

# Accounting for the Non-Employment of U.S. Men, 1968 - 2010

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## Abstract

We conduct an accounting exercise of the changes in aggregate employment, unemployment and out of labor force (OLF) among 25-64 year old men from 1968 to 2010. We decompose the observed changes in these labor market outcomes into changes in the socio-demographic composition of the population and changes in the labor market outcomes of different socio-demographic groups. Using the results of the decomposition, we predict that the OLF-to-population ratio for men will increase to 16% in 2015, up from 14.7% in 2010.

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Men in their prime working age, defined as men between the ages of 25 and 64, constitute 33% of the civilian non-institutionalized population in the U.S.. At the trough of the 1969-1970 recession, 6.5% of this group (henceforth, "population") were out of the labor force (OLF), 90.8% were employed, and 2.7% were unemployed. Since then the employment-to-population ratio has trended persistently downward, while the OLF-to-population ratio has increased substantially.<sup>1</sup> In 2010, the aftermath of the 2007-2009 recession, the employment-to-population ratio of this same group declined to an all time low of 76.3%, while the OLF-to-population ratio increased to an all time high of 14.7% (see Figure 1, Panels A-C).

In this article we investigate the extent to which the change in the socio-demographic composition of the population (by age, educational attainment, marital status and race) has contributed to the changes in the aggregate labor market outcomes. Our emphasis on the compositional changes in the socio-demographic characteristics of the population is motivated by a literature rife with correlations between socio-demographic factors and labor market outcomes. In particular, older workers typically experience lower rates of labor force participation and, conditional on participating, older workers are less likely to be unemployed than younger workers (see, for example, Shimer 1999). The literature also finds that (i) more highly educated workers have a higher opportunity cost of not working; (ii) married men are more likely to participate in the labor force and, conditional on participation, more likely to be employed; and (iii) non-white persons are usually underrepresented in the labor force and employment. Thus, one expects a strong association between labor market outcomes and the demographic composition of the labor force, which serves as a reduced-form representation of underlying structural relationships.

In the article we decompose the observed changes in aggregate labor market outcomes into changes in the socio-demographic composition of the population and changes in the labor market outcomes of different socio-demographic groups. For each year we generate two sets of counterfactual aggregate labor market outcomes. The first set is generated by using the socio-demographic composition of the population from all the years in the sample and holding the labor market outcomes of different socio-demographic groups constant at the actual level of the reference year. The second set is generated by holding the socio-demographic composition constant instead. We then use these counterfactuals to perform the decomposition of the changes in the aggregate labor market outcomes. Finally, we use the most recent socio-demographic composition of the population to forecast the aggregate

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<sup>1</sup>The focus of this paper is on the employment-, unemployment- and OLF-to-population ratios. These are defined as the proportion of individuals in the entire population with a given labor status. They are thus distinct from rates (e.g. the unemployment rate), which are defined as the proportion of the labor force (i.e., the sum of unemployed and employed persons) with a given labor status outcome.

OLF-to-population ratio in 2015.

Given the similarities between the 1980-1982 and 2007-2009 recessions in terms of severity, throughout the paper we emphasize comparisons between the labor market outcomes in 1983 and 2010. We find that the changes in the demographic composition of the population explain much of the historical upward trend in the OLF ratio. The OLF ratio increased from 11.1% in 1983 to 14.7% in 2010. Of this increase, 1.9 percentage points (49% of the total change) are attributable to changes in the socio-demographic composition of the population. The employment-to-population ratio fell from 80.2% in 1983 to 76.3% in 2010. We find that changes in the socio-demographic composition of the population account for 1.7 percentage points (44%) of this decline. The unemployment-to-population ratio increased from 8.7% in 1983 to 8.9% in 2010, but none of this increase can be accounted for by changes in the demographic composition of the population. Finally, using predicted changes in the age distribution of the population we estimate that the OLF-to-population ratio will increase to over 16% in 2015 as compared to 14.7% in 2010.

When interpreting our results we need to be wary that changes in the socio-demographic composition might cause changes in the labor market outcomes of different socio-demographic groups. Alternatively, changes in the labor market outcomes of some socio-demographic groups might cause changes in the socio-demographic composition of the population. For example, an increase in the employment probability for higher educated workers relative to other education levels might contribute to an increase in the educational attainment of the population. Alternatively, an increase in educational attainment of the population can change the employment probabilities of different groups. Our accounting exercise does not account for these effects.

This article is related to the existing literature that documents a secular decline in the labor force participation of prime working age men. Autor and Duggan (2003) document a substantial fall in the labor force participation among men. Using data from the Current Population Survey (CPS), Juhn, Murphy and Topel (1991, 2002) find that falling unemployment rates among men in the 1990s greatly exaggerated the improvements of the labor outcomes for this population because the period was also characterized by a fall in the labor force participation rate. We update their analysis by focusing on the decomposition of the changes in the labor outcomes into changes in the socio-demographic characteristics of the population and by adding data from the most recent decade. Our work is also closely related to Little and Bradley (2007) who use a multinomial logistic model to study the socio-demographic determinants of labor market outcomes, distinguishing employment, unemployment, peripheral inactivity (marginally attached to labor force) and out of labor force, in Great Britain. Finally, our work expands on that of Fallick and Pingle (2006) who

decompose movements in U.S. labor force participation into ageing of the population and labor force trends within age groups. Whereas these authors focus solely on changes in the OLF-to-population ratio caused by ageing of the population, we consider changes in each employment status caused by changes in four different socio-demographic factors.

The article is structured as follows. Section 1 describes the data. Section 2 summarizes the changes in the demographic composition of the population of working age men between 1968 and 2010 and documents trends in labor market outcomes by socio-demographic groups. Section 3 describes the decomposition exercise and presents results of the decomposition of changes in labor outcomes between 2010 and the earlier years. Section 4 presents the forecast of the 2015 OLF-to-population ratio. Section 5 concludes.

## 1 Data

We use data from the Integrated Public Use Microdata Series CPS (IPUMS-CPS), which is comprised of data from the March Supplement of the Current Population Survey (hereafter referred to as the March CPS). The CPS is a monthly survey of U.S. households' activities, conducted by the Census Bureau and the Bureau of Labor Statistics and designed to measure unemployment. The basic survey is conducted every month; over time various supplementary surveys have been conducted to study different social and economic questions. The March CPS contains in-depth information on socio-demographic characteristics of the population and income. The variables in IPUMS-CPS are coded identically or "harmonized" over the years.

The CPS is a collection of individual-level data obtained from the interviewed households. We focus on males between the ages of 25 and 64.<sup>2</sup> Throughout the analysis we use the March CPS sampling weights that account for a complex survey design. The aggregate annual statistics that we report thus correspond to March of a respective year.

It should be noted that in 1994 the CPS underwent a major redesign both in the wording of its questions and in the methodology of the data collection process which led to some discrepancies between the aggregate series constructed from the micro data prior to the redesign and post-redesign. However, it is not a concern of our analysis because the inconsistencies

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<sup>2</sup>This paper focuses on the male population. The OLF-to-population ratio for women fell drastically from 1968 to the mid-1990s as females entered employment, while that of males trended upwards. Since the mid-1990s, the OLF-to-population ratios for males and females have experienced similar trends, though the OLF-to-population ratio for females remains approximately 10 percentage points higher. While studying aggregate employment outcomes for both genders would be an interesting exercise, doing so is beyond the scope of this paper.

associated with the aggregate labor statistics for the sample of 25-64 year old men are minor and not statistically significant (see Polivka and Miller (1995)).

## **2 Socio-Demographic Composition of the Population and Labor Outcomes by Different Groups**

Between 1968 and 2010 there have been considerable changes in the distribution of 25-64 year old civilian non-institutionalized men by age and education, and some noticeable changes by marital status and race. Figures 3-5 display the time series of labor outcomes by different socio-demographic groups. In general, across different groups the employment-to-population ratio has been trending down, while the OLF-to-population has been gradually increasing. We now describe each figure in detail.

### **2.1 Socio-Demographic Composition**

Panel A of Figure 2 shows the changes in the shares of 25-34, 35-44, 45-54, and 55-64 year old men in the population. From 1968 to 1986 the share of 25-34 year old men grew steadily, reaching its largest fraction of 35.6% in 1986, and declined thereafter. The share of 55-64 year old men fell from 1968 to 1995, reaching its smallest fraction of 15% in 1995, and has increased steadily since. From 2000 to present the shares of older workers (45-54 and 55-64 year olds) have been increasing, while the shares of younger workers (25-34 and 35-44 year olds) have been decreasing. This shift in the age distribution towards older workers is largely due to the aging of the Baby Boom generation. In 2010, the shares of 25-34, 35-44, 45-54, and 55-64 year olds were 25.8, 25.2, 27.5 and 21.5, respectively.

Panel B of Figure 2 shows the upward trend in the educational attainment of the population and reveals that the shares of men with some college, college or higher than college education have been increasing at the expense of men with at most a high school degree. The share of the latter has declined from 74.6% in 1969 to 44.0% in 2010. Panel C shows that the population distribution by marital status has shifted towards divorced or separated and single men at the expense of married men. In 1968, 84.8% of the 25-64 year old men were married, while only 61.1% were married in 2010. Finally, Panel D shows that the share of white men in the population has been steadily falling over the last forty years while the shares of black men and men of other races have been increasing.

## 2.2 Employment-to-Population Ratio

Employment-to-population ratios by age are shown in Figure 3, Panel A. The figure shows that the proportion of employed workers for the 25-34, 35-44 and 45-54 age groups move in sync over the years, declining from roughly .95 in 1968 to approximately .80 in 2010. The 55-64 age group has displayed markedly different behavior, declining from approximately .82 in 1968 to an all time low of .60 in 1994 before trending back up to .65 in 2010.

Figure 3, Panel B displays the employment-to-population ratio by educational attainment. For each group there is a clear decline in the employment-to-population ratio over time, with the severity of this decline decreasing in years of schooling. From 1968 to 2010, those with more than a college education and those with just a college degree have seen moderate declines of .06 and .11, respectively, while those with some college experience and those with at most a high school degree have experienced larger declines of .18 and .21, respectively.

The employment-to-population ratio trends by marital status are displayed in Figure 3, Panel C. Though there have been decreases in the employment-to-population ratio across marital status groups from 1968-2010, we observe that much of these declines came prior to 1980 and after 2007. Between these two dates, the employment-to-population ratio across marital status groups shows little or no trend.

Panel D of Figure 3 shows the employment-to-population ratio for each race. We observe declines in the employment-to-population ratio for whites, blacks and others over the sample period, with this decline being most pronounced for blacks. The employment-to-population ratio fell by approximately .24 for this group from 1968-2010, whereas the employment-to-population ratio for whites and others declined by .14 and .10, respectively.

## 2.3 Unemployment-to-Population Ratio

The unemployment-to-population ratio shows a clear cyclical pattern, rising during economic contractions and falling during expansions. As can be seen from Panel A of Figure 4, the unemployment-to-population ratio is decreasing with age. The rise in the unemployment-to-population ratio across age groups from 2007-2010 is comparable to the increase from 1980-1983, though the increase for the 25-34 age group was more pronounced in the 1980-1983 recession and the increases for the 35-44 and 45-54 age groups are more pronounced in the 2007-2009 recession.

The unemployment-to-population ratios for educational attainment groups are displayed in Figure 4, Panel B, which shows that more years of schooling are associated with lower unemployment. Figure 4, Panel C shows the unemployment-to-population ratio by marital

status and shows that single, never married and separated/divorced individuals have consistently higher unemployment-to-population ratios than those who are married. Finally, as can be seen from Panel D of Figure 4, the unemployment-to-population ratio for blacks are consistently higher than the unemployment-to-population ratio for whites and others. Between 2007 and 2010 the unemployment-to-population ratio for blacks increased by .08, whereas those of whites and others increased by approximately .04.

## 2.4 OLF-to-Population Ratio

Figure 5, Panel A displays the OLF-to-population ratio for each age group. We note that each time series has a distinct upward trend from 1968 through 2010, with the upward trend for the 55-64 age group from 1968 to 1985 being particularly severe. However, the OLF-to-population ratio for the 35-44 age group has been relatively stable since 1994 and that of the 55-64 age group has actually declined moderately since 1994. The most notable feature of this figure is the disparity between the 55-64 age group and the other age groups. Historically, the OLF-to-population ratio of the 55-64 age group has dwarfed that of the younger age groups. In 2010, the OLF-to-population ratio for the 55-64 age group was .30, whereas those of the other age groups ranged from .09 to .13. We also observe that the OLF-to-population ratio of the 45-54 group tends to be higher than the 25-34 and 35-44 age groups by approximately .02.

The OLF-to-population ratios for different educational attainment groups are shown in Panel B of Figure 5. There are upward trends since 1968 for each group, with the largest increases occurring for those with at most a high school education and those with some college education. The figure shows that those with a college degree and those with more than a college education have experienced similar OLF-to-population ratios across time, though since 2005 these series have diverged, with the OLF-to-population ratio for those with a college degree continuing to trend upward while that of those with more than a college education has fallen. Finally, we observe that fewer years of education are associated with a larger OLF-to-population ratio: in 2010 the OLF-to-population ratios were .19, .15, .09 and .07 for those with at most a high school degree, some college education, a college degree, and more than a college degree, respectively.

Panel C of Figure 5 gives the OLF-to-population ratio by marital status. There is a notable upward trend in the OLF-to-population ratio for each marital status group. Those in the married group have the lowest OLF-to-population ratio throughout the observation period, while the separated/divorced and single, never married groups have an OLF-to-population ratio which is between .05 and .1 higher. The widowed group has had the highest

OLF-to-population ratio historically, occasionally exceeding .40.

Figure 5, Panel D breaks down the OLF-to-population ratio by race. The most notable feature of this figure is the large difference in the growth of the OLF-to-population ratio between blacks and the other groups. The OLF-to-population rate for blacks has increased from .09 in 1968 to .24 in 2010, whereas the OLF-to-population ratios for the other and white groups have increased from .09 and .06 to .15 and .14, respectively. Thus, while each series has trended upwards, that of blacks has done so more rapidly.

### 3 Accounting for Changes in Aggregate Labor Outcomes

#### 3.1 Method

In this subsection we discuss the methods by which we create counterfactual labor outcomes and decompose the changes in actual labor market outcomes.

The aggregate share of persons with labor outcome  $LO$ , where  $LO = \{\text{Employed, Unemployed, OLF}\}$ , in year  $t$  can be described by the following equation:

$$\frac{LO_t}{pop_t} = \sum_i \left( \frac{LO_{i,t}}{g_{i,t}} \times \frac{g_{i,t}}{\sum_i g_{i,t}} \right) \tag{1}$$

where  $i \in A \times E \times M \times R$  corresponds to a vector of demographic characteristics consisting of age (A), educational attainment (E), marital status (M) and race (R),  $g_{i,t}$  is the number of persons in group  $i$ ,  $LO_{i,t}$  is the number of persons with the labor status  $LO$  in group  $i$ , and  $pop_t$  is the size of the population.

In essence, we divide the population into mutually exclusive groups (e.g. married, college-educated white males between the ages of 25 and 34). Equation (1) describes the aggregate proportion as the sum of the labor outcomes by group (the first term in the equation) weighted by the size of the groups in the population (the second term in the equation). For example, fixing either term for all  $i$  at its 2010 level while allowing the other to take on historical values allows us to construct counterfactual aggregate labor outcomes for 2010. By creating and comparing time series of these counterfactuals, we can observe the degree to which these two terms are driving changes in aggregate labor outcomes in 2010.

