Declining Desire to Work and Downward Trends in Unemployment and Participation[*]

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March 2015

Abstract

The US labor market has witnessed two apparently unrelated trends in the last 30 years: a decline in unemployment between the early 1980s and the early 2000s, and a decline in labor force participation since the early 2000s. We show that a substantial factor behind both trends is a decline in desire to work among individuals outside the labor force, with a particularly strong decline during the second half of the 90s. A decline in desire to work lowers both the unemployment rate and the participation rate, because a nonparticipant who wants to work has a high probability to join the unemployment pool in the future, while a nonparticipant who does not want to work has a low probability to ever enter the labor force. We use cross-sectional variation to estimate a model of nonparticipants' propensity to want a job, and we find that changes in the provision of welfare and social insurance, possibly linked to the mid-90s welfare reforms, explain about 50 percent of the decline in desire to work.

JEL classifications: J6, E24.

1   Introduction

The US labor market has witnessed two apparently unrelated trends in the last 30 years. First, the unemployment rate declined secularly after the early 80s, prompting policy makers to adjust downward their estimate of the natural rate or NAIRU (Non-Accelerating Inflation Rate of Unemployment), as shown in Figure 1. Second, a decline in labor force participation has brought down the participation rate to a level not seen in 30 years, prompting discussions among policy makers about the implications of such a trend for potential output (Figure 2).[1]

However, considerable uncertainty remains about the underlying reasons for these trends, making it very difficult to draw implications for the conduct of policy. While the aging of the baby boom generation has often been cited as a possible factor, it is not clear that demographics alone is responsible for these trends.[2] This difficulty is best illustrated with the recent lively debate about the "cyclical" or "structural" nature (i.e., persistence) of the low participation rate observed today. For instance, the Congressional Budget Office (CBO) estimates that the potential labor force participation rate is substantially larger than the actual participation rate (Figure 2), but the issue is far from settled.[3]

This paper shows that a substantial, and hitherto unnoticed, factor behind both labor market trends is a secular decline in desire to work in the US population.

The Current Population Survey (CPS) has been measuring individuals' desire for work consistently since 1967, allowing us to construct a measure of nonemployed individuals' desire to work over 1967-2014. We find that the share of nonparticipants (individuals outside the labor force) who want to work has been declining secularly over the past 30 years, with a particularly strong decline during the second half of the 90s. Using matched CPS micro data and a stock-flow accounting framework to isolate the worker flows responsible for that decline, we establish that the decline in the share of "want to work" nonparticipants during the late 90s reflected a genuine growing disinterest in work as nonparticipants were moving away from the labor force. It was not due to "want to work" nonparticipants moving into the labor force during the strong labor market of the late 90s.

A downward trend in desire to work has consequences for the aggregate unemployment and participation rates, because people who want a job behave differently from people who do

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[1]In particular, a central worry is whether the workers who left the labor force during the last recession will ultimately come back to the labor force. See, e.g., Van Zandweghe (2012).

[2]Since older workers have lower unemployment and participation rates than younger workers, an older population will have both lower unemployment and participation rates. The aging of the baby boom generation has been proposed to explain the inverse U-shape movement in unemployment since the early 70s (Perry (1970), Flaim (1979), Gordon (1982), Summers (1986), and Shimer (1998, 2001)).

[3]See, e.g., Aaronson et al. (2012), Elsby and Shapiro (2012), Moffitt (2012), Sherk (2012), Van Zandweghe (2012), Erceg and Levin (2013), Hotchkiss, Pitts and Rios-Avila (2013).

not want a job. Using the matched CPS micro data to measure worker transitions between labor market states, we find that a nonparticipant who wants a job enters the labor force (i) often and (ii) mostly through unemployment, while a nonparticipants who does not want a job enter the labor force (i) rarely and (ii) mostly through employment. Because of this difference in behavior, a decline in the fraction of nonparticipants who want a job lowers *both* the unemployment rate and the participation rate. Using a stock-flow accounting framework, we find that the decline in desire to work since the mid-90s lowered the unemployment rate by about 0.5 ppt and the participation rate by 1.75 ppt. This is a large effect: in comparison, the widely studied aging of the baby boom lowered unemployment by 0.7 ppt and participation by 2.5 ppt over the same time period. Taken together, we find that population aging and variations in desire to work account for the bulk of the low-frequency movements in unemployment since the late 60s.

We then explore possible explanations for the decline in desire to work in the second half of the 90s.

Looking across different sub-groups, the decline in the number of nonparticipants who want to work is due mainly to prime-age females, and, to a lesser extent, young individuals. Moreover, the decline is mainly a low-income and non-single household phenomenon, and is stronger for families with children than without.

We estimate a model of nonparticipants' propensity to want a job, in which desire to work can depend on individual characteristics, the family structure, as well as the different sources of income, both at the individual and at the family level. We use time fixed effects, so that our coefficient estimates depend on cross sectional variation, and we use our estimates to predict changes in desire to work since the mid-90s.

