-0.8375
age40to54HSwhite	-0.4124	(0.1467)	-0.4523	(0.1018)	-0.5768
age40to54HSblack	-0.4469	(0.1488)	-0.5826	(0.1051)	-0.6376
age40to54HSother	-0.3952	(0.1574)	-0.4528	(0.1190)	-0.5958
age40to54SCwhite	-0.2763	(0.1474)	-0.3749	(0.1019)	-0.4111
age40to54SCblack	-0.2203	(0.1505)	-0.3715	(0.1059)	-0.5060
age40to54SCother	-0.2682	(0.1587)	-0.3110	(0.1204)	-0.4916
age40to54Colwhite	-0.0896	(0.1473)	-0.1576	(0.1019)	-0.1902
age40to54Colblack	-0.0475	(0.1518)	-0.1626	(0.1054)	-0.3080
age40to54Colother	-0.1387	(0.1590)	-0.2095	(0.1108)	-0.2224
age55to64lessHSwhite	-0.3454	(0.1500)	-0.0921	(0.1152)	-0.4632
age55to64lessHSblack	-0.4559	(0.1594)	-0.2883	(0.1174)	-0.4577
age55to64lessHSother	-0.6091	(0.1996)	-0.2093	(0.1506)	-0.5257
age55to64HSwhite	-0.2701	(0.1476)	-0.1638	(0.1052)	-0.3616
age55to64HSblack	-0.3457	(0.1563)	-0.2052	(0.1205)	-0.5326
age55to64HSother	-0.3855	(0.1720)	-0.0662	(0.1668)	-0.3689
age55to64SCwhite	-0.1528	(0.1494)	-0.1080	(0.1044)	-0.2798
age55to64SCblack	-0.1690	(0.1720)	0.0722	(0.1250)	-0.3174
age55to64SCother	-0.2696	(0.1690)	0.2162	(0.1764)	-0.3013
age55to64Colwhite	0.0906	(0.1490)	0.1706	(0.1050)	-0.0601
age55to64Colblack	0.1790	(0.1706)	0.3545	(0.1240)	0.0179
EPOPNid99_select			1.3898	(0.0813)	
EPOPNid07_select					0.9896
_cons	6.1790	(0.1522)	5.7551	(0.1188)	6.2074
N	15998		13594		14700

Standard errors in parentheses