One concern when creating these counterfactuals is that the changing socio-demographic composition of the population could affect the labor outcomes of different groups. Alternatively, changes in the labor outcomes of a socio-demographic group could change the

socio-demographic composition of the population. For example, if college educated individuals are more likely to be employed relative to other educational attainment sub-groups, there will likely be an influx of individuals into the college educated demographic group. By simply fixing either of these terms while varying the other, we do not account for these endogeneity effects.

To analyze the change in labor outcomes, we perform the following decomposition:

$$\frac{LO_{t_2}}{pop_{t_2}} - \frac{LO_{t_1}}{pop_{t_1}} = \left[ \sum_i s_{i,t_2,t_1} - \sum_i s_{i,t_1,t_1} \right] + \left[ \sum_i s_{i,t_2,t_2} - \sum_i s_{i,t_2,t_1} \right], \quad (2)$$

where  $s_{i,t_x,t_y} = \frac{LO_{i,t_x}}{g_{i,t_x}} \times \frac{g_{i,t_y}}{\sum_i g_{i,t_y}}$ .

The component in the first set of brackets in equation (2) measures the effect of changes in the labor outcomes of different groups from year  $t_1$  to  $t_2$ , given the socio-demographic composition of the population in year  $t_1$ . The second term captures the effect of changes in the socio-demographic composition of the population, given the labor outcomes of different groups in year  $t_2$ .

Alternatively, we can write

$$\frac{LO_{t_2}}{pop_{t_2}} - \frac{LO_{t_1}}{pop_{t_1}} = \left[ \sum_i s_{i,t_1,t_2} - \sum_i s_{i,t_1,t_1} \right] + \left[ \sum_i s_{i,t_2,t_2} - \sum_i s_{i,t_1,t_2} \right]. \quad (3)$$

The component in the first set of brackets in equation (3) measures the effect of changes in the socio-demographic composition of the population, given the labor outcomes of different groups in year  $t_1$ . The second term captures the effect of changes in the labor outcomes of different groups from year  $t_1$  to  $t_2$ , given the socio-demographic composition of the population in year  $t_2$ . The difference between these two decompositions is the base year, i.e., the year at which the component, other than the component of interest, is held constant. For example, the change due to a change in the labor outcomes of different groups in equation (2) is calculated using  $t_1$  as the base year, while in equation (3) it is calculated using  $t_2$  as the base year. Due to the endogeneity issues mentioned above, these two decompositions do not necessarily deliver the same results. Nor is it clear that one is theoretically better than the other. We perform both decompositions and, despite some small quantitative differences, find the qualitative conclusions from the two decompositions to be the same. For this reason, we report only the results of the decomposition corresponding to Equation 2.<sup>3</sup>

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<sup>3</sup>Results of the alternative decomposition are available upon request.

## 3.2 Changes in Aggregate Labor Outcomes

Tables 1-3 show the predicted labor outcomes – proportion employed, unemployed and OLF, respectively, – calculated using the labor outcomes of different groups from year  $t_1$  and the demographic composition of the population from year  $t_2$ , where  $t_1, t_2 \in [1968, 2010]$ .

The diagonal elements in Tables 1-3 (darkly shaded) show the actual labor outcomes for their respective year. The off-diagonal elements show the counterfactual labor outcomes. Thus, for each year we have two sets of counterfactual predictions. Moving along a row gives the predicted labor outcome for a fixed demographic composition, while moving down a column gives the predicted labor outcome for fixed labor outcomes of different groups. For example, the (1983,2010) entry of Table 1 gives the predicted proportion of employed individuals in 2010 given the 1983 demographic composition (77.9%), while the (2010,1983) entry gives the predicted proportion of employed in 2010 given the 1983 labor outcomes of different groups (78.6%).

### 3.2.1 Employment

The actual 2010 value of the employment-to-population ratio for 25-64 year old men and the two series of counterfactual predictions for 2010 are shown in Figure 6, Panel A. The dashed line shows the predicted employment-to-population ratio from holding the demographic composition of the population constant at its 2010 level but varying the labor outcomes of different groups. The dotted line shows the predicted employment-to-population ratio from holding the labor outcomes of different groups at their 2010 level but varying the socio-demographic composition of the population. The actual employment-to-population ratio in 2010 is lower than any point of the predicted counterfactual series. This implies that changes in both the socio-demographic composition and labor outcomes of different groups in 2010 contribute to the historically low employment-to-population ratio among men.

To examine the contribution of the change in the labor outcomes of different groups and the socio-demographic composition to changes in the employment-to-population ratio, we construct each term of equation (2) for  $t_1 \in [1968, 2010]$  and  $t_2 = 2010$ . Table 4 reports the change in the employment-to-population ratio, the total change due to change in each of the two terms and the percentage of the total change which is accounted for by changes in each of the two terms. Figure 7, Panel A plots the change in the employment-to-population ratio and the total change due to each of the two terms. We find that the change in the labor outcomes of different groups accounts for the majority of the change in the employment-to-population ratio. Comparing the aftermath of the 2007-2009 and 1980-1982 recessions, we see that between 1983 and 2010 the employment-to-population ratio fell by 3.86 percentage

points, of which 41.7% is due to the change in the demographic composition.

We conclude that the decline in the employment to population ratio is due to both changes in the socio-demographic composition and changes in the labor outcomes of different groups.

### 3.2.2 Unemployment

Panel B of Figure 6 plots the two counterfactual series of the 2010 unemployment-to-population ratio against its actual 2010 value. We draw two key observations from the figure: (1) the actual 2010 unemployment-to-population ratio is higher than any point of the predicted counterfactual series that holds the socio-demographic composition constant at its 2010 level; and (2) the actual 2010 unemployment-to-population ratio is lower than the predicted counterfactual for some periods when we hold the labor outcomes of different groups constant at their 2010 level.

These observations suggest that (1) the labor outcomes of different socio-demographic groups in 2010 contribute to a higher unemployment-to-population ratio than the labor outcomes of different groups in all previous years; and (2) the socio-demographic composition of the population in 2010 actually contributes to a lower unemployment-to-population ratio as compared to the socio-demographic composition in some earlier years.

Table 5 breaks down the total change in the unemployment-to-population ratio between a given year and 2010 into that caused by changes in the demographic composition of the population and that caused by changes in the labor outcomes of different groups. Figure 7, Panel B plots the total change in the unemployment-to-population ratio and the change due to each of the two terms. The results of this table and graph corroborate our above claims. Changes in the demographic composition of the population have contributed a small, and often negative, amount of the increase in the unemployment-to-population ratio, whereas changes in the labor outcomes of different groups have been responsible for approximately 100% of the increase. We observe that, relative to 1983, the 2010 unemployment-to-population ratio is 0.18 percentage points higher, of which 101.0% of the change is due to a change in the labor outcomes of different groups. Thus, the rise in the 2010 unemployment-to-population ratio relative to its 1983 level is driven entirely by changes in the labor outcomes of different groups.

### 3.2.3 Out of Labor Force

Panel C of Figure 6 plots the two counterfactual series of the 2010 OLF-to-population ratio against its actual 2010 value. We highlight two features of the figure: (1) The actual 2010 OLF-to-population ratio is always higher than the counterfactual series calculated by holding

the labor outcomes of different groups at their 2010 level; and (2) prior to 1994 the actual 2010 OLF-to-population ratio is always higher than the counterfactual series which is calculated by holding the socio-demographic composition constant at its 2010 level, although after 1994 the counterfactual is sometimes higher. Thus, we infer that the demographic composition contributes substantially to the high OLF-to-population ratio in 2010.

Table 6 and Panel C of Figure 7 formalize this result, showing that the total change in the incidence of the OLF-to-population ratio between any year prior to 2009 and 2010 is positive. It also shows that the change in the socio-demographic composition contributes to a higher OLF-to-population ratio. The contribution from the change in the socio-demographic composition has been increasing since 1968. The contribution from the change in the labor outcomes of different groups has been significantly smaller, and has even lowered the OLF-to-population ratio in more recent years. Turning our attention once again to the 1983 and 2010 comparison, we see that the OLF-to-population ratio increased 3.68 percentage points from 1983 to 2010, of which 1.66 percentage points can be attributed to the change in the demographic composition. Thus, changes to the demographic composition of the population have played a large role in increasing the 2010 OLF-to-population ratio relative to its 1983 level.

## 4 Forecast of the OLF-to-Population Ratio

Our findings show that changes in the employment- and OLF-to-population ratios of 25-64 year old men during the last four decades are to a large degree associated with changes in the socio-demographic composition of the population. Using the labor outcomes of different socio-demographic groups from 2010 and a projected socio-demographic composition of the population in 2015, we are able to create projections of the aggregate labor outcomes in 2015 using equation (1).

As Figure 1 shows, there is a large cyclical component in the employment- and unemployment-to-population ratios. Consequently, the forecasts of these ratios depend heavily on the business cycle phase of the year of our decomposition. In addition, the changes in unemployment (and employment to a lesser extent) are mostly dominated by changes in the labor outcomes of different socio-demographic groups rather than changes in the socio-demographic composition. In contrast, the OLF-to-population ratio has a much smaller cyclical component. Consequently, we focus on forecasting the OLF-to-population ratio.

To perform this forecasting exercise, we project the socio-demographic composition of the population of 25-64 year old men in 2015. In projecting the socio-demographic composition we focus on the changes in age of the individuals in the 2010 sample while holding education,

race and marital characteristics constant at their 2010 levels.

To simulate a sample of 25-64 year old male workers in 2015, we use the 2010 sample of 20-59 year old male workers and construct the age variable for 2015. We use the age-specific annual male mortality rates from the Social Security Administration<sup>4</sup> and accordingly choose which workers of a particular age survive from 2010 to 2015.<sup>5</sup> Each worker in the simulated sample is aged 5 years, but has the same education, race and marital status as in the 2010 sample. We use the projected 2015 population and the CPS sampling weights to construct the socio-demographic composition terms in equation (1). Then we use these forecasted demographic composition terms and the labor outcomes of the corresponding socio-demographic groups from 2010 to construct the predicted aggregate 2015 OLF-to-population ratio using equation (1).

Note that this exercise assumes that the mortality rates for each age remain unchanged from 2007 to 2015. Also, we use the sampling weights from 2010, which may not deliver a representative population for our simulated 2015 sample (for example, because we do not adjust the weights to reflect the demographic composition of the surviving individuals). However, given the relatively short forecast horizon, these weights provide a good approximation for aggregation. Finally, when ageing the 2010 population we do not accordingly adjust demographic factors other than age. For example, ageing a male from 20 to 25 might alter both his educational attainment and marital status. Our forecasting exercise does not take these effects into account.

The results of our forecast are displayed in Table 7. Panel C of Table 7 contains our forecast and the U.S. Census forecast for the age distribution of 25-64 year old men in 2015. As the forecast shows, the shares of 55-64 and 25-34 year old males are projected to increase, while the share of 35-54 year old males is projected to decrease.

Panel A of Table 7 displays the results of the forecast of the OLF-to-population ratio based on the labor status outcomes of different groups in 2010. For comparison, Panel B contains the results based on the labor status outcomes of different groups in 2007, i.e., the year of a recent business cycle peak. The results show that under both sets of labor status outcomes of different groups, the OLF-to-population ratio is predicted to reach more than 16% in 2015 as compared to the actual rate of 14.7% in 2010.

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<sup>4</sup>Data available at: <http://www.ssa.gov/oact/STATS/table4c6.html#ss>.

<sup>5</sup>For example, the probability that a 20 year old worker in 2010 survives to 2015 is  $(1 - p_{20}^m)(1 - p_{21}^m)(1 - p_{22}^m)(1 - p_{23}^m)(1 - p_{24}^m)$ , where  $p_a^m$  is the annual mortality rate of a worker at age  $a$ .

## 5 Conclusions

The OLF-to-population ratio among 25-64 year old men has increased from 6.5% in 1970 to 14.7% in 2010. In the aftermath of the 1969-70 recession the employment-to-population ratio among this group was 89.1%, while in the aftermath of the 2007-09 recession, the ratio is nearly 13 percentage points lower. Throughout this article we have examined the degree to which these changes can be explained by changes in the composition of the population by age, race, education, and marital status, and the degree to which they can be attributed to changes in the labor market outcomes of different socio-demographic groups.

We find that the rise in the OLF-to-population ratio since the early 1980s is primarily due to changes in the demographic composition of the population, changes in the demographic composition account for about 25% of the increase in the employment-to-population ratio during the same period, and changes in the unemployment-to-population ratio are almost entirely driven by changes in the employment status composition. Finally, simulating the 2010 sample five years forward and using labor outcomes of different socio-demographic groups from 2010, we project that the OLF-to-population ratio among 25-64 year old men will rise to 16% in 2015.

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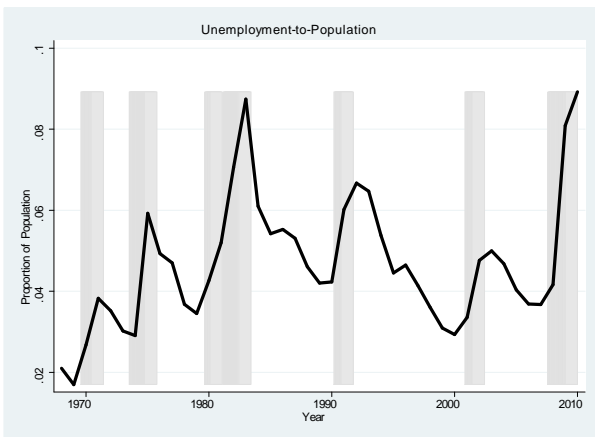
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- [9] U.S. Census Bureau, "2008 National Population Projections," August 2008.