Our estimates imply that changes in the provision of welfare and social insurance (notably disability insurance) explain about 50 percent of the decline in desire to work, which suggest a possible role for the major welfare reforms of the 90s –the 1993 Earned Income Tax Credit (EITC) expansion and the 1996 reform of the Aid to Families with Dependent Children (AFDC) program–, which precisely affected low-income households with children.

We then use a difference-in-difference strategy to try to identify the causal effects of the EITC expansion and the AFDC reform on low-income mothers. The strategy exploits the facts that households without children receive little EITC or AFDC benefits and were therefore little affected by the reforms. The difference-in-difference estimates attribute between 50 and 70 percent of the decline in mothers' desire to work to the welfare reforms.

Although the existence of different degrees of desire to work among nonparticipants has been previously documented (Hall 1970, Clark and Summers, 1979), the existence of a secular trend in desire to work and its effects on the participation and unemployment rates are, as

far as we know, novel. That latter effect underscores the difficult issue of the appropriate definition of unemployment and the distinction between the "unemployment" and "out of the labor force" classifications (Clark and Summers 1979, Flinn and Heckman, 1983, Jones and Riddell, 1999).

To quantify how the decline in desire to work affect unemployment and participation, we build on a large literature, going back at least to Darby, Haltiwanger and Plant (1986), that studies the flows of workers in and out of unemployment.[4]

Finally, the possibility that changes in the provision of social transfers can affect desire to work and thereby the aggregate unemployment and participation rates echoes Juhn, Murphy and Topel (2002) and Autor and Dugan (2003) who argue that the growing attractiveness of disability benefits relative to work increased the number of individuals outside the labor force.

Section 2 documents the decline in the fraction of nonparticipants willing to work; Section 3 shows that that decline in people who want a job was not driven by people entering the labor force, but rather by nonparticipants becoming less interested in working; Section 4 quantifies how the decline in nonparticipants willing to work affect the unemployment and participation rates; Sections 5 explores the possible reasons for the decline in desire to work; Section 6 concludes.

2 Fewer people want to work

In this section, we show that the fraction of nonparticipants who report "wanting to work" has displayed substantial secular movements, with a particularly strong decline during the second half of the 90s.

2.1 "Do you want a job now?"

To measure the extent to which nonemployed individuals are interested in working, we use data collected by the BLS. Since 1967, the Current Population Survey (CPS) has been consistently asking the question "Do you currently want a job now, either full or part-time?" to non-employed individuals outside the labor force, also called "nonparticipants". We use the answer to this question to separate nonparticipants into two groups; individuals who want a job, denoted M for "Marginal" (the labeling will become clear shortly) and individuals who do not want a job, denoted I, for "Inactive".[5]

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[4]See, among others, Blanchard and Diamond (1989, 1990), Bleakley, Ferris and Fuhrer (1999), Jones and Riddell (1999), Elsby, Michaels and Solon (2009), Fujita and Ramey (2009), Barnichon (2012), Shimer (2012), and Elsby, Hobijn and Sahin (2013).

[5]Note that our definition of a marginal nonparticipant is different from that of the BLS, in which a nonparticipant is classified as "marginally-attached" if he wants to work, is available for work, and has searched for a

Since the phrasing of the CPS question did not change over 1967-2014, we can construct a consistent time-series of the share of nonparticipants who want to work over 1976-2014; i.e., the ratio

$$m_t \equiv \frac{M_t}{M_t + I_t}$$

with M_t and I_t the respective number of marginal and inactive nonparticipants. For the period covering 1967-1975, we tabulated the data from successive BLS Employment and Earnings publications, and for the period covering 1976-2014, we micro data from the CPS.

Figure 3 shows that the fraction of "want a job" nonparticipants (m_t) displays an inverse U-shape pattern over over 1967-2014, with a particularly strong decline in the second half of the 90s.[6],[7] Interestingly, the behavior of the Congressional Budget Office (CBO)'s estimate of the natural rate –one estimate of the long-run level of unemployment– displays a pattern that is similar to that of m_t., a point to which we will later return.[8]

2.2 Marginal vs. Inactive nonparticipants

While the trend in the share of nonparticipants who want to work is striking, for it to be of any consequence for the aggregate labor market, people who want to work must behave differently from people who do not want to work.

To evaluate whether this is the case, we match the CPS micro data over 1994-2010 to measure and compare the transition rates of nonparticipants who report wanting a job (M) with the transition rates of nonparticipants who report wanting a job (I).[9] Table 1a reports the average transition rates from Nonparticipation to Unemployment (denoted λ^{MU}) and from Nonparticipation to Employment (denoted λ^{ME}) for nonparticipants who want a job, and the same transition rates for nonparticipants who do not want a job (denoted λ^{IU} and λ^{IE}).[10]

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job in the past year.

[6] There is a subtle difference in the survey before and after 1994. While the "desire for work" question is asked to all rotation groups after 1994, it is only asked to the outgoing rotation groups before 1994, i.e., 1/4 of the sample. We verified that this difference did not affect our measurement, by calculating the fraction of marginally-attached using only the outgoing rotation groups over the whole sample 1976-2010, and compared it with our main measure. Although this alternative measure is more noisy, the two series behave remarkably similarly after 1994.