Figure 1: LABOR MARKET OUTCOMES OF 25-64 YEAR OLD MEN

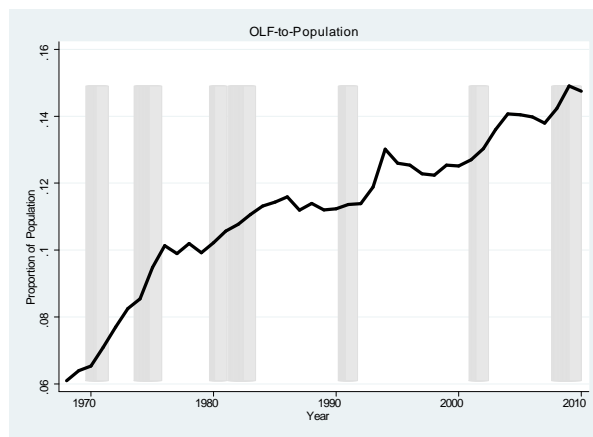
Panel A



Panel B

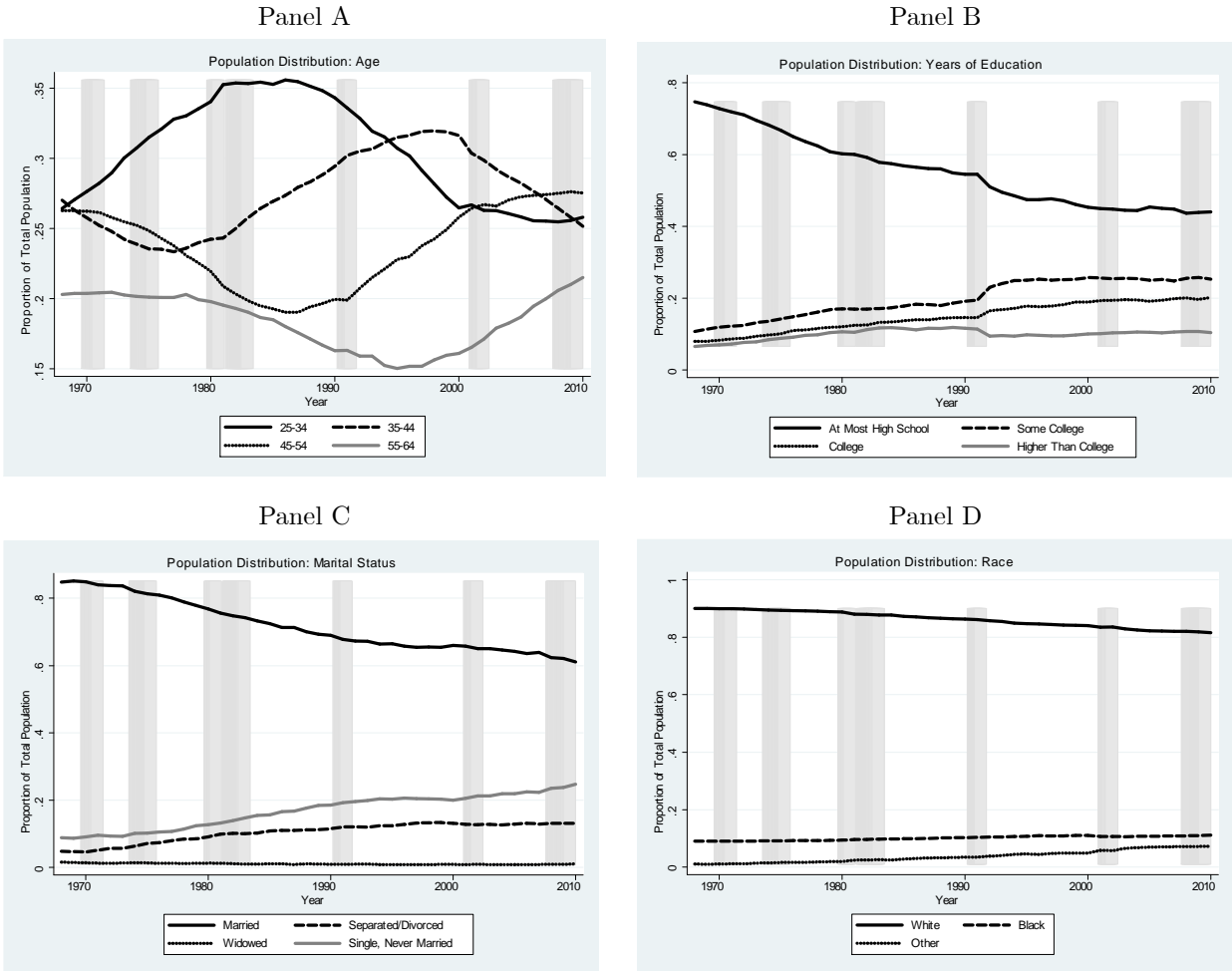


Panel C



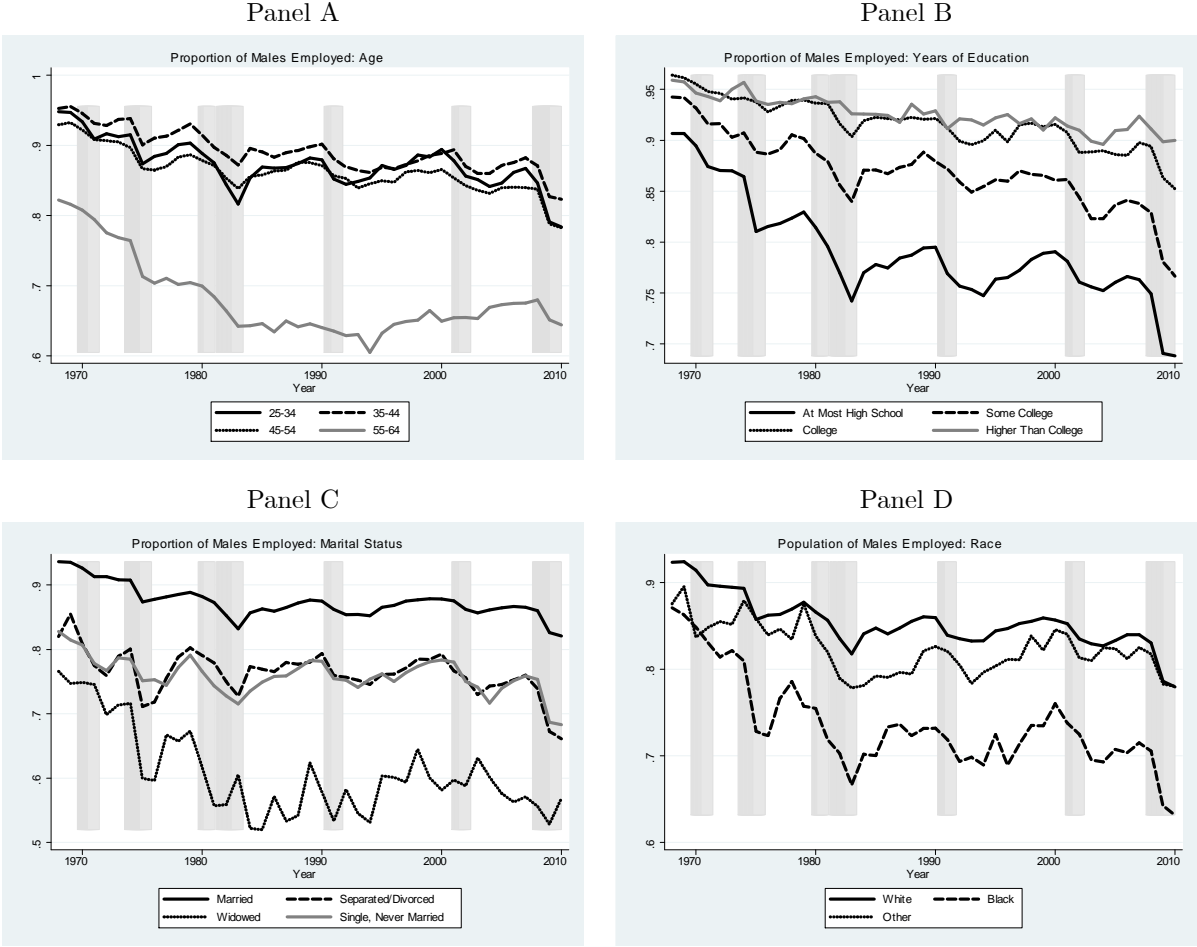
Note: Authors's own calculations from the IPUMS-CPS data. Shaded areas on this and subsequent graphs represent NBER-dated recessions.

Figure 2: DISTRIBUTION BY AGE, EDUCATION, MARITAL STATUS AND RACE



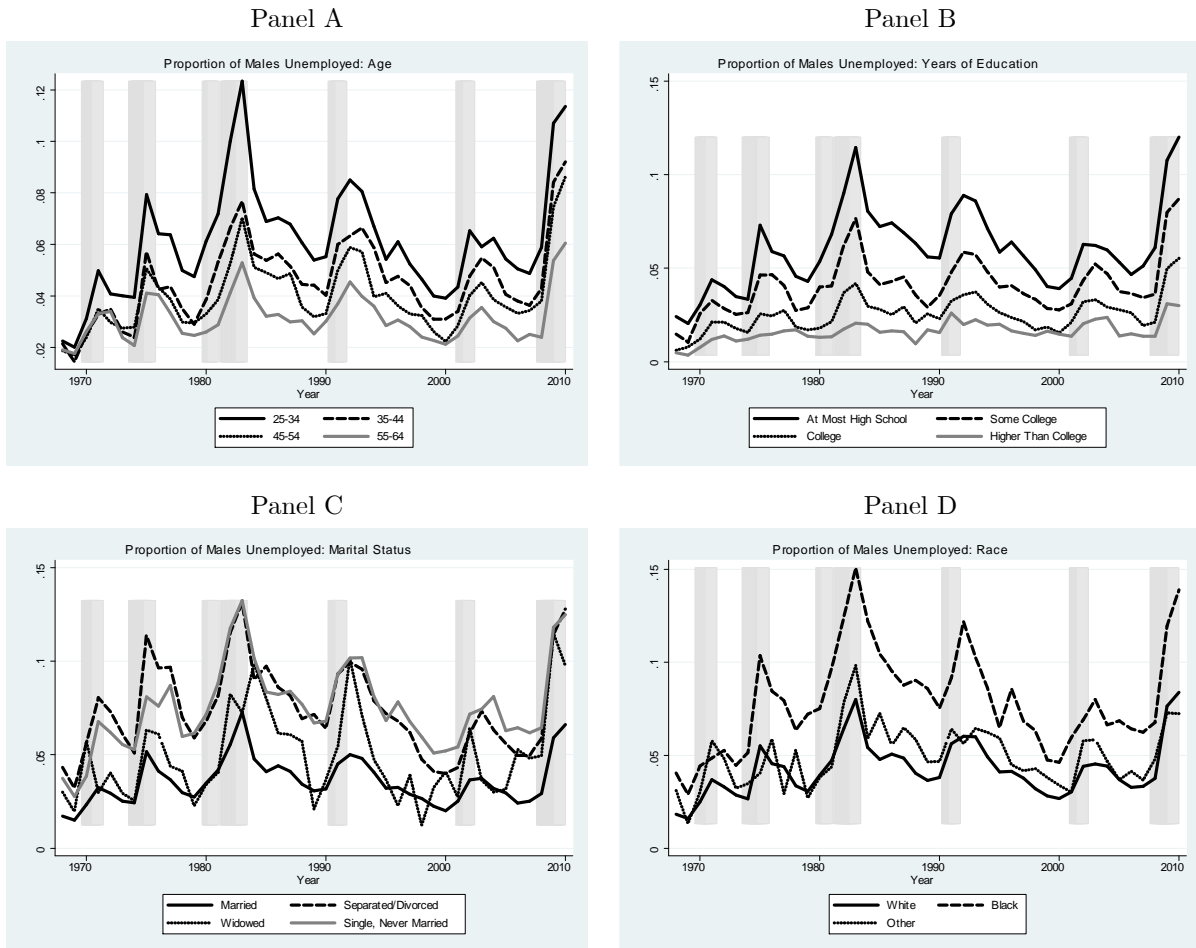
Note: Authors' own calculations from the IPUMS-CPS data. In this graph "population" refers to the population of 25 – 64 year old civilian non-institutionalized men.

Figure 3: EMPLOYMENT-TO-POPULATION RATIO BY SOCIO-DEMOGRAPHIC GROUP



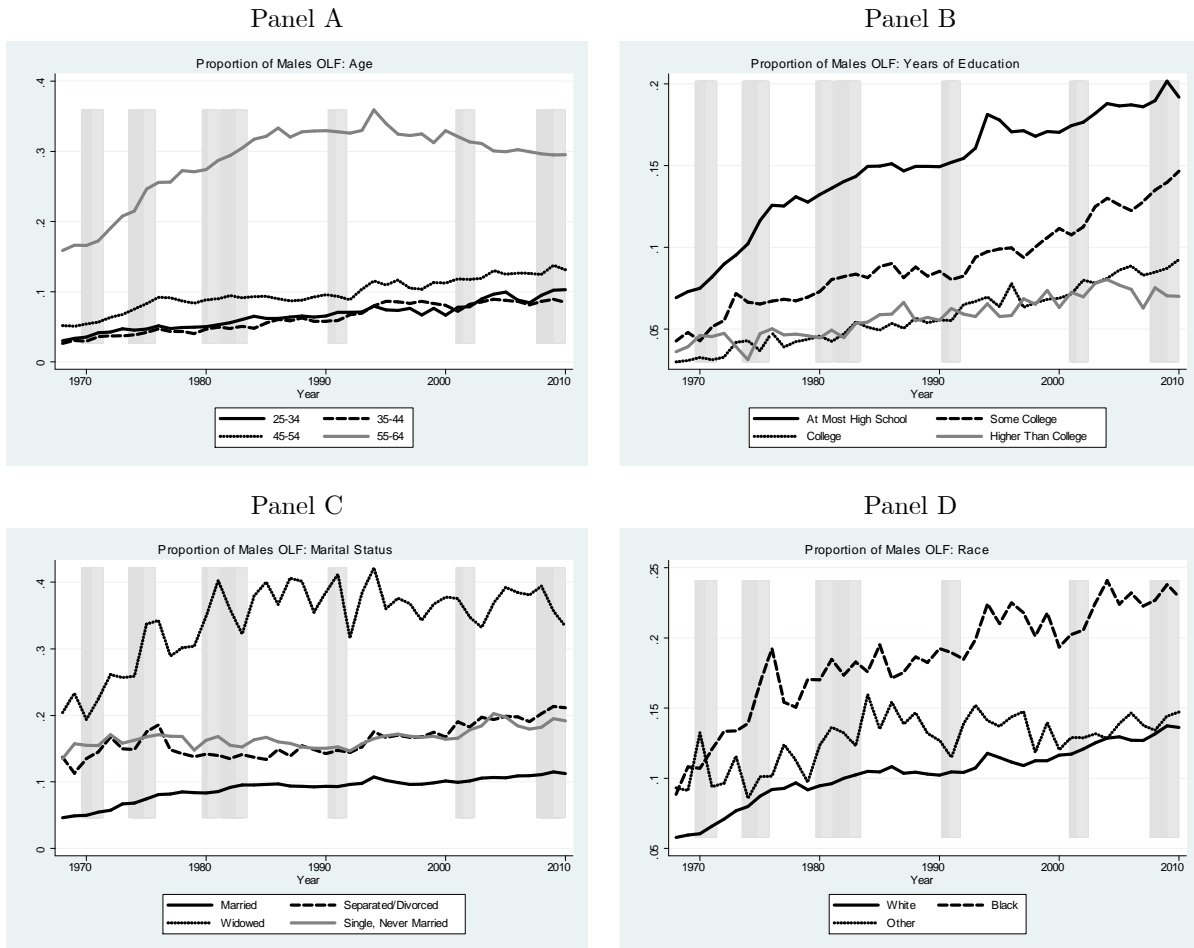
Note: Authors' own calculations from the IPUMS-CPS data.

Figure 4: UNEMPLOYMENT-TO-POPULATION RATIO BY SOCIO-DEMOGRAPHIC GROUP



Note: Authors' own calculations from the IPUMS-CPS data.

Figure 5: OLF-TO-POPULATION RATIO BY SOCIO-DEMOGRAPHIC GROUP



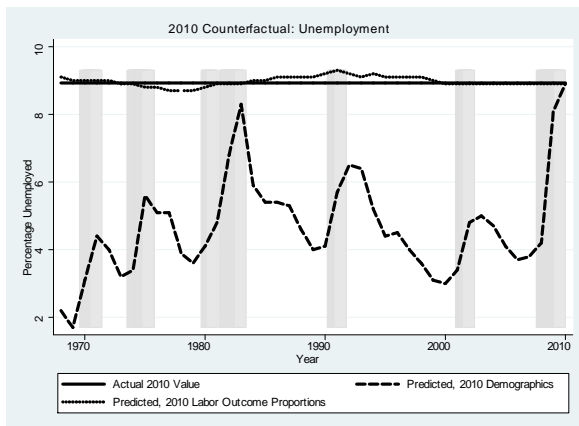
Note: Authors' own calculations from the IPUMS-CPS data.

Figure 6: COUNTERFACTUAL PREDICTIONS OF LABOR OUTCOMES

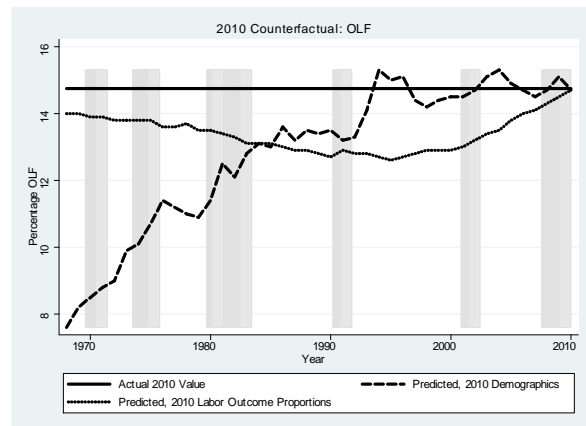
Panel A



Panel B



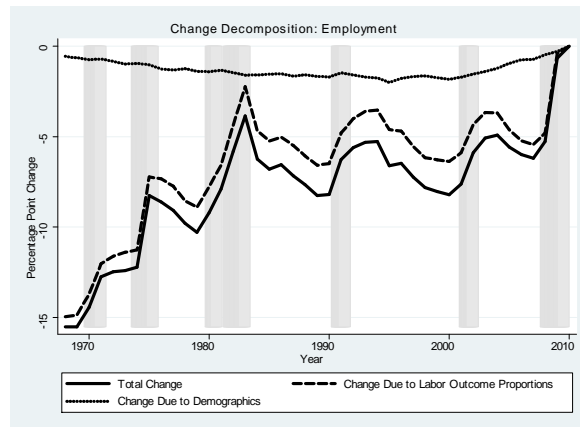
Panel C



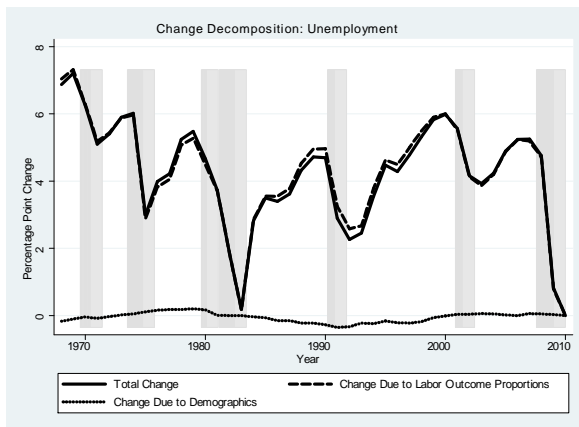
Note: Authors' own calculations from the IPUMS-CPS data. The figure shows the outcome-to-population ratio for each of the three labor outcomes. "Predicted, 2010 Demographics" gives the predicted 2010 labor outcome using the 2010 demographic composition and historical labor outcome proportions. "Predicted, 2010 labor outcome proportions" gives the predicted 2010 labor outcome using the 2010 labor outcome proportions and historical demographic compositions.

Figure 7: THE DECOMPOSITION OF THE CHANGE IN LABOR OUTCOMES

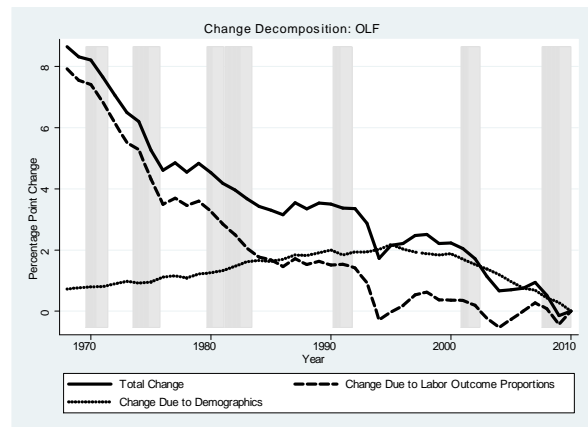
Panel A



Panel B



Panel C



Note: Authors' own calculations from the IPUMS-CPS data.

Table 1: COUNTERFACTUAL PREDICTIONS OF THE EMPLOYMENT-TO-POPULATION RATIO, PERCENT

| Year | Demographics | Labor Outcomes |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|--------------|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|      |              | 1968           | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| 1968 | 1919         | 917            | 907  | 890  | 887  | 887  | 885  | 84.5 | 84.8 | 85.1 | 85.9 | 86.4 | 85.2 | 83.8 | 81.7 | 79.5 | 81.9 | 82.4 | 82.0 | 82.5 | 83.3 | 83.7 | 83.3 | 81.6 | 80.5 | 80.5 | 79.9 | 81.2 | 81.7 | 82.4 | 83.0 | 83.4 | 83.3 | 82.8 | 81.2 | 81.1 | 81.3 | 81.9 | 82.7 | 82.5 | 81.6 | 77.2 | 76.9 |
| 1969 | 1918         | 917            | 908  | 890  | 888  | 888  | 88.6 | 84.6 | 84.8 | 85.2 | 85.9 | 86.4 | 85.3 | 83.9 | 81.8 | 79.6 | 82.0 | 82.5 | 82.1 | 82.6 | 83.4 | 83.7 | 83.3 | 81.8 | 80.6 | 80.6 | 80.1 | 81.3 | 81.8 | 82.5 | 83.1 | 83.4 | 83.4 | 82.9 | 81.3 | 81.2 | 81.4 | 82.1 | 82.8 | 82.6 | 81.8 | 77.3 | 77.0 |
| 1970 | 1918         | 918            | 908  | 890  | 888  | 887  | 88.6 | 84.6 | 84.9 | 85.2 | 85.9 | 86.4 | 85.3 | 83.9 | 81.8 | 79.6 | 82.0 | 82.5 | 82.1 | 82.7 | 83.4 | 83.8 | 83.3 | 81.8 | 80.6 | 80.6 | 80.1 | 81.4 | 81.8 | 82.5 | 83.1 | 83.5 | 83.4 | 82.9 | 81.4 | 81.2 | 81.4 | 82.1 | 82.8 | 82.6 | 81.8 | 77.4 | 77.1 |
| 1971 | 1918         | 917            | 907  | 891  | 887  | 886  | 88.5 | 84.5 | 84.8 | 85.2 | 85.9 | 86.4 | 85.3 | 83.9 | 81.8 | 79.6 | 82.0 | 82.5 | 82.1 | 82.7 | 83.4 | 83.8 | 83.4 | 81.8 | 80.7 | 80.6 | 80.1 | 81.4 | 81.9 | 82.6 | 83.2 | 83.5 | 83.5 | 82.9 | 81.4 | 81.2 | 81.4 | 82.1 | 82.8 | 82.6 | 81.8 | 77.4 | 77.1 |
| 1972 | 1918         | 917            | 907  | 890  | 888  | 886  | 88.6 | 84.6 | 84.9 | 85.2 | 85.9 | 86.4 | 85.3 | 84.0 | 81.8 | 79.7 | 82.0 | 82.6 | 82.2 | 82.7 | 83.5 | 83.8 | 83.4 | 81.9 | 80.7 | 80.7 | 80.2 | 81.5 | 81.9 | 82.6 | 83.2 | 83.5 | 83.5 | 83.0 | 81.6 | 81.4 | 81.5 | 82.1 | 82.9 | 82.7 | 81.9 | 77.4 | 77.2 |
| 1973 | 1918         | 917            | 905  | 889  | 888  | 887  | 88.6 | 84.7 | 84.9 | 85.2 | 85.9 | 86.4 | 86.1 | 86.5 | 84.1 | 82.0 | 79.8 | 82.2 | 82.8 | 82.4 | 82.9 | 83.7 | 83.6 | 82.0 | 80.9 | 80.9 | 80.4 | 81.7 | 82.1 | 82.8 | 83.4 | 83.6 | 83.7 | 83.2 | 81.5 | 81.7 | 82.3 | 83.0 | 82.9 | 82.0 | 77.6 | 77.3 |      |
| 1974 | 1917         | 915            | 905  | 889  | 886  | 885  | 88.6 | 84.6 | 84.8 | 85.2 | 86.0 | 86.4 | 85.4 | 84.0 | 81.9 | 79.7 | 82.1 | 82.7 | 82.3 | 82.8 | 83.6 | 83.9 | 83.5 | 81.9 | 80.8 | 80.8 | 80.4 | 81.6 | 82.0 | 82.8 | 83.3 | 83.6 | 83.6 | 83.1 | 81.6 | 81.3 | 81.6 | 82.2 | 82.9 | 82.0 | 77.5 | 77.3 |      |
| 1975 | 1916         | 916            | 905  | 887  | 885  | 885  | 88.4 | 84.6 | 84.8 | 85.2 | 86.0 | 86.5 | 85.4 | 84.1 | 81.8 | 79.8 | 82.2 | 82.7 | 82.4 | 82.9 | 83.6 | 83.9 | 83.5 | 82.0 | 80.9 | 80.9 | 80.4 | 81.6 | 82.0 | 82.8 | 83.4 | 83.7 | 83.7 | 83.2 | 81.7 | 81.4 | 81.6 | 82.2 | 83.0 | 82.9 | 82.0 | 77.6 | 77.4 |
| 1976 | 1917         | 917            | 906  | 889  | 886  | 886  | 88.5 | 84.7 | 84.9 | 85.3 | 86.1 | 86.6 | 85.5 | 84.3 | 82.1 | 80.0 | 82.4 | 82.9 | 82.6 | 83.1 | 83.8 | 84.1 | 83.7 | 82.2 | 81.1 | 81.1 | 80.6 | 81.8 | 82.2 | 83.0 | 83.6 | 83.9 | 83.9 | 83.3 | 81.9 | 81.6 | 81.8 | 82.4 | 83.2 | 83.1 | 82.2 | 77.8 | 77.6 |
| 1977 | 1917         | 916            | 905  | 888  | 885  | 885  | 88.4 | 84.7 | 84.9 | 85.4 | 86.2 | 86.6 | 85.5 | 84.3 | 82.1 | 80.0 | 82.4 | 83.0 | 82.6 | 83.1 | 83.8 | 84.1 | 83.8 | 82.2 | 81.2 | 81.2 | 80.7 | 81.9 | 82.4 | 83.1 | 83.7 | 83.9 | 84.0 | 83.4 | 81.9 | 81.6 | 81.8 | 82.5 | 83.2 | 83.1 | 82.2 | 77.9 | 77.7 |
| 1978 | 1915         | 915            | 904  | 886  | 884  | 884  | 88.3 | 84.5 | 84.7 | 85.2 | 86.1 | 86.5 | 85.4 | 84.2 | 82.1 | 80.0 | 82.3 | 82.9 | 82.5 | 83.0 | 83.7 | 84.0 | 83.7 | 82.1 | 81.1 | 81.1 | 80.7 | 81.9 | 82.4 | 83.0 | 83.6 | 83.9 | 83.9 | 83.3 | 81.9 | 81.5 | 81.7 | 82.4 | 83.1 | 82.2 | 77.9 | 77.6 |      |
| 1979 | 1916         | 915            | 904  | 887  | 884  | 883  | 88.4 | 84.6 | 84.8 | 85.3 | 86.2 | 86.6 | 85.5 | 84.3 | 82.1 | 80.0 | 82.4 | 82.9 | 82.6 | 83.1 | 83.7 | 84.1 | 83.8 | 82.3 | 81.3 | 81.2 | 80.8 | 82.0 | 82.4 | 83.1 | 83.7 | 84.0 | 84.0 | 83.5 | 82.0 | 81.6 | 81.8 | 82.5 | 83.2 | 83.2 | 82.3 | 78.0 | 77.7 |
| 1980 | 1915         | 914            | 903  | 886  | 883  | 883  | 88.3 | 84.5 | 84.7 | 85.3 | 86.1 | 86.6 | 85.5 | 84.3 | 82.1 | 80.0 | 82.4 | 83.0 | 82.6 | 83.1 | 83.8 | 84.1 | 83.9 | 82.3 | 81.3 | 81.2 | 80.9 | 82.1 | 82.4 | 83.2 | 83.8 | 84.0 | 84.0 | 83.5 | 82.0 | 81.7 | 81.8 | 82.5 | 83.3 | 83.2 | 82.4 | 78.0 | 77.7 |
| 1981 | 1914         | 913            | 902  | 885  | 882  | 882  | 88.2 | 84.4 | 84.6 | 85.2 | 86.1 | 86.5 | 85.5 | 84.2 | 82.0 | 79.9 | 82.3 | 82.9 | 82.6 | 83.1 | 83.7 | 84.2 | 83.9 | 82.3 | 81.3 | 81.2 | 80.8 | 82.1 | 82.4 | 83.2 | 83.8 | 84.0 | 84.1 | 83.6 | 82.0 | 81.7 | 81.8 | 82.5 | 83.3 | 83.3 | 82.3 | 77.9 | 77.7 |
| 1982 | 1915         | 914            | 902  | 885  | 882  | 882  | 88.2 | 84.5 | 84.7 | 85.2 | 86.1 | 86.6 | 85.5 | 84.3 | 82.2 | 80.0 | 82.5 | 83.0 | 82.7 | 83.2 | 83.8 | 84.2 | 84.0 | 82.3 | 81.4 | 81.4 | 81.0 | 82.2 | 82.5 | 83.3 | 83.9 | 84.2 | 84.3 | 83.7 | 82.2 | 81.8 | 81.9 | 82.6 | 83.4 | 83.4 | 82.4 | 78.0 | 77.8 |
| 1983 | 1916         | 915            | 902  | 886  | 883  | 883  | 88.3 | 84.7 | 84.8 | 85.3 | 86.2 | 86.6 | 85.6 | 84.4 | 82.3 | 80.2 | 82.6 | 83.2 | 82.9 | 83.4 | 84.0 | 84.4 | 84.4 | 82.6 | 81.6 | 81.5 | 81.1 | 82.4 | 82.7 | 83.5 | 84.1 | 84.3 | 84.4 | 83.8 | 82.3 | 81.9 | 82.0 | 82.8 | 83.5 | 83.6 | 82.6 | 78.2 | 77.9 |
| 1984 | 1915         | 914            | 903  | 886  | 882  | 882  | 88.2 | 84.6 | 84.8 | 85.3 | 86.2 | 86.7 | 85.6 | 84.3 | 82.2 | 80.1 | 82.6 | 83.1 | 82.8 | 83.3 | 84.0 | 84.3 | 84.2 | 82.5 | 81.6 | 81.5 | 81.1 | 82.4 | 82.7 | 83.4 | 84.1 | 84.3 | 84.4 | 83.8 | 82.3 | 81.9 | 82.0 | 82.7 | 83.5 | 83.6 | 82.6 | 78.2 | 77.9 |
| 1985 | 1914         | 913            | 901  | 885  | 882  | 882  | 88.1 | 84.5 | 84.8 | 85.3 | 86.2 | 86.7 | 85.5 | 84.3 | 82.2 | 80.1 | 82.6 | 83.1 | 82.8 | 83.3 | 83.9 | 84.3 | 84.2 | 82.5 | 81.6 | 81.5 | 81.1 | 82.4 | 82.7 | 83.4 | 84.1 | 84.3 | 84.4 | 83.8 | 82.3 | 81.9 | 82.0 | 82.7 | 83.5 | 83.6 | 82.6 | 78.2 | 77.9 |
| 1986 | 1914         | 913            | 901  | 884  | 881  | 881  | 88.1 | 84.5 | 84.7 | 85.2 | 86.1 | 86.7 | 85.5 | 84.3 | 82.2 | 80.1 | 82.6 | 83.1 | 82.9 | 83.3 | 83.8 | 84.4 | 84.2 | 82.5 | 81.6 | 81.5 | 81.2 | 82.5 | 82.7 | 83.4 | 84.1 | 84.3 | 84.4 | 83.9 | 82.3 | 81.9 | 82.0 | 82.8 | 83.5 | 83.6 | 82.6 | 78.2 | 77.9 |
| 1987 | 1915         | 914            | 901  | 884  | 881  | 883  | 88.2 | 84.6 | 84.8 | 85.3 | 86.2 | 86.8 | 85.6 | 84.4 | 82.4 | 80.2 | 82.7 | 83.2 | 82.9 | 83.6 | 84.1 | 84.5 | 84.4 | 82.7 | 81.8 | 81.7 | 81.4 | 82.6 | 82.9 | 83.6 | 84.3 | 84.5 | 84.7 | 84.1 | 82.5 | 82.1 | 82.2 | 82.9 | 83.7 | 83.8 | 82.6 | 78.3 | 78.0 |
| 1988 | 1914         | 913            | 900  | 883  | 880  | 882  | 88.2 | 84.5 | 84.6 | 85.2 | 86.1 | 86.6 | 85.6 | 84.4 | 82.3 | 80.1 | 82.6 | 83.2 | 82.9 | 83.4 | 84.0 | 84.4 | 84.4 | 82.6 | 81.6 | 81.5 | 81.1 | 82.4 | 82.7 | 83.5 | 84.2 | 84.4 | 84.0 | 84.2 | 84.0 | 82.6 | 82.1 | 82.1 | 82.8 | 83.6 | 82.6 | 78.2 | 77.9 |
| 1989 | 1913         | 913            | 900  | 883  | 880  | 881  | 88.1 | 84.5 | 84.7 | 85.2 | 86.2 | 86.8 | 85.7 | 84.4 | 82.4 | 80.2 | 82.7 | 83.3 | 83.0 | 83.4 | 84.1 | 84.6 | 84.4 | 82.7 | 81.9 | 81.6 | 81.4 | 82.7 | 82.8 | 83.6 | 84.3 | 84.5 | 84.6 | 84.1 | 82.5 | 82.1 | 82.1 | 82.9 | 83.7 | 82.8 | 78.3 | 78.0 |      |
| 1990 | 1914         | 913            | 900  | 883  | 880  | 882  | 88.2 | 84.5 | 84.7 | 85.3 | 86.3 | 86.9 | 85.7 | 84.4 | 82.4 | 80.2 | 82.8 | 83.3 | 83.0 | 83.5 | 84.1 | 84.6 | 84.5 | 82.8 | 81.9 | 81.7 | 81.5 | 82.7 | 82.9 | 83.6 | 84.4 | 84.5 | 84.7 | 84.2 | 82.6 | 82.1 | 82.2 | 83.0 | 83.7 | 83.8 | 82.8 | 78.3 | 78.0 |
| 1991 | 1913         | 912            | 899  | 882  | 879  | 880  | 88.0 | 84.5 | 84.6 | 85.1 | 86.2 | 86.7 | 85.6 | 84.2 | 82.2 | 80.0 | 82.6 | 83.1 | 82.8 | 83.3 | 83.8 | 84.3 | 84.3 | 82.6 | 81.7 | 81.5 | 81.3 | 82.5 | 82.6 | 83.4 | 84.2 | 84.3 | 84.5 | 84.0 | 82.4 | 81.9 | 81.9 | 82.8 | 83.5 | 83.6 | 82.6 | 78.1 | 77.8 |
| 1992 | 1912         | 912            | 899  | 882  | 879  | 881  | 88.0 | 84.6 | 84.6 | 85.1 | 86.3 | 86.9 | 85.7 | 84.4 | 82.4 | 80.2 | 82.8 | 83.2 | 83.0 | 83.4 | 83.9 | 84.6 | 84.5 | 83.0 | 82.0 | 81.5 | 81.5 | 82.6 | 82.7 | 83.6 | 84.3 | 84.4 | 84.6 | 84.2 | 82.6 | 81.9 | 81.9 | 82.9 | 83.6 | 83.8 | 82.8 | 78.4 | 78.0 |
| 1993 | 1912         | 912            | 899  | 882  | 879  | 882  | 88.0 | 84.7 | 84.7 | 85.2 | 86.3 | 86.9 | 85.8 | 84.4 | 82.5 | 80.3 | 82.9 | 83.3 | 83.0 | 83.5 | 84.0 | 84.6 | 84.5 | 82.9 | 82.0 | 81.6 | 81.5 | 82.7 | 82.8 | 83.6 | 84.3 | 84.5 | 84.7 | 84.2 | 82.6 | 82.1 | 82.1 | 82.9 | 83.6 | 83.8 | 82.8 | 78.4 | 78.0 |
| 1994 | 1912         | 912            | 899  | 881  | 879  | 881  | 88.0 | 84.8 | 84.8 | 85.3 | 86.4 | 87.0 | 85.9 | 84.5 | 82.5 | 80.3 | 83.0 | 83.3 | 83.1 | 83.5 | 84.1 | 84.7 | 84.6 | 83.0 | 82.1 | 81.7 | 81.6 | 82.8 | 82.8 | 83.7 | 84.4 | 84.6 | 84.8 | 84.3 | 82.7 | 82.1 | 82.1 | 83.0 |      |      |      |      |      |