[7] To assess the robustness of our finding, we use another, little studied, CPS question that has also been consistently asked since 1976: "Do you intend to look for work during the next 12 months?". That measure gave a similar conclusion: the aggregate fraction of nonparticipants interested in working has been declining since the mid 70s with a marked decline in the second half of the 1990s.

[8] Although not the focus of this paper, it is also interesting to note that willingness to work is strongly counter-cyclical.

[9] See the Appendix for details on the construction of these series, in particular the time-aggregation bias correction. Since the question about "desire for work" was only asked to the *outgoing* rotation groups prior to 1994, we cannot measure worker flows in and out of M or I prior to 1994, because we do not observe the labor force status over two consecutive months.

[10] We show in the Appendix that the ratios $\lambda^{MU}/\lambda^{IU}$ and $\lambda^{ME}/\lambda^{IE}$ are stable over time, indicating that

We can see that someone who wants a job (M) behaves very differently from someone who does not want a job (I). First, someone who wants a job is very likely to enter the labor force in the near future ($\lambda^{MU} + \lambda^{ME} = .62$). In other words, someone who wants a job is at the margin of participation, hence the labeling "marginal" nonparticipant. In contrast, someone who does not want a job is unlikely to enter the labor force ($\lambda^{IU} + \lambda^{IE} = .05$) and is "far" from the participation margin and from labor force activity, hence the labeling "inactive".

Second, an individual who wants a job is much more likely to enter the labor force through unemployment than through employment ($\lambda^{MU} > \lambda^{ME}$), but this is the opposite for someone who does not want a job: an inactive is much more likely to enter the labor force through employment ($\lambda^{IE} > \lambda^{IU}$). These two differences in behavior between "want a job" and "not want a job" nonparticipants –the fact that $\lambda^{MU} - \lambda^{ME} > 0$ and $\lambda^{IE} - \lambda^{IU} > 0$– will later prove crucial, when we consider how changes in the share of "want a job" nonparticipants affect the unemployment rate.

Digging further, Table 1b compares the transition rates of a recent labor force entrant (formerly M or I) who entered the labor force a month ago with the transition rates of other labor force participants (who entered the labor force more than a month ago).[11] We can see that recent labor force entrants have much higher transition rates back to nonparticipation. Interestingly however, although "Want a job" and "Not want a job" nonparticipants display very different transition rates into participation (Table 1a), the difference is much less marked once these individuals are inside the labor force. For instance, their job finding rates are similar, and their labor force exit rate are somewhat comparable, although a former "not want a job" nonparticipant (I) is more likely to leave the labor force than a former "want a job" nonparticipant (M).

3 Declining desire to work

In this section, we establish that decline in the share of "want a job" nonparticipants during the 90s reflected a genuine growing disinterest in work as nonparticipants were moving away from the labor force. To do so, we use a stock-flow model of the labor market to isolate the main worker flows responsible for the downward trend in the share of "want a job" nonparticipants. We then show that the decline in desire to work has affected mostly the prime-age female population and, to a lesser extent, the young population.

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behavioral difference between "Want a job" and "Not want a job" nonparticipants is stable over time.

[11]To do so, we match CPS micro data over three consecutive surveys (see Nekarda, 2009), and we adjust the transition probabilities for time-aggregation bias as described in the Appendix.

3.1 Some accounting

Our starting point is a labor market described by four labor market states: Employment (E), Unemployment (U), Marginal nonparticipation (M, a nonparticipant who wants a job) and Inactivity (I, a nonparticipant who does not want a job).

As in the "Ins and Outs" literature (e.g., Shimer, 2012), we assume that the labor market can be described by a Markov chain of order 1,[12] so that the number of employed E_t, unemployed U_t, marginal nonparticipants M_t and inactive nonparticipants I_t satisfies the system

$$
\begin{pmatrix} \dot{E} \\ U \\ M \\ I \end{pmatrix}_t = L_t \begin{pmatrix} E \\ U \\ M \\ I \end{pmatrix}_t
\tag{1}
$$

with

$$
L_t = \begin{pmatrix}
-\lambda^{EU} - \lambda^{EM} - \lambda^{EI} & \lambda^{UE} & \lambda^{ME} & \lambda^{IE} \\
\lambda^{EU} & -\lambda^{UE} - \lambda^{UM} - \lambda^{UI} & \lambda^{MU} & \lambda^{IU} \\
\lambda^{EM} & \lambda^{UM} & -\lambda^{MU} - \lambda^{ME} - \lambda^{MI} & \lambda^{IM} \\
\lambda^{EI} & \lambda^{UI} & \lambda^{MI} & -\lambda^{IU} - \lambda^{IE} - \lambda^{IM}
\end{pmatrix}_t
$$

and where λ_t^{AB} denotes the hazard rate of transiting from state $A \in \{E, U, M, I\}$ to state $B \in \{E, U, M, I\}$.