Table 2: COUNTERFACTUAL PREDICTIONS OF THE UNEMPLOYMENT-TO-POPULATION RATIO, PERCENT

| Demographics | Labor Outcomes |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |
|--------------|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|
|              | 1969           | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |     |
| 1968         | 2.1            | 17   | 2.7  | 3.8  | 3.5  | 3.0  | 2.9  | 6.0  | 4.9  | 4.6  | 3.7  | 3.5  | 4.3  | 5.2  | 6.9  | 8.8  | 6.1  | 5.3  | 5.5  | 5.2  | 4.5  | 3.9  | 4.0  | 5.7  | 6.5  | 6.2  | 5.1  | 4.2  | 4.5  | 3.8  | 3.5  | 3.0  | 2.8  | 3.3  | 4.8  | 4.7  | 4.3  | 3.9  | 3.3  | 3.6  | 4.3  | 8.2  | 9.1 |
| 1969         | 2.0            | 17   | 2.7  | 3.8  | 3.5  | 3.0  | 2.9  | 6.0  | 4.9  | 4.6  | 3.7  | 3.4  | 4.2  | 5.2  | 6.8  | 8.7  | 6.1  | 5.3  | 5.5  | 5.1  | 4.4  | 3.9  | 4.0  | 5.6  | 6.5  | 6.2  | 5.1  | 4.2  | 4.4  | 3.8  | 3.5  | 3.0  | 2.8  | 3.3  | 4.8  | 4.7  | 4.3  | 3.9  | 3.3  | 3.5  | 4.3  | 8.2  | 9.0 |
| 1970         | 2.0            | 17   | 2.7  | 3.8  | 3.5  | 3.0  | 2.9  | 6.0  | 4.9  | 4.6  | 3.7  | 3.4  | 4.3  | 5.1  | 6.8  | 8.7  | 6.0  | 5.3  | 5.5  | 5.1  | 4.4  | 3.9  | 4.0  | 5.6  | 6.5  | 6.2  | 5.1  | 4.1  | 4.4  | 3.8  | 3.5  | 3.0  | 2.7  | 3.3  | 4.8  | 4.7  | 4.3  | 3.9  | 3.3  | 3.5  | 4.3  | 8.1  | 9.0 |
| 1971         | 2.0            | 17   | 2.7  | 3.8  | 3.5  | 3.0  | 2.9  | 6.0  | 4.9  | 4.7  | 3.7  | 3.5  | 4.3  | 5.2  | 6.8  | 8.7  | 6.0  | 5.3  | 5.5  | 5.1  | 4.4  | 3.9  | 4.0  | 5.7  | 6.5  | 6.2  | 5.1  | 4.2  | 4.4  | 3.8  | 3.5  | 3.0  | 2.7  | 3.3  | 4.8  | 4.7  | 4.3  | 3.9  | 3.3  | 3.5  | 4.3  | 8.1  | 9.0 |
| 1972         | 2.0            | 17   | 2.7  | 3.9  | 3.5  | 3.0  | 2.9  | 6.0  | 4.9  | 4.6  | 3.7  | 3.4  | 4.2  | 5.1  | 6.8  | 8.7  | 6.0  | 5.2  | 5.4  | 5.1  | 4.4  | 3.9  | 4.0  | 5.6  | 6.4  | 6.1  | 5.1  | 4.1  | 4.4  | 3.8  | 3.5  | 3.0  | 2.7  | 3.3  | 4.8  | 4.7  | 4.3  | 3.9  | 3.3  | 3.5  | 4.2  | 8.1  | 9.0 |
| 1973         | 2.0            | 17   | 2.7  | 3.9  | 3.5  | 3.0  | 2.9  | 5.9  | 4.9  | 4.6  | 3.7  | 3.4  | 4.2  | 5.1  | 6.8  | 8.7  | 5.9  | 5.2  | 5.4  | 5.1  | 4.4  | 3.9  | 4.0  | 5.6  | 6.4  | 6.1  | 5.0  | 4.1  | 4.4  | 3.8  | 3.5  | 3.0  | 2.7  | 3.2  | 4.8  | 4.6  | 4.2  | 3.9  | 3.2  | 3.5  | 4.2  | 8.1  | 8.9 |
| 1974         | 2.0            | 17   | 2.7  | 3.9  | 3.6  | 3.0  | 2.9  | 5.9  | 4.9  | 4.7  | 3.7  | 3.4  | 4.2  | 5.1  | 6.8  | 8.6  | 5.9  | 5.2  | 5.4  | 5.0  | 4.4  | 3.9  | 4.0  | 5.6  | 6.4  | 6.1  | 5.0  | 4.1  | 4.4  | 3.8  | 3.5  | 3.0  | 2.7  | 3.3  | 4.8  | 4.6  | 4.3  | 3.9  | 3.3  | 3.5  | 4.2  | 8.1  | 8.9 |
| 1975         | 2.0            | 17   | 2.7  | 3.9  | 3.6  | 3.0  | 2.9  | 5.9  | 4.9  | 4.7  | 3.7  | 3.4  | 4.2  | 5.0  | 6.8  | 8.6  | 5.9  | 5.2  | 5.3  | 5.0  | 4.3  | 3.8  | 3.9  | 5.6  | 6.4  | 6.1  | 5.0  | 4.1  | 4.4  | 3.8  | 3.4  | 2.9  | 2.7  | 3.2  | 4.7  | 4.6  | 4.2  | 3.9  | 3.3  | 3.5  | 4.2  | 8.1  | 8.8 |
| 1976         | 2.0            | 17   | 2.7  | 3.9  | 3.6  | 3.1  | 2.9  | 5.9  | 4.9  | 4.7  | 3.7  | 3.4  | 4.2  | 5.0  | 6.7  | 8.6  | 5.9  | 5.2  | 5.3  | 5.0  | 4.3  | 3.8  | 3.9  | 5.5  | 6.3  | 6.1  | 5.0  | 4.1  | 4.4  | 3.8  | 3.4  | 2.9  | 2.7  | 3.2  | 4.7  | 4.6  | 4.3  | 3.8  | 3.3  | 3.5  | 4.1  | 8.0  | 8.8 |
| 1977         | 2.0            | 17   | 2.7  | 3.9  | 3.6  | 3.1  | 3.0  | 5.9  | 4.9  | 4.7  | 3.7  | 3.4  | 4.2  | 5.0  | 6.7  | 8.5  | 5.9  | 5.2  | 5.3  | 5.0  | 4.3  | 3.8  | 3.9  | 5.5  | 6.3  | 6.0  | 5.0  | 4.1  | 4.3  | 3.8  | 3.4  | 2.9  | 2.7  | 3.2  | 4.7  | 4.6  | 4.3  | 3.8  | 3.3  | 3.5  | 4.1  | 8.0  | 8.7 |
| 1978         | 2.0            | 17   | 2.7  | 4.0  | 3.6  | 3.1  | 3.0  | 5.9  | 4.9  | 4.7  | 3.7  | 3.4  | 4.2  | 5.0  | 6.7  | 8.5  | 5.9  | 5.2  | 5.3  | 5.0  | 4.3  | 3.9  | 3.9  | 5.5  | 6.3  | 6.0  | 5.0  | 4.1  | 4.4  | 3.8  | 3.4  | 2.9  | 2.8  | 3.2  | 4.7  | 4.6  | 4.3  | 3.8  | 3.3  | 3.5  | 4.1  | 8.0  | 8.7 |
| 1979         | 2.0            | 17   | 2.7  | 4.0  | 3.6  | 3.1  | 3.0  | 5.9  | 5.0  | 4.8  | 3.7  | 3.4  | 4.2  | 5.0  | 6.8  | 8.5  | 5.9  | 5.2  | 5.3  | 5.0  | 4.3  | 3.9  | 3.9  | 5.5  | 6.3  | 6.1  | 5.0  | 4.1  | 4.4  | 3.8  | 3.4  | 2.9  | 2.8  | 3.2  | 4.7  | 4.3  | 3.8  | 3.3  | 3.5  | 4.1  | 8.0  | 8.7  |     |
| 1980         | 2.0            | 17   | 2.7  | 4.0  | 3.6  | 3.1  | 3.0  | 5.9  | 5.0  | 4.9  | 3.7  | 3.5  | 4.3  | 5.1  | 6.8  | 8.6  | 5.9  | 5.2  | 5.3  | 5.1  | 4.3  | 3.9  | 4.0  | 5.6  | 6.4  | 6.1  | 5.0  | 4.1  | 4.4  | 3.8  | 3.4  | 2.9  | 2.8  | 3.3  | 4.7  | 4.4  | 3.9  | 3.3  | 3.5  | 4.2  | 8.0  | 8.8  |     |
| 1981         | 2.1            | 17   | 2.8  | 4.1  | 3.7  | 3.2  | 3.1  | 6.0  | 5.1  | 5.0  | 3.8  | 3.6  | 4.4  | 5.2  | 7.0  | 8.7  | 6.0  | 5.3  | 5.4  | 5.1  | 4.4  | 4.0  | 4.1  | 5.7  | 6.4  | 6.2  | 5.1  | 4.2  | 4.5  | 3.9  | 3.5  | 3.0  | 2.9  | 3.3  | 4.8  | 4.8  | 4.4  | 4.0  | 3.4  | 3.6  | 4.3  | 8.2  | 8.9 |
| 1982         | 2.1            | 17   | 2.8  | 4.1  | 3.7  | 3.2  | 3.1  | 6.1  | 5.1  | 5.0  | 3.8  | 3.6  | 4.4  | 5.2  | 7.1  | 8.8  | 6.1  | 5.3  | 5.4  | 5.2  | 4.4  | 4.0  | 4.1  | 5.7  | 6.4  | 6.2  | 5.1  | 4.2  | 4.5  | 3.9  | 3.5  | 3.0  | 2.9  | 3.3  | 4.9  | 4.8  | 4.5  | 4.0  | 3.4  | 3.6  | 4.3  | 8.2  | 8.9 |
| 1983         | 2.1            | 17   | 2.8  | 4.1  | 3.7  | 3.2  | 3.2  | 6.0  | 5.1  | 5.0  | 3.8  | 3.6  | 4.4  | 5.2  | 7.0  | 8.7  | 6.1  | 5.3  | 5.4  | 5.2  | 4.4  | 4.0  | 4.1  | 5.7  | 6.4  | 6.2  | 5.1  | 4.2  | 4.5  | 3.9  | 3.5  | 3.0  | 2.9  | 3.3  | 4.9  | 4.8  | 4.5  | 4.0  | 3.4  | 3.6  | 4.3  | 8.2  | 8.9 |