We can then use (1) to express any stock variable, for instance the fraction of nonparticipants who want a job, $m_t \equiv \frac{M_t}{M_t + I_t}$, as a function of the (present and past) worker transition rates $\{\lambda_{t-j}^{AB}, \ \forall j > 0\}$. For the US, such a function is particularly simple, because the magnitude of the worker flows are so large that, at a quarterly frequency, the labor market is very well described by the steady-state of system (1).[13] As detailed in the Appendix, the steady-state of system (1) then gives us an accounting identity that allows to express the fraction of nonparticipants who want a job m_t as a function $m(.)$ of the 12 contemporaneous hazard rates $\{\lambda_t^{AB}\}$, i.e.,

$$
m_t = m(\{\lambda_t^{AB}\}), \quad A, B \in \{E, U, M, I\}.
\tag{2}
$$

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[12] Since we found that the most striking difference between M and I individuals was in their transition rates into the labor force (and not their subsequent transition rates once inside the labor force), we assume that the labor market with 4 states can be described by a Markov chain of order 1. In other words, once inside the labor force, M and I individuals behave like the other labor force participants. In the appendix, we consider a richer model that allows M and I individuals to continue behaving differently once inside the labor force.

[13] In the U.S., the magnitudes of the hazard rates are such that the half-life of a deviation of unemployment from its steady state value is about one month (Shimer, 2012).

3.2 A flow decomposition of the fraction of nonparticipants who want a job

Using the accounting identity (2), we can decompose movements in m_t into the contributions of the underlying worker flows.

Taking a first-order Taylor expansion of (2) around the mean of the hazard rates ($\lambda_t^{AB} \simeq \lambda^{AB} \equiv E\lambda_t^{AB}$), we can decompose movements in m_t with

$$m_t - m \simeq \sum_{A \neq B} \gamma^{AB} \left(\lambda_t^{AB} - \lambda^{AB} \right) \tag{3}$$

with $A, B \in \{E, U, M, I\}$, m the average value of m_t and $\{\gamma^{AB}\}$ the coefficients of the Taylor expansion.

Using (3) and data on transition rates between E, U, M and I over 1994-2010,[14] we can assess the separate contributions of each hazard rate to movements of m_t. In particular, we can decompose the variance of m_t using Fujita and Ramey (2009)'s insight.[15]

We find that only two worker flows –flows between M and I– account for most of the behavior of the fraction of "want a job" nonparticipants (m_t) since the mid-90s: the decline in the fraction of nonparticipants who want a job was caused by a decline in the propensity of people who did not want a job to start wanting a job ($M->I$, Figure 4) and an increase in the propensity of people who wanted a job to stop wanting a job ($I->M$, Figure 4). In other words, the decline in the share of nonparticipants who want a job was due to nonparticipants becoming less interested in working. It was not due to marginal nonparticipants moving into the labor force (i.e., into employment or unemployment).

To see that, Figure 5 plots m_t over 1994-2010 along with a counterfactual in m_t generated solely by movements in λ_t^{MI} and λ_t^{IM}. We can see that λ_t^{MI} and λ_t^{IM} account for most of the downward trend in m_t since 1994. Confirming this visual inspection, a variance decomposition exercise shows that λ_t^{IM} and λ_t^{MI} account for, respectively, 50% and 25% of the variance of m_t (Table 3).[16]

3.3 Decline in desire to work across demographic groups

Looking at different demographic groups, a decline in the share of "want a job" nonparticipants can be seen among prime-age females, prime-age males and young workers. However, in terms

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[14]Recall that transitions in and out of M or I are only available starting in 1994.

[15]For instance, $\frac{Cov(\gamma^{MI} d\lambda_t^{MI}, dm_t)}{Var(dm_t)}$ measures the fraction of the variance of m_t due to movements in the transition rate λ_t^{MI}.

[16]While the variance decomposition reported in Table 3 is for unfiltered data, the variance decomposition is similar at low and cyclical frequencies.

of the *number* of individuals affected by the decline, the decline is mainly a prime-age female, and to a lesser extent young worker, phenomenon.

First, similarly to Figure 3, Figure 7 plots m_{it}, the fraction of "want a job" nonparticipants for four demographic subgroups (denoted with the subscript i): Prime-age male 25-55, Prime-age female 25-55, Younger than 25 and Over 55. In all groups except for old workers, m_{it} displays an inverted-U shape, rising in the 70s and declining in the second-half of the 90s.[17]

However these percentage point declines hide large differences in the number of individuals affected by the decline in desire to work. Between 1994 and 2001, the number of prime-age female willing to work declined by 930,000, of young individuals by 680,000, and the number of prime-age male declined by "only" 250,000. Thus, the decline in desire to work is predominantly a (i) prime-age female, and (ii) young individuals phenomenon. This difference between groups was not apparent in the behavior of the share of "want a job" nonparticipants, because that measure does not capture differences in participation rates across groups. In particular, since prime-age males have a very high participation rate, there are few prime-age male nonparticipants, so that the decline in m_{it} is a phenomenon that affected only a very small share of the prime-age male population. This is not the case for prime age females and young individuals.

Finally, as with the aggregate share of "want a job" nonparticipants, the decline in m_{it} in the second half of the 90s reflects nonparticipants moving further away from the labor force. Using our previous stock-flow decomposition to each demographic group, we find that again the decline in the share of "want a job" nonparticipants is due to changes in the worker flows between M and I. To illustrate this result with young workers (results are similar with the other groups), Figure 6 shows that movements in λ^{MI} and λ^{IM} account for virtually all of the downward trend in the share of young "want a job" nonparticipants, and Table 3 shows that transitions between M and I account for 77 % of the variance of m_{it}.

4 Declining desire to work and its effects on unemployment and participation

Using a stock-flow accounting framework, we now assess quantitatively how movements in desire to work affect the aggregate unemployment and participation rates.

We make two points. First, the share of "want a job" nonparticipants is the main factor, with demographics, behind the inverse U-shape behavior of unemployment between the early 1970s and the early 2000s. Second, the decline in desire to work in the second-half of the 90s is a crucial aspect of the currently low level of participation in the US. The decline was

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[17]For young workers, the secular decline appears to go back to the early 80s, pointing to an older phenomenon.

not apparent in the late 90s, because it was masked by a tight labor market that boosted participation.

4.1 Some more accounting

The unemployment rate u_t and participation rate l_t are given by

$$\begin{cases} u_t = \frac{U_t}{LF_t} \\ l_t = \frac{LF_t}{Pop_t} \end{cases}$$

with the labor force $LF_t = E_t + U_t$ and the population $Pop_t = E_t + U_t + M_t + I_t$, so that as in Section 3.1, we can use the steady-state of (1) to express the unemployment and participation rates u_t and l_t as a functions $u(.)$ and $l(.)$ of the contemporaneous hazard rates $\left\{ \lambda_t^{AB} \right\}$.[18]

Specifically, it is easy to write u_t and l_t as functions of the transition rates out of Employment (E), Unemployment (U), and Nonparticipation (N, including all nonparticipants, M or I) with

$$\begin{cases} u_t = u(\{\lambda_t^{AB}\}) \\ l_t = l\left(\{\lambda_t^{AB}\}\right) \end{cases}, \quad A, B \in \{E, U, N\} \tag{4}$$

where the N-U and N-E transition rates, denoted λ_t^{NU} and λ_t^{NE}, are weighted averages of the two transition rates out of M and I:

$$\begin{cases} \lambda_t^{NU} = m_t \lambda_t^{MU} + (1 - m_t) \lambda_t^{IU} \\ \lambda_t^{NE} = m_t \lambda_t^{ME} + (1 - m_t) \lambda_t^{IE} \end{cases}. \tag{5}$$

Since nonparticipants who want a job behave very differently from the nonparticipants who do not want a job (in particular, $\lambda^{MU} >> \lambda^{IU}$), changes in the fraction of nonparticipants who want a job will affect the transition rates out of Nonparticipation through (5) and thus the unemployment and participation rates through (4).

4.2 Quantifying the effect of lower desire to work

A Taylor expansion of the accounting identities (4) around the mean of the hazard rates ($\lambda_t^{AB} \simeq \lambda^{AB}$) and a little bit of algebra with (5) gives (see the Appendix for more details)

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[18] Again since the most striking difference between M and I individuals is in their transition rates into the labor force (and not their subsequent transition rates once inside the labor force), we assume that the labor market with 4 states can be described by a Markov chain of order 1. We relax this assumption in the appendix where we allow M and I individuals to continue behaving differently once inside the labor force. The quantitative results are similar to what we report in the main text. This is because M and I individuals do not behave very differently once inside the labor force. Thus, a change in the ratio of M and I individuals affect the unemployment rate mostly through the differences in their labor force entry rates.

that the effect of a change in the fraction of "want a job" nonparticipants on the aggregate unemployment rate, denoted du_t^m, is given by

$$du_t^m = \beta^{NU} \left[\left(\lambda^{MU} - \lambda^{IU} \right) - \frac{\lambda^{NU}}{\lambda^{NE}} \left(\lambda^{ME} - \lambda^{IE} \right) \right] (m_t - m) \tag{6}$$

with m the average fraction of "want a job" nonparticipants, and $\beta^{NU} > 0$, the coefficient of the first-order Taylor expansion of u_t with respect to λ_t^{NU}.

The effect of a decline in desire to work on the aggregate unemployment rate is a priori ambiguous. On the one hand, as captured by the first term on the right-hand side of (6), a decline in the share of marginal nonparticipants lower the average NU transition rate since marginal nonparticipants are more likely to join unemployment than inactives ($\lambda^{MU} - \lambda^{IU} > 0$), and this lowers the unemployment rate. On the other hand, as captured by the second term on the right-hand side of (6), a decline in the share of marginal nonparticipants lowers the average N-E transition rate, since marginal nonparticipants are more likely to join employment ($\lambda^{ME} - \lambda^{IE} > 0$), and this increases the unemployment rate.

To quantify the effect of lower desire to work on the participation rate, we proceed in the exact same fashion and calculate dll_t^m, the effect of changes in the fraction of nonparticipants who want a job on the labor force participation rate from a relation similar to (6) and left for the Appendix. Contrary to the unemployment rate, a decline in m_t has an unambiguous effect on the labor force participation rate. Since a lower fraction of "want a job" nonparticipants lowers all transition rates out of Nonparticipation, a lower fraction of "want a job" nonparticipants implies a lower labor force participation rate.

4.3 Controlling for demographic heterogeneity

Before proceeding with the decomposition results, we generalize our approach to control for changes in demographics.

We do so for two reasons: First, changes in demographics are known to have large effects on the behavior of the unemployment and participation rates, and we want to put the effects of declining desire to work in the context of the contribution of demographics. Second, to the extent that declining average desire to work could be explained by changes in the demographic structure of the nonparticipation pool, we want to control for the demographic composition of the population.

We divide the population into K demographic (age and sex) groups, denoted by subscript $i \in \{1, .., K\}$. The approach to identify the effect of lower desire to work is exactly as described in the previous section, except that all variables now have a subscript i. As described in the

Appendix, we can then aggregate across groups to estimate the effects of (i) demographics, and (ii) lower desire to work on unemployment and participation using the definition of the aggregate unemployment and participation rates

$$
\begin{cases}
u_t = \sum_{i=1}^{K} \omega_{it} u_{it} \\
l_t = \sum_{i=1}^{K} \Omega_{it} l_{it}
\end{cases}
$$

with ω_{it} the labor force share of group i and Ω_{it} the population share of group i.

4.4 Decomposition of the unemployment rate

We now report the decomposition of the unemployment rate.

Figure 8 plots the contribution of changes in (i) demographics (top panel) and (ii) the fraction of "want a job" nonparticipants (middle panel) to the aggregate unemployment rate. The lower panel shows the actual unemployment rate along with the counterfactual unemployment rate holding (i) and (ii) constant. For clarity of exposition, in all panels, the series are shown in deviation from their mean. More details about the decomposition are described in the Appendix.

The decline in the fraction of nonparticipants who want a job lowered the aggregate unemployment rate substantially: Comparing the business cycle peaks of 1979 and 2006, the decline in desire to work lowered the unemployment rate by about 0.5 ppt over the last 30 years. This contribution is comparable with that of demographics. Demographics and the aging of the population, an oft-cited reason for the trend in unemployment, lowered unemployment by about 0.7 percentage point.

Taken together, demographics and desire to work appear to account for a large share of the low-frequency movements in unemployment. In fact, Figure 9 shows that demographics and desire to work account for the bulk of the long-run movements in unemployment, as captured by the CBO estimate of the natural rate.

To understand why a lower share of nonparticipants who want to work unambiguously implies a lower unemployment rate, we can go back to (6). In practice, the two hazard rates out of nonparticipation, λ^{NU} and λ^{NE}, are of similar magnitudes and $\frac{\lambda^{NU}}{\lambda^{NE}} \simeq 1$ (see Figure 1 in the Appendix). As a result, the sign of the effect of a change in m on the unemployment rate is given by

$$
\underbrace{\left(\lambda^{MU} - \lambda^{ME}\right)}_{>0} + \underbrace{\left(\lambda^{IE} - \lambda^{IU}\right)}_{>0} > 0
$$

which is unambiguously positive for two reasons: (i) a nonparticipant who wants a job enters the labor force mainly through unemployment ($\lambda^{MU} - \lambda^{ME} > 0$), and (ii) a nonparticipant who does not want a job enters the labor force mostly through employment ($\lambda^{IE} - \lambda^{IU} > 0$).

4.5 Decomposition of the labor force participation rate

We now report the decomposition of the participation rate.

Figure 10 plots the contribution of changes in (i) demographics (top panel) and (ii) the fraction of nonparticipants who want a job (middle panel) to the aggregate participation rate. The lower panel shows the actual participation rate along with the counterfactual participation rate holding (i) and (ii) constant. For clarity of exposition, in all panels, the series are shown in deviation from their mean.

The decline in the fraction of nonparticipants who want a job lowered the labor force participation rate by $1\frac{3}{4}$ ppt since the late 70s. Again, this is a large effect. Over the same time period, demographics and the aging of the population lowered participation by 2 ppt.[19]

Taken together, the bottom panel of Figure 10 shows that demographics and desire to work account for most of the downward trend in participation since the early 2000s. There is currently a large debate on the reasons for the currently record low level of participation in the US. Our decomposition shows that low desire to work is an important factor behind the currently low level of participation. The decline in desire to work that took place in the second-half of the 90s did not translate immediately into lower labor force participation, because it appears to have been masked (from the perspective of the labor force participation rate) by the strong labor demand of the late 90s, which propped up the participation rate.[20]

5 Why fewer people want a job?

In the final part of the paper, we investigate the reasons for the decline in desire to work since the mid-90s.

As a preliminary step, we note that the decline in desire to work is concentrated among (i) non-single and (ii) low-income households. Figure 11 shows that the fraction of "want a

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[19]Comparing figures 8 and 10, we can see that the contribution of demographics is different in the case of the aggregate participation rate and in the case of the aggregate unemployment rate. This is because the contribution of demographics to the participation rate is mainly driven by the demographic share of old workers (who have a much lower participation rate than the other groups), while the contribution of demographics to unemployment is mainly driven by the demographic share of young workers (who have much higher unemployment rate than the other groups).