| 1984         | 2.1            | 17   | 2.8  | 4.1  | 3.8  | 3.2  | 3.1  | 6.1  | 5.1  | 5.1  | 3.9  | 3.6  | 4.4  | 5.3  | 7.1  | 8.8  | 6.1  | 5.4  | 5.5  | 5.2  | 4.5  | 4.1  | 4.1  | 5.8  | 6.5  | 6.3  | 5.2  | 4.3  | 4.5  | 4.0  | 3.5  | 3.0  | 2.9  | 3.3  | 4.9  | 4.8  | 4.5  | 4.0  | 3.5  | 3.6  | 4.3  | 8.2  | 9.0 |
| 1985         | 2.1            | 17   | 2.9  | 4.1  | 3.8  | 3.2  | 3.2  | 6.1  | 5.2  | 5.1  | 3.9  | 3.6  | 4.4  | 5.3  | 7.1  | 8.8  | 6.1  | 5.4  | 5.5  | 5.2  | 4.5  | 4.1  | 4.1  | 5.8  | 6.5  | 6.3  | 5.2  | 4.3  | 4.6  | 4.0  | 3.5  | 3.0  | 2.9  | 3.4  | 4.9  | 4.8  | 4.6  | 4.0  | 3.5  | 3.6  | 4.3  | 8.2  | 9.0 |
| 1986         | 2.1            | 17   | 2.9  | 4.2  | 3.8  | 3.3  | 3.2  | 6.1  | 5.2  | 5.2  | 4.0  | 3.6  | 4.5  | 5.3  | 7.2  | 8.9  | 6.2  | 5.5  | 5.5  | 5.3  | 4.6  | 4.1  | 4.2  | 5.8  | 6.5  | 6.3  | 5.2  | 4.3  | 4.6  | 4.1  | 3.6  | 3.1  | 3.0  | 3.4  | 5.0  | 4.9  | 4.6  | 4.1  | 3.5  | 3.7  | 4.4  | 8.3  | 9.1 |
| 1987         | 2.1            | 18   | 2.9  | 4.2  | 3.9  | 3.3  | 3.2  | 6.1  | 5.2  | 5.2  | 3.9  | 3.6  | 4.5  | 5.3  | 7.2  | 8.9  | 6.2  | 5.5  | 5.5  | 5.3  | 4.6  | 4.1  | 4.2  | 5.9  | 6.6  | 6.4  | 5.3  | 4.3  | 4.6  | 4.1  | 3.6  | 3.1  | 3.0  | 3.4  | 5.0  | 4.9  | 4.6  | 4.1  | 3.5  | 3.7  | 4.4  | 8.3  | 9.1 |
| 1988         | 2.2            | 18   | 3.0  | 4.2  | 3.9  | 3.3  | 3.3  | 6.2  | 5.3  | 5.3  | 4.0  | 3.7  | 4.5  | 5.4  | 7.3  | 9.0  | 6.2  | 5.6  | 5.6  | 5.4  | 4.6  | 4.2  | 4.2  | 5.9  | 6.6  | 6.4  | 5.3  | 4.4  | 4.6  | 4.1  | 3.6  | 3.1  | 3.0  | 3.4  | 5.0  | 4.9  | 4.7  | 4.1  | 3.5  | 3.7  | 4.4  | 8.4  | 9.1 |
| 1989         | 2.2            | 17   | 3.0  | 4.2  | 3.8  | 3.3  | 3.3  | 6.1  | 5.2  | 5.3  | 4.0  | 3.7  | 4.5  | 5.4  | 7.3  | 8.9  | 6.2  | 5.6  | 5.6  | 5.4  | 4.6  | 4.2  | 4.2  | 5.9  | 6.6  | 6.4  | 5.3  | 4.4  | 4.7  | 4.1  | 3.7  | 3.1  | 3.0  | 3.4  | 5.0  | 4.9  | 4.7  | 4.1  | 3.6  | 3.7  | 4.4  | 8.4  | 9.1 |
| 1990         | 2.2            | 17   | 3.0  | 4.3  | 3.9  | 3.3  | 3.3  | 6.1  | 5.2  | 5.3  | 4.0  | 3.7  | 4.5  | 5.4  | 7.3  | 8.9  | 6.2  | 5.6  | 5.6  | 5.4  | 4.6  | 4.2  | 4.2  | 5.9  | 6.6  | 6.5  | 5.3  | 4.4  | 4.7  | 4.2  | 3.7  | 3.1  | 3.0  | 3.4  | 5.0  | 5.0  | 4.7  | 4.1  | 3.6  | 3.7  | 4.4  | 8.4  | 9.2 |
| 1991         | 2.3            | 18   | 3.0  | 4.3  | 3.9  | 3.3  | 3.3  | 6.2  | 5.3  | 5.3  | 4.0  | 3.7  | 4.5  | 5.4  | 7.4  | 9.0  | 6.3  | 5.6  | 5.7  | 5.5  | 4.7  | 4.3  | 4.3  | 6.0  | 6.7  | 6.6  | 5.4  | 4.5  | 4.7  | 4.2  | 3.7  | 3.2  | 3.1  | 3.5  | 5.0  | 5.0  | 4.8  | 4.1  | 3.7  | 3.8  | 4.5  | 8.5  | 9.3 |
| 1992         | 2.3            | 17   | 3.0  | 4.3  | 3.9  | 3.3  | 3.3  | 6.1  | 5.3  | 5.3  | 4.0  | 3.6  | 4.5  | 5.3  | 7.3  | 8.9  | 6.2  | 5.6  | 5.6  | 5.4  | 4.7  | 4.2  | 4.3  | 5.9  | 6.7  | 6.5  | 5.3  | 4.4  | 4.7  | 4.2  | 3.7  | 3.1  | 3.0  | 3.4  | 5.0  | 5.0  | 4.8  | 4.1  | 3.7  | 3.8  | 4.4  | 8.4  | 9.2 |
| 1993         | 2.3            | 17   | 3.0  | 4.3  | 3.9  | 3.3  | 3.3  | 6.0  | 5.2  | 5.2  | 3.9  | 3.6  | 4.4  | 5.2  | 7.2  | 8.8  | 6.1  | 5.5  | 5.5  | 5.4  | 4.6  | 4.2  | 4.2  | 5.9  | 6.6  | 6.5  | 5.3  | 4.4  | 4.6  | 4.1  | 3.6  | 3.1  | 3.0  | 3.4  | 5.0  | 4.9  | 4.8  | 4.1  | 3.7  | 3.7  | 4.3  | 8.3  | 9.1 |
| 1994         | 2.3            | 17   | 3.0  | 4.3  | 3.9  | 3.3  | 3.3  | 6.0  | 5.2  | 5.2  | 3.9  | 3.6  | 4.4  | 5.2  | 7.2  | 8.8  | 6.1  | 5.6  | 5.6  | 5.5  | 4.6  | 4.2  | 4.2  | 5.9  | 6.6  | 6.5  | 5.4  | 4.4  | 4.7  | 4.2  | 3.7  | 3.2  | 3.0  | 3.4  | 4.9  | 5.1  | 4.8  | 4.1  | 3.7  | 3.7  | 4.4  | 8.4  | 9.2 |
| 1995         | 2.2            | 17   | 3.0  | 4.3  | 3.9  | 3.2  | 3.3  | 5.9  | 5.1  | 5.1  | 3.9  | 3.6  | 4.4  | 5.2  | 7.2  | 8.7  | 6.1  | 5.5  | 5.5  | 5.4  | 4.6  | 4.2  | 4.2  | 5.9  | 6.5  | 6.5  | 5.3  | 4.4  | 4.6  | 4.1  | 3.7  | 3.1  | 3.0  | 3.4  | 4.9  | 5.1  | 4.8  | 4.1  | 3.7  | 3.7  | 4.3  | 8.3  | 9.1 |
| 1996         | 2.3            | 17   | 3.0  | 4.3  | 3.9  | 3.3  | 3.3  | 5.9  | 5.2  | 5.2  | 3.9  | 3.6  | 4.4  | 5.2  | 7.2  | 8.7  | 6.1  | 5.5  | 5.5  | 5.4  | 4.6  | 4.2  | 4.2  | 5.9  | 6.6  | 6.5  | 5.3  | 4.5  | 4.6  | 4.1  | 3.7  | 3.1  | 3.0  | 3.4  | 4.9  | 5.1  | 4.8  | 4.1  | 3.7  | 3.7  | 4.3  | 8.3  | 9.1 |
| 1997         | 2.3            | 17   | 3.0  | 4.3  | 3.9  | 3.2  | 3.3  | 5.8  | 5.1  | 5.1  | 3.9  | 3.6  | 4.4  | 5.2  | 7.2  | 8.7  | 6.1  | 5.5  | 5.5  | 5.4  | 4.6  | 4.2  | 4.2  | 5.9  | 6.6  | 6.5  | 5.3  | 4.4  | 4.6  | 4.1  | 3.6  | 3.1  | 3.0  | 3.4  | 4.9  | 5.1  | 4.8  | 4.1  | 3.7  | 3.7  | 4.3  | 8.3  | 9.1 |
| 1998         | 2.3            | 17   | 3.0  | 4.3  | 3.9  | 3.2  | 3.3  | 5.8  | 5.1  | 5.1  | 3.8  | 3.6  | 4.3  | 5.1  | 7.1  | 8.6  | 6.0  | 5.4  | 5.5  | 5.4  | 4.6  | 4.1  | 4.2  | 5.8  | 6.6  | 6.5  | 5.3  | 4.4  | 4.5  | 4.0  | 3.7  | 3.1  | 3.0  | 3.4  | 4.9  | 5.1  | 4.7  | 4.1  | 3.7  | 3.7  | 4.3  | 8.3  | 9.1 |
| 1999         | 2.3            | 17   | 3.0  | 4.2  | 3.9  | 3.2  | 3.3  | 5.7  | 5.0  | 5.0  | 3.8  | 3.5  | 4.2  | 5.0  | 7.0  | 8.5  | 5.9  | 5.4  | 5.4  | 5.3  | 4.5  | 4.1  | 4.1  | 5.8  | 6.5  | 6.4  | 5.3  | 4.4  | 4.6  | 4.1  | 3.6  | 3.1  | 3.0  | 3.4  | 4.8  | 5.0  | 4.7  | 4.1  | 3.7  | 3.7  | 4.2  | 8.2  | 9.0 |
| 2000         | 2.2            | 17   | 3.0  | 4.1  | 3.9  | 3.1  | 3.3  | 5.7  | 5.0  | 4.9  | 3.7  | 3.5  | 4.2  | 4.9  | 6.9  | 8.4  | 5.9  | 5.4  | 5.4  | 5.3  | 4.5  | 4.1  | 4.1  | 5.8  | 6.4  | 6.4  | 5.2  | 4.4  | 4.5  | 4.0  | 3.5  | 3.1  | 2.9  | 3.3  | 4.8  | 5.0  | 4.7  | 4.0  | 3.   |      |      |      |     |