[20]In fact, one can show that the participation rate was propped up in the late 90s by the very high level of the job finding rate. An increase in the job finding rate increases the labor force participation rate, because it raises the number of employed workers relative to the number of unemployed workers, and because employed workers are much less likely to leave the labor force than unemployed workers.

job" nonparticipants did *not* decline for those living alone.[21] Among non-single households, the decline in desire to work is concentrated among low income families (Figure 12). And among low-income non-single households, the decline in desire to work is more pronounced for individuals with children than without (Figure 13).[22]

Since the family structure seems to play an important role, the next section discusses a very simple model of family labor supply to help frame the discussion and guide the empirical analysis. Then, we estimate an empirical model of nonparticipants' propensity to want a job, in which desire to work can depend on individual characteristics, the family structure, as well as the different sources of income. Since the decline in desire to work is a low-income phenomenon, we pay special attention to the role played by welfare income and other social transfer programs.

Our estimates suggest that the mid-90s welfare reforms may have played an important role, and we try to identify their causal effects on desire to work by using a difference-in-difference strategy. We conclude by discussing the implications of our results.

5.1   A model of family labor supply

We sketch a simple framework of family labor supply.[23] We focus only on family members decision to search for a job,[24] and we consider a sequential multiple-earner model in which the primary earner makes his/her work decision independently of the secondary earners. The first secondary earner, say the spouse, then makes his/her labor supply decision by maximizing utility, taking account of the primary earner's income. The next secondary earner, say a teenager living in the household, then makes his/her labor supply decision in a similar fashion. And so on, for the other family members.

We posit that there exist search frictions, so that each worker must search in order to get

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[21]The trends in the unemployment and participation rates of these two groups are consistent with their trends in desire to work. Figure 2 in the Appendix shows that the unemployment rate of individuals living alone experienced a substantially less pronounced downward trend since 1976, consistent the smaller decline in the desire to work for this group and our previous result that a lower desire for work should lead to a lower unemployment rate. And while the participation of individuals not living alone started declining in the early 2000s, the participation rate of individuals living alone kept increasing up until the beginning of the Great Recession (Figure 3 in the Appendix). This is again consistent with the smaller decline in desire to work for individuals living alone and consistent with our previous result that a lower desire for work should lead to a lower participation rate.

[22]The decline in the share of "want a job" nonparticipants from these sub-groups is still mainly due to nonparticipants moving away from the labor force. For instance, the decline in share of low-income single mothers who want a job is almost exclusively due to changes in transition rates between M and I.

[23]We leave a more formal labor supply model with intrafamilial choice for the Appendix.

[24]In particular, the model will not fully capture the complex dynamics associated with the movements in-and-out of the labor force emphasized in Section 3. This aspect of the problem is a very active area of research. See for instance Krusell et al. (2012).

a job, and a worker can increase his/her job finding probability by increasing the intensity of search.[25]

In this framework, we interpret the nonemployment states –Inactive nonparticipant (I), Marginal nonparticipant (M) and Unemployed (U)– as arbitrary distinctions introduced by the household survey and its imperfect measurement of search intensity. Specifically, while search intensity s is a continuous variable, a survey cannot precisely measure s. Instead, a household survey like the CPS can classify workers into different labor market states –Inactive nonparticipant (I), Marginal nonparticipant (M) and Unemployed (U)– that correspond to increasing intensities of search.

In this framework, it is easy to show that search intensity (or desire for work) is influenced by the following mechanisms:

1. Returns to employment:
   Higher employment income increases desire to work among primary workers, but has an ambiguous effect on desire to work among secondary workers. The effect is ambiguous, because the direct effect is compensated by an added-worker effect (Lundberg, 1985, Juhn and Potter, 2007): As the family income generated by "higher-order" workers increases through higher employment income, desire to work amongst secondary workers decline.

2. Returns to nonparticipation:
   Higher nonparticipation income lowers desire to work among primary workers and has an ambiguous effect on desire to work among secondary workers. The ambiguity occurs again because of the added-worker effect, although this time it is because higher returns to nonparticipation lowers search intensity of higher order workers, which lowers disposable income.

3. Heterogeneous preferences:
   If the disutility of search varies with demographic characteristics such as age, gender or education, search intensity will vary with demographic characteristics, and a change in the composition of the population will affect the observed average desire to work.[26]

4. Higher asset income lowers search intensity through a "wealth effect".

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[25]The model takes the wage and job finding rate as given. Such a simple model could be consistent with non-clearing labor market models, such as search and matching models (Mortensen and Pissarides, 1994), efficiency wage models, or search models with job rationing (Michaillat, 2011).

[26]Another possibility that we will not consider explicitly here is that desire to work changed over time because of a change in preferences. While we do not discard this possibility, we prefer to keep it as a residual explanation.

5.2 An empirical model of nonparticipants' propensity to want a job

To quantitatively assess different explanations for the decline in desire to work, we consider a linear model of nonparticipants' propensity to want a job: The probability that a nonparticipant of type i wants a job (i.e., be M) at time t is given by

$$P(M|N)_{it} = \beta X_{it} + \sum_{j=1}^{J} \alpha_j w_{j,it} + \delta_t + \varepsilon_{it} \tag{7}$$

with X_{it} a vector of characteristics for type i at time t, $w_{j,it}$ an income source of type j, and δ_t a time dummy. Because we use time fixed effects, our coefficient estimates depend largely on cross sectional variation.

To measure worker characteristics as well as income and its different categories, we use matched annual data from the (March) Annual Social and Economic Supplement of the CPS over 1988-2010. In addition to information contained in the basic CPS files, the March supplement includes detailed information on income. Since the March supplement only contains information related to past year's income, we match the March supplements across successive years, so that we can study the relation between the current year's income and desire to work.[27] Matching March supplements also allows us to instrument for income in year t with income in year $t-1$. There is likely substantial measurement error in the reported income variables, and instrumenting with lagged income variables allows us to correct for the downward bias imparted by this measurement error (under the assumption that the measurement error is i.i.d.).

An individual of type i is defined by the following demographic characteristics: (i) age group –we classify workers into 8 groups spanning 16-85–, (ii) sex, (iii) education level –less than high school, high school or some college, college or more–, (iv) married or not, (v) school status –in school or not–, (iv) position in household –head, spouse, child, other–, and finally (vii) number of children (younger than 19) in the household. X_{it} is a thus vector of 7 dummy variables.

We consider the different income categories: individual social insurance transfers, individual welfare income, other individual income, asset income, total tax payment, earned family

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[27] To construct our data set we link individuals and families across consecutive March supplements. The time series and cross sectional behavior of the want job variable in our matched data set is quite similar to that in the unmatched March supplements and to that in the basic monthly CPS. Because unique individual and family-level identifiers comparable to identifiers in other years are missing in the 1995 March supplement, our data set excludes the years 1994 and 1995, but otherwise includes all years from 1988 to 2010. Since some of the detailed income categories we use were not available on a consistent basis prior to 1988, our sample period starts in 1988.

income and family income from social transfers.[28] Social insurance transfers include supplemental security income (SSI), social security disability insurance (SSDI), social security pensions, survivor's insurance, workmen's compensation and veterans' benefits, [29] but since we are restricting our sample to individuals younger than 55, the "social insurance transfers" category captures mostly disability insurance. Note that we treat separately individual income, which would affect desire to work through changes in the returns to nonparticipation or employment, and the income provided by higher-order family members (labeled "family income"), which would affect desire to work through added-worker effects.[30] We also add asset income to capture a possible wealth effect. Income values are deflated using the BEA deflator for personal consumption expenditures.

Finally, since the impairment associated with the receipt of disability insurance is conditioned on the existence of an impairment that (in theory) precludes any work activity (and thus affects desire to work), we include a dummy for receiving disability insurance (SSI or SSDI). Similarly, since welfare recipients are strongly encouraged or mandated to return to employment, participation in a welfare program may affect search intensity and desire to work, we include a dummy for receiving welfare income.

5.3 Coefficient estimates

Table 3 presents our coefficient estimates for the different income categories, and the first column of Table 3 reports coefficient estimates for all individuals aged 16 to 55.[31]

Most strikingly, receiving welfare and receiving disability insurance have very different implications for desire to work. While receiving disability insurance substantially reduces the probability to want to work by 17 percentage points (ppt), consistent with the fact that an impairment should preclude any work activity and thus lower desire to work, receiving welfare increases the probability to want to work by 17 ppt. This latter result is consistent with the fact that welfare recipients are strongly encouraged (especially since 1988) to return to

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[28]Earned labor income includes wages and salaries, self employed income, farm income. Welfare income (also called public assistance) includes AFDC/TANF benefits. Asset income includes interest income, dividend income and rents. The category "other" include all other individual income sources reported.

[29]SSDI provides income supplements to people who are physically restricted in their ability to be employed because of a notable disability, usually a physical disability. SSI provides stipends to low-income people who are either aged (65 or older), blind, or disabled. There are two important differences between SSI and SSDI: (i) SSI is means-tested, while SSDI is not, and (ii) SSDI is only available to individuals with sufficient recent work experience.

[30]To "rank" family members, we proceed as follows. We classify as primary earner, the family member with the highest earned labor income, or if none, the household head. The second worker is the spouse (if any) or the individual who is closest in age to the primary earner. We continue by considering family members with increasing distance in age from the primary earner.

[31]The coefficients were estimated using cross-sectional variation over 1988-2010. Using cross-sectional variation over the pre-1994 period gives similar results.

employment quickly, which should push welfare recipients to exert more search effort.[32]

Increasing the income from social insurance reduces desire to work (a \$1000 increase decreases the probability to want a job by 0.7 ppt), but the effect is small compared to the effect of participation (e.g., being officially recognized as disabled).

Increasing welfare income has no significant effect on desire to work. This small effect is again in contrast with the strong effect of participation (i.e., being on welfare). Thus, most of the effect of the welfare or social insurance programs on desire to work occur through the program participation margin, as captured by our dummy variables.

Turning to income from higher-order family members, the coefficients for earnings and transfer are highly significant and negative, indicating that an added-worker effect is at play. Specifically, a \$1000 extra annual family income reduces the probability to want a job by 4.5 ppt for earnings and by about 2 ppt for transfer income. Higher asset income lowers desire to work, consistent with the existence of a wealth effect, although the coefficient is