Table 3: COUNTERFACTUAL PREDICTIONS OF THE OLF-TO-POPULATION RATIO, PERCENT

| Demographics | Labor Outcomes |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|              | 1969           | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |      |      |
| 1968         | 6.1            | 6.5  | 6.5  | 7.1  | 7.7  | 8.3  | 8.5  | 9.4  | 10.3 | 10.2 | 10.4 | 10.2 | 0.5  | 11.0 | 11.4 | 11.7 | 12.0 | 12.2 | 12.4 | 12.3 | 12.2 | 12.4 | 12.7 | 12.6 | 13.0 | 13.3 | 14.9 | 14.6 | 13.8 | 13.7 | 13.4 | 13.6 | 13.9 | 13.9 | 14.0 | 14.2 | 14.4 | 14.1 | 14.0 | 14.0 | 14.0 | 14.6 | 14.0 |      |
| 1969         | 6.1            | 6.4  | 6.5  | 7.1  | 7.6  | 8.2  | 8.5  | 9.4  | 10.2 | 10.2 | 10.4 | 10.1 | 0.5  | 11.0 | 11.4 | 11.6 | 12.0 | 12.2 | 12.4 | 12.3 | 12.1 | 12.4 | 12.7 | 12.6 | 12.9 | 13.2 | 14.8 | 14.5 | 13.7 | 13.6 | 13.4 | 13.5 | 13.9 | 13.8 | 13.9 | 14.1 | 14.3 | 14.0 | 14.0 | 13.9 | 13.9 | 14.5 | 14.0 |      |
| 1970         | 6.1            | 6.5  | 6.5  | 7.1  | 7.6  | 8.3  | 8.5  | 9.4  | 10.2 | 10.2 | 10.4 | 10.1 | 0.4  | 10.9 | 11.4 | 11.6 | 11.9 | 12.2 | 12.4 | 12.2 | 12.1 | 12.3 | 12.7 | 12.6 | 12.9 | 13.2 | 14.8 | 14.5 | 13.7 | 13.6 | 13.4 | 13.5 | 13.8 | 13.8 | 13.9 | 14.1 | 14.3 | 14.0 | 13.9 | 13.9 | 14.5 | 13.9 |      |      |
| 1971         | 6.1            | 6.5  | 6.6  | 7.1  | 7.7  | 8.3  | 8.5  | 9.4  | 10.2 | 10.1 | 10.3 | 10.2 | 0.4  | 10.8 | 11.4 | 11.6 | 12.0 | 12.2 | 12.4 | 12.2 | 12.1 | 12.3 | 12.6 | 12.6 | 12.8 | 13.2 | 14.8 | 14.4 | 13.6 | 13.5 | 13.3 | 13.5 | 13.8 | 13.8 | 13.8 | 14.1 | 14.3 | 14.0 | 13.9 | 13.8 | 13.9 | 14.5 | 13.9 |      |
| 1972         | 6.1            | 6.5  | 6.6  | 7.1  | 7.7  | 8.3  | 8.5  | 9.4  | 10.2 | 10.1 | 10.3 | 10.1 | 0.4  | 10.8 | 11.3 | 11.5 | 11.8 | 12.1 | 12.3 | 12.1 | 12.0 | 12.1 | 12.3 | 12.6 | 12.5 | 12.7 | 13.1 | 14.7 | 14.3 | 13.6 | 13.5 | 13.3 | 13.5 | 13.7 | 13.7 | 14.0 | 14.2 | 14.0 | 13.8 | 13.8 | 13.9 | 14.4 | 13.8 |      |
| 1973         | 6.1            | 6.5  | 6.5  | 7.1  | 7.6  | 8.3  | 8.4  | 9.3  | 10.1 | 10.0 | 10.2 | 10.1 | 0.3  | 10.7 | 11.1 | 11.4 | 11.7 | 11.9 | 12.2 | 12.0 | 12.0 | 12.1 | 12.4 | 12.4 | 12.7 | 13.0 | 14.7 | 14.3 | 13.6 | 13.5 | 13.3 | 13.5 | 13.5 | 13.7 | 13.5 | 13.6 | 13.9 | 14.1 | 13.8 | 13.7 | 13.6 | 14.1 | 13.7 |      |
| 1974         | 6.2            | 6.7  | 7.2  | 7.8  | 8.4  | 8.5  | 9.4  | 10.2 | 10.1 | 10.3 | 10.1 | 0.4  | 10.8 | 11.3 | 11.6 | 11.9 | 12.1 | 12.3 | 12.1 | 12.1 | 12.2 | 12.5 | 12.5 | 12.7 | 13.1 | 14.6 | 14.3 | 13.6 | 13.4 | 13.2 | 13.4 | 13.6 | 13.6 | 13.6 | 14.0 | 14.2 | 13.9 | 13.7 | 13.8 | 14.3 | 13.8 |      |      |      |
| 1975         | 6.2            | 6.7  | 7.3  | 7.9  | 8.4  | 8.6  | 9.5  | 10.2 | 10.1 | 10.3 | 10.1 | 0.4  | 10.9 | 11.4 | 11.5 | 11.9 | 12.1 | 12.3 | 12.1 | 12.1 | 12.2 | 12.5 | 12.5 | 12.7 | 13.0 | 14.6 | 14.2 | 13.5 | 13.4 | 13.1 | 13.4 | 13.6 | 13.6 | 14.0 | 14.2 | 13.9 | 13.8 | 13.6 | 13.8 | 14.3 | 13.8 |      |      |      |
| 1976         | 6.2            | 6.6  | 6.7  | 7.2  | 7.7  | 8.4  | 8.6  | 9.4  | 10.1 | 10.0 | 10.2 | 10.0 | 0.2  | 10.7 | 11.2 | 11.4 | 11.7 | 11.9 | 12.1 | 11.9 | 11.9 | 12.0 | 12.3 | 12.3 | 12.5 | 12.8 | 14.4 | 14.0 | 13.4 | 13.2 | 12.9 | 13.2 | 13.4 | 13.4 | 13.4 | 13.8 | 14.0 | 13.7 | 13.6 | 13.5 | 13.6 | 14.1 | 13.6 |      |
| 1977         | 6.2            | 6.7  | 6.7  | 7.2  | 7.8  | 8.5  | 8.5  | 9.4  | 10.1 | 9.9  | 10.2 | 10.0 | 0.3  | 10.7 | 11.1 | 11.4 | 11.7 | 11.9 | 12.1 | 11.9 | 11.9 | 12.0 | 12.3 | 12.3 | 12.5 | 12.8 | 14.3 | 14.0 | 13.4 | 13.1 | 12.9 | 13.2 | 13.3 | 13.4 | 13.3 | 13.8 | 13.9 | 13.7 | 13.5 | 13.4 | 13.6 | 14.1 | 13.6 |      |
| 1978         | 6.3            | 6.7  | 6.8  | 7.3  | 7.9  | 8.5  | 8.6  | 9.5  | 10.2 | 10.0 | 10.2 | 10.0 | 0.3  | 10.7 | 11.2 | 11.5 | 11.8 | 11.9 | 12.2 | 12.0 | 12.0 | 12.1 | 12.3 | 12.3 | 12.5 | 12.9 | 14.3 | 14.0 | 13.4 | 13.2 | 12.9 | 13.2 | 13.3 | 13.4 | 13.4 | 13.8 | 14.0 | 13.8 | 13.6 | 13.4 | 13.6 | 14.1 | 13.7 |      |
| 1979         | 6.2            | 6.7  | 6.8  | 7.3  | 7.8  | 8.5  | 8.6  | 9.4  | 10.1 | 9.9  | 10.1 | 9.9  | 0.2  | 10.7 | 11.1 | 11.4 | 11.7 | 11.8 | 12.1 | 11.9 | 11.9 | 12.0 | 12.2 | 12.2 | 12.4 | 12.7 | 14.2 | 13.8 | 13.2 | 13.0 | 12.8 | 13.1 | 13.2 | 13.3 | 13.2 | 13.7 | 13.9 | 13.6 | 13.5 | 13.3 | 13.5 | 14.0 | 13.5 |      |
| 1980         | 6.3            | 6.8  | 6.8  | 7.3  | 7.9  | 8.5  | 8.6  | 9.4  | 10.2 | 9.9  | 10.1 | 9.9  | 0.2  | 10.7 | 11.0 | 11.4 | 11.6 | 11.8 | 12.0 | 11.8 | 11.9 | 12.0 | 12.2 | 12.1 | 12.4 | 12.7 | 14.1 | 13.7 | 13.2 | 13.0 | 12.8 | 13.0 | 13.1 | 13.2 | 13.2 | 13.2 | 13.7 | 13.8 | 13.6 | 13.4 | 13.5 | 13.9 | 13.5 |      |
| 1981         | 6.3            | 6.8  | 6.8  | 7.3  | 7.9  | 8.5  | 8.6  | 9.4  | 10.1 | 9.8  | 10.0 | 9.8  | 0.1  | 10.6 | 10.9 | 11.3 | 11.6 | 11.7 | 11.9 | 11.7 | 11.8 | 11.8 | 12.0 | 12.0 | 12.2 | 12.6 | 14.0 | 13.6 | 13.1 | 12.9 | 12.7 | 12.9 | 13.0 | 13.1 | 13.1 | 13.6 | 13.7 | 13.5 | 13.3 | 13.1 | 13.4 | 13.9 | 13.4 |      |
| 1982         | 6.2            | 6.7  | 6.8  | 7.3  | 7.9  | 8.5  | 8.3  | 9.1  | 9.8  | 9.4  | 9.7  | 9.5  | 9.7  | 10.2 | 10.4 | 10.9 | 11.1 | 11.2 | 11.5 | 11.6 | 11.6 | 11.7 | 11.9 | 11.9 | 12.1 | 12.4 | 13.9 | 13.5 | 12.9 | 12.7 | 12.5 | 12.8 | 12.8 | 13.0 | 13.0 | 13.5 | 13.6 | 13.4 | 13.2 | 13.0 | 13.3 | 13.7 | 13.3 |      |
| 1983         | 6.1            | 6.7  | 6.8  | 7.2  | 7.8  | 8.4  | 8.4  | 9.2  | 10.0 | 9.6  | 9.8  | 9.7  | 9.9  | 10.3 | 10.8 | 11.1 | 11.3 | 11.5 | 11.7 | 11.5 | 11.6 | 11.7 | 11.7 | 12.0 | 12.3 | 13.7 | 13.3 | 12.8 | 12.6 | 12.3 | 12.7 | 12.7 | 12.8 | 12.6 | 13.1 | 13.2 | 12.8 | 12.6 | 12.9 | 12.8 | 13.1 | 13.6 | 13.1 |      |
| 1984         | 6.2            | 6.8  | 6.8  | 7.2  | 7.8  | 8.4  | 8.4  | 9.2  | 9.9  | 9.6  | 9.8  | 9.6  | 9.9  | 10.4 | 10.6 | 11.1 | 11.3 | 11.4 | 11.7 | 11.5 | 11.5 | 11.6 | 11.7 | 11.8 | 11.9 | 12.2 | 13.7 | 13.3 | 12.8 | 12.6 | 12.3 | 12.7 | 12.6 | 12.8 | 12.8 | 13.3 | 13.4 | 13.3 | 13.0 | 12.8 | 13.1 | 13.6 | 13.1 |      |
| 1985         | 6.2            | 6.8  | 6.8  | 7.2  | 7.8  | 8.4  | 8.5  | 9.2  | 9.9  | 9.6  | 9.8  | 9.6  | 10.0 | 10.4 | 10.6 | 11.1 | 11.3 | 11.4 | 11.7 | 11.4 | 11.5 | 11.6 | 11.7 | 11.9 | 12.2 | 13.6 | 13.3 | 12.8 | 12.6 | 12.3 | 12.7 | 12.6 | 12.8 | 12.8 | 13.3 | 13.4 | 13.3 | 13.0 | 12.8 | 13.1 | 13.6 | 13.1 |      |      |
| 1986         | 6.2            | 6.8  | 6.8  | 7.3  | 7.9  | 8.4  | 8.5  | 9.2  | 9.9  | 9.5  | 9.8  | 9.6  | 9.9  | 10.3 | 10.6 | 11.0 | 11.2 | 11.4 | 11.6 | 11.4 | 11.5 | 11.5 | 11.6 | 11.6 | 11.8 | 12.1 | 13.5 | 13.1 | 12.6 | 12.5 | 12.3 | 12.6 | 12.5 | 12.7 | 12.7 | 13.2 | 13.4 | 13.2 | 12.9 | 12.7 | 13.0 | 13.5 | 13.0 |      |
| 1987         | 6.1            | 6.7  | 6.8  | 7.2  | 7.8  | 8.3  | 8.3  | 9.1  | 9.8  | 9.4  | 9.7  | 9.5  | 9.7  | 10.2 | 10.4 | 10.9 | 11.1 | 11.2 | 11.5 | 11.2 | 11.3 | 11.3 | 11.4 | 11.4 | 11.7 | 12.0 | 13.4 | 13.0 | 12.5 | 12.3 | 12.1 | 12.4 | 12.4 | 12.5 | 12.6 | 13.0 | 13.2 | 13.0 | 12.8 | 12.6 | 12.9 | 13.4 | 12.9 |      |
| 1988         | 6.1            | 6.8  | 6.9  | 7.2  | 7.8  | 8.3  | 8.4  | 9.1  | 9.9  | 9.4  | 9.7  | 9.5  | 9.8  | 10.2 | 10.4 | 10.9 | 11.1 | 11.2 | 11.5 | 11.2 | 11.3 | 11.3 | 11.4 | 11.4 | 11.6 | 12.0 | 13.4 | 13.0 | 12.5 | 12.3 | 12.1 | 12.4 | 12.4 | 12.6 | 12.6 | 13.1 | 13.2 | 13.1 | 13.0 | 12.8 | 12.9 | 13.4 | 12.9 |      |
| 1989         | 6.1            | 6.7  | 6.8  | 7.3  | 7.8  | 8.3  | 8.4  | 9.1  | 9.8  | 9.4  | 9.6  | 9.4  | 9.7  | 10.1 | 10.3 | 10.8 | 11.0 | 11.1 | 11.4 | 11.2 | 11.3 | 11.2 | 11.3 | 11.3 | 11.4 | 11.5 | 11.9 | 13.2 | 12.9 | 12.5 | 12.3 | 12.0 | 12.3 | 12.3 | 12.4 | 12.5 | 13.0 | 13.1 | 13.0 | 12.7 | 12.5 | 12.8 | 13.3 | 12.8 |
| 1990         | 6.1            | 6.7  | 6.8  | 7.3  | 7.8  | 8.3  | 8.3  | 9.0  | 9.8  | 9.4  | 9.6  | 9.3  | 9.7  | 10.1 | 10.2 | 10.7 | 10.9 | 11.1 | 11.3 | 11.1 | 11.2 | 11.2 | 11.2 | 11.2 | 11.4 | 11.8 | 13.1 | 12.8 | 12.4 | 12.2 | 11.9 | 12.3 | 12.2 | 12.4 | 12.4 | 12.4 | 12.9 | 13.1 | 12.9 | 12.6 | 12.4 | 12.7 | 13.2 | 12.7 |
| 1991         | 6.2            | 6.9  | 6.9  | 7.3  | 7.9  | 8.4  | 8.5  | 9.1  | 9.9  | 9.5  | 9.7  | 9.5  | 9.8  | 10.3 | 10.4 | 10.9 | 11.1 | 11.3 | 11.5 | 11.2 | 11.4 | 11.3 | 11.3 | 11.4 | 11.6 | 11.9 | 13.3 | 13.0 | 12.6 | 12.4 | 12.1 | 12.5 | 12.4 | 12.5 | 12.6 | 13.1 | 13.3 | 13.1 | 12.8 | 12.6 | 12.9 | 13.4 | 12.9 |      |
| 1992         | 6.1            | 6.8  | 6.8  | 7.2  | 7.7  | 8.3  | 8.5  | 9.0  | 9.8  | 9.4  | 9.6  | 9.3  | 9.7  | 10.2 | 10.2 | 10.8 | 10.9 | 11.1 | 11.3 | 11.0 | 11.3 | 11.2 | 11.1 | 11.4 | 11.9 | 13.1 | 12.8 | 12.5 | 12.2 | 12.0 | 12.3 | 12.2 | 12.3 | 12.4 | 12.4 | 12.9 | 13.2 | 12.9 | 13.2 | 12.9 | 12.7 | 13.4 | 12.8 | 13.1 |
| 1993         | 6.2            | 6.8  | 6.9  | 7.3  | 7.7  | 8.4  | 8.5  | 9.1  | 9.8  | 9.4  | 9.6  | 9.3  | 9.7  | 10.3 | 10.3 | 10.8 | 10.9 | 11.1 | 11.3 | 11.0 | 11.3 | 11.2 | 11.1 | 11.2 | 11.4 | 11.9 | 13.1 | 12.8 | 12.5 | 12.2 | 12.0 | 12.3 | 12.2 | 12.3 | 12.4 | 12.4 | 12.9 | 13.1 | 12.9 | 12.6 | 12.4 | 12.8 | 13.2 | 12.8 |
| 1994         | 6.2            | 6.8  | 6.8  | 7.4  | 7.7  | 8.4  | 8.5  | 9.0  | 9.7  | 9.4  | 9.5  | 9.3  | 9.6  | 10.2 | 10.2 | 10.8 | 10.8 | 11.1 | 11.3 | 11.0 | 11.3 | 11.1 | 11.1 | 11.0 | 11.3 | 11.8 | 13.0 | 12.7 | 12.5 | 12.1 | 11.9 | 12.2 | 12.2 | 12.3 | 12.3 | 12.8 | 13.1 | 12.9 | 12.5 | 12.4 | 12.6 | 13.1 | 12.7 |      |
| 1995         | 6.1            | 6.7  | 6.7  | 7.3  | 7.6  | 8.2  | 8.4  | 8.8  | 9.5  | 9.3  | 9.4  | 9.1  | 9.5  | 10.1 | 10.1 | 10.7 | 10.9 | 11.2 | 10.8 | 11.2 | 11.0 | 10.9 | 11.1 | 11.6 | 12.8 | 12.6 | 12.4 | 12.0 | 11.8 | 12.1 | 12.1 | 12.1 | 12.2 | 12.7 | 13.0 | 12.7 | 13.0 | 12.7 | 12.4 | 12.2 | 12.5 | 13.0 | 12.6 |      |
| 1996         | 6.2            | 6.8  | 6.8  | 7.4  | 7.7  | 8.4  | 8.5  | 8.9  | 9.6  | 9.4  | 9.5  | 9.3  | 9.6  | 10.2 | 10.2 | 10.8 | 10.8 | 11.1 | 11.3 | 11.0 | 11.3 | 11.0 | 11.1 | 11.0 | 11.3 | 11.8 | 13.0 | 12.8 | 12.5 | 12.1 | 12.0 | 12.3 | 12.2 | 12.3 | 12.3 | 12.8 | 13.1 | 12.9 | 12.6 | 12.3 | 12.7 | 13.1 | 12.7 |      |
| 1997         | 6.3            | 6.9  | 6.9  | 7.4  | 7.8  | 8.5  | 8.6  | 9.0  | 9.7  | 9.5  | 9.6  | 9.4  | 9.8  | 10.3 | 10.3 | 10.9 | 10.9 | 11.2 | 11.4 | 11.1 | 11.2 | 11.2 | 11.1 | 11.2 | 11.4 | 11.9 | 13.1 | 12.9 | 12.7 | 12.3 | 12.1 | 12.4 | 12.3 | 12.4 | 12.5 | 13.0 | 13.0 | 13.0 | 12.7 | 12.5 | 12.8 | 13.2 | 12.8 |      |
| 1998         | 6.3            | 6.8  | 6.9  | 7.5  | 7.8  | 8.4  | 8.6  | 9.1  | 9.7  | 9.6  | 9.7  | 9.4  | 9.8  | 10.4 | 10.4 | 11.0 | 11.0 | 11.2 | 11.5 | 11.2 | 11.  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

Table 4: DECOMPOSITION OF THE CHANGE IN THE EMPLOYMENT-TO-POPULATION RATIO BETWEEN 2010 AND EARLIER YEARS

| Year | Total change | Change due to labor outcomes |                   | Change due to socio-demographics |                   |
|------|--------------|------------------------------|-------------------|----------------------------------|-------------------|
|      |              | Perc.pnts                    | % of total change | Perc.pnts                        | % of total change |
| 1968 | -15.52       | -14.96                       | 96.39             | -0.56                            | 3.61              |
| 1969 | -15.52       | -14.87                       | 95.81             | -0.65                            | 4.19              |
| 1970 | -14.45       | -13.70                       | 94.78             | -0.76                            | 5.22              |
| 1971 | -12.75       | -12.03                       | 94.32             | -0.72                            | 5.68              |
| 1972 | -12.46       | -11.61                       | 93.18             | -0.85                            | 6.82              |
| 1973 | -12.40       | -11.40                       | 91.92             | -1.00                            | 8.08              |
| 1974 | -12.22       | -11.26                       | 92.11             | -0.96                            | 7.89              |
| 1975 | -8.26        | -7.23                        | 87.47             | -1.04                            | 12.53             |
| 1976 | -8.61        | -7.33                        | 85.20             | -1.27                            | 14.80             |
| 1977 | -9.08        | -7.75                        | 85.36             | -1.33                            | 14.64             |
| 1978 | -9.79        | -8.54                        | 87.21             | -1.25                            | 12.79             |
| 1979 | -10.30       | -8.90                        | 86.41             | -1.40                            | 13.59             |
| 1980 | -9.19        | -7.77                        | 84.59             | -1.42                            | 15.41             |
| 1981 | -7.91        | -6.57                        | 83.10             | -1.34                            | 16.90             |
| 1982 | -5.83        | -4.37                        | 74.85             | -1.47                            | 25.15             |
| 1983 | -3.86        | -2.25                        | 58.29             | -1.61                            | 41.71             |
| 1984 | -6.25        | -4.65                        | 74.44             | -1.60                            | 25.56             |
| 1985 | -6.81        | -5.25                        | 77.03             | -1.56                            | 22.97             |
| 1986 | -6.56        | -5.03                        | 76.73             | -1.53                            | 23.27             |
| 1987 | -7.17        | -5.50                        | 76.69             | -1.67                            | 23.31             |
| 1988 | -7.66        | -6.07                        | 79.23             | -1.59                            | 20.77             |
| 1989 | -8.26        | -6.59                        | 79.68             | -1.68                            | 20.32             |
| 1990 | -8.20        | -6.49                        | 79.15             | -1.71                            | 20.85             |
| 1991 | -6.28        | -4.80                        | 76.45             | -1.48                            | 23.55             |
| 1992 | -5.61        | -4.01                        | 71.44             | -1.60                            | 28.56             |
| 1993 | -5.32        | -3.61                        | 67.81             | -1.71                            | 32.19             |
| 1994 | -5.28        | -3.53                        | 66.78             | -1.76                            | 33.22             |
| 1995 | -6.62        | -4.61                        | 69.59             | -2.01                            | 30.41             |
| 1996 | -6.48        | -4.69                        | 72.39             | -1.79                            | 27.61             |
| 1997 | -7.25        | -5.56                        | 76.65             | -1.69                            | 23.35             |
| 1998 | -7.82        | -6.17                        | 78.87             | -1.65                            | 21.13             |
| 1999 | -8.04        | -6.29                        | 78.27             | -1.75                            | 21.73             |
| 2000 | -8.22        | -6.38                        | 77.57             | -1.84                            | 22.43             |
| 2001 | -7.62        | -5.90                        | 77.39             | -1.72                            | 22.61             |
| 2002 | -5.89        | -4.33                        | 73.61             | -1.55                            | 26.39             |
| 2003 | -5.07        | -3.66                        | 72.14             | -1.41                            | 27.86             |
| 2004 | -4.92        | -3.69                        | 75.03             | -1.23                            | 24.97             |
| 2005 | -5.59        | -4.62                        | 82.75             | -0.96                            | 17.25             |
| 2006 | -6.00        | -5.24                        | 87.39             | -0.76                            | 12.61             |
| 2007 | -6.20        | -5.46                        | 88.10             | -0.74                            | 11.90             |
| 2008 | -5.28        | -4.80                        | 91.00             | -0.47                            | 9.00              |
| 2009 | -0.68        | -0.39                        | 56.79             | -0.29                            | 43.21             |
| 2010 | 0.00         | 0.00                         | 0.00              | 0.00                             | 0.00              |

Note: Authors's own calculations from the IPUMS-CPS data. Shaded rows correspond to the NBER-dated contractions (from peak to trough). Columns 3-6 correspond to the decomposition as described in equation 2.

Table 5: DECOMPOSITION OF THE CHANGE IN THE UNEMPLOYMENT-TO-POPULATION RATIO BETWEEN 2010 AND EARLIER YEARS

| Year | Total change | Change due to labor outcomes |                   | Change due to socio-demographics |                   |
|------|--------------|------------------------------|-------------------|----------------------------------|-------------------|
|      |              | Perc.pnts                    | % of total change | Perc.pnts                        | % of total change |
| 1968 | 6.87         | 7.04                         | 102.42            | -0.17                            | -2.42             |
| 1969 | 7.20         | 7.31                         | 101.46            | -0.10                            | -1.46             |
| 1970 | 6.25         | 6.28                         | 100.57            | -0.04                            | -0.57             |
| 1971 | 5.10         | 5.18                         | 101.62            | -0.08                            | -1.62             |
| 1972 | 5.41         | 5.44                         | 100.53            | -0.03                            | -0.53             |
| 1973 | 5.90         | 5.88                         | 99.61             | 0.02                             | 0.39              |
| 1974 | 6.02         | 5.97                         | 99.14             | 0.05                             | 0.86              |
| 1975 | 3.00         | 2.89                         | 96.20             | 0.11                             | 3.80              |
| 1976 | 3.99         | 3.83                         | 95.98             | 0.16                             | 4.02              |
| 1977 | 4.22         | 4.05                         | 95.79             | 0.18                             | 4.21              |
| 1978 | 5.24         | 5.07                         | 96.64             | 0.18                             | 3.36              |
| 1979 | 5.48         | 5.28                         | 96.33             | 0.20                             | 3.67              |
| 1980 | 4.66         | 4.49                         | 96.41             | 0.17                             | 3.59              |
| 1981 | 3.73         | 3.72                         | 99.76             | 0.01                             | 0.24              |
| 1982 | 1.86         | 1.86                         | 99.75             | 0.00                             | 0.25              |
| 1983 | 0.18         | 0.18                         | 101.02            | 0.00                             | -1.02             |
| 1984 | 2.82         | 2.86                         | 101.41            | -0.04                            | -1.41             |
| 1985 | 3.50         | 3.56                         | 101.66            | -0.06                            | -1.66             |
| 1986 | 3.40         | 3.55                         | 104.50            | -0.15                            | -4.50             |
| 1987 | 3.62         | 3.78                         | 104.28            | -0.15                            | -4.28             |
| 1988 | 4.32         | 4.53                         | 105.07            | -0.22                            | -5.07             |
| 1989 | 4.72         | 4.95                         | 104.72            | -0.22                            | -4.72             |
| 1990 | 4.69         | 4.96                         | 105.69            | -0.27                            | -5.69             |
| 1991 | 2.90         | 3.25                         | 112.03            | -0.35                            | -12.03            |
| 1992 | 2.26         | 2.58                         | 114.43            | -0.33                            | -14.43            |
| 1993 | 2.45         | 2.67                         | 108.79            | -0.22                            | -8.79             |
| 1994 | 3.55         | 3.79                         | 106.79            | -0.24                            | -6.79             |
| 1995 | 4.47         | 4.63                         | 103.61            | -0.16                            | -3.61             |
| 1996 | 4.28         | 4.49                         | 105.03            | -0.21                            | -5.03             |
| 1997 | 4.78         | 5.00                         | 104.59            | -0.22                            | -4.59             |
| 1998 | 5.32         | 5.49                         | 103.31            | -0.18                            | -3.31             |
| 1999 | 5.83         | 5.90                         | 101.11            | -0.06                            | -1.11             |
| 2000 | 5.99         | 6.00                         | 100.09            | -0.01                            | -0.09             |
| 2001 | 5.57         | 5.53                         | 99.21             | 0.04                             | 0.79              |
| 2002 | 4.16         | 4.12                         | 98.96             | 0.04                             | 1.04              |
| 2003 | 3.93         | 3.87                         | 98.53             | 0.06                             | 1.47              |
| 2004 | 4.24         | 4.20                         | 98.87             | 0.05                             | 1.13              |
| 2005 | 4.89         | 4.87                         | 99.63             | 0.02                             | 0.37              |
| 2006 | 5.24         | 5.23                         | 99.98             | 0.00                             | 0.02              |
| 2007 | 5.25         | 5.19                         | 98.87             | 0.06                             | 1.13              |
| 2008 | 4.76         | 4.71                         | 99.04             | 0.05                             | 0.96              |
| 2009 | 0.83         | 0.80                         | 96.35             | 0.03                             | 3.65              |
| 2010 | 0.00         | 0.00                         | 0.00              | 0.00                             | 0.00              |

Note: Authors's own calculations from the IPUMS-CPS data. Shaded rows correspond to the NBER-dated contractions (from peak to trough). Columns 3-6 correspond to the decomposition as described in equation 2.

Table 6: DECOMPOSITION OF THE CHANGE IN THE OLF-TO-POPULATION RATIO BETWEEN 2010 AND EARLIER YEARS

| Year | Total change | Change due to labor outcomes |                   | Change due to socio-demographics |                   |
|------|--------------|------------------------------|-------------------|----------------------------------|-------------------|
|      |              | Perc.pnts                    | % of total change | Perc.pnts                        | % of total change |
| 1968 | 8.65         | 7.92                         | 91.51             | 0.73                             | 8.49              |
| 1969 | 8.32         | 7.55                         | 90.73             | 0.77                             | 9.27              |
| 1970 | 8.21         | 7.41                         | 90.25             | 0.80                             | 9.75              |
| 1971 | 7.65         | 6.84                         | 89.40             | 0.81                             | 10.60             |
| 1972 | 7.05         | 6.15                         | 87.27             | 0.90                             | 12.73             |
| 1973 | 6.50         | 5.51                         | 84.88             | 0.98                             | 15.12             |
| 1974 | 6.20         | 5.28                         | 85.16             | 0.92                             | 14.84             |
| 1975 | 5.26         | 4.31                         | 81.82             | 0.96                             | 18.18             |
| 1976 | 4.61         | 3.50                         | 75.80             | 1.12                             | 24.20             |
| 1977 | 4.85         | 3.70                         | 76.15             | 1.16                             | 23.85             |
| 1978 | 4.55         | 3.46                         | 76.03             | 1.09                             | 23.97             |
| 1979 | 4.83         | 3.60                         | 74.62             | 1.22                             | 25.38             |
| 1980 | 4.53         | 3.27                         | 72.15             | 1.26                             | 27.85             |
| 1981 | 4.18         | 2.85                         | 68.10             | 1.33                             | 31.90             |
| 1982 | 3.97         | 2.50                         | 62.90             | 1.47                             | 37.10             |
| 1983 | 3.68         | 2.06                         | 55.89             | 1.62                             | 44.11             |
| 1984 | 3.43         | 1.77                         | 51.70             | 1.66                             | 48.30             |
| 1985 | 3.31         | 1.68                         | 50.69             | 1.63                             | 49.31             |
| 1986 | 3.16         | 1.46                         | 46.24             | 1.70                             | 53.76             |
| 1987 | 3.55         | 1.72                         | 48.30             | 1.84                             | 51.70             |
| 1988 | 3.35         | 1.53                         | 45.69             | 1.82                             | 54.31             |
| 1989 | 3.54         | 1.63                         | 46.01             | 1.91                             | 53.99             |
| 1990 | 3.51         | 1.51                         | 43.12             | 2.00                             | 56.88             |
| 1991 | 3.38         | 1.54                         | 45.67             | 1.84                             | 54.33             |
| 1992 | 3.36         | 1.42                         | 42.26             | 1.94                             | 57.74             |
| 1993 | 2.87         | 0.93                         | 32.32             | 1.94                             | 67.68             |
| 1994 | 1.73         | -0.28                        | -16.19            | 2.02                             | 116.19            |
| 1995 | 2.15         | -0.03                        | -1.41             | 2.18                             | 101.41            |
| 1996 | 2.21         | 0.18                         | 7.96              | 2.03                             | 92.04             |
| 1997 | 2.47         | 0.54                         | 21.98             | 1.93                             | 78.02             |
| 1998 | 2.51         | 0.63                         | 25.06             | 1.88                             | 74.94             |
| 1999 | 2.21         | 0.37                         | 16.76             | 1.84                             | 83.24             |
| 2000 | 2.23         | 0.36                         | 15.93             | 1.88                             | 84.07             |
| 2001 | 2.05         | 0.35                         | 16.92             | 1.70                             | 83.08             |
| 2002 | 1.72         | 0.19                         | 10.93             | 1.53                             | 89.07             |
| 2003 | 1.14         | -0.24                        | -20.80            | 1.38                             | 120.80            |
| 2004 | 0.67         | -0.53                        | -78.90            | 1.20                             | 178.90            |
| 2005 | 0.70         | -0.27                        | -38.66            | 0.97                             | 138.66            |
| 2006 | 0.76         | 0.00                         | -0.16             | 0.76                             | 100.16            |
| 2007 | 0.95         | 0.27                         | 28.02             | 0.69                             | 71.98             |
| 2008 | 0.52         | 0.08                         | 14.69             | 0.44                             | 85.31             |
| 2009 | -0.15        | -0.43                        | 284.63            | 0.28                             | -184.63           |
| 2010 | 0.00         | 0.00                         | 0.00              | 0.00                             | 0.00              |

Note: Authors's own calculations from the IPUMS-CPS data. Shaded rows correspond to the NBER-dated contractions (from peak to trough). Columns 3-6 correspond to the decomposition as described in equation 2.

Table 7: PREDICTED AGGREGATE OLF-TO-POPULATION RATIO AMONG 25-64 YEAR OLD MEN, 2015

| Panel A: Based on 2010 labor outcomes |              |                 |              |
|---------------------------------------|--------------|-----------------|--------------|
|                                       | Actual, 2010 | Predicted, 2015 |              |
| Employment-to-population              | 76.33        | x               |              |
| Unemployment-to-population            | 8.92         | x               |              |
| OLF-to-population                     | 14.75        | 16.27           |              |
| Panel B: Based on 2007 labor outcomes |              |                 |              |
|                                       | Actual, 2007 | Predicted, 2015 |              |
| Employment-to-population              | 82.53        | x               |              |
| Unemployment-to-population            | 3.67         | x               |              |
| OLF-to-population                     | 13.79        | 16.04           |              |
| Panel C: Age Composition, %           |              |                 |              |
| Age                                   | Actual, 2010 | Simulated, 2015 | Census, 2015 |
| 25-34                                 | 25.80        | 26.36           | 26.74        |
| 35-44                                 | 25.20        | 23.93           | 24.63        |
| 45-54                                 | 27.50        | 25.87           | 25.43        |
| 55-64                                 | 21.50        | 23.85           | 23.20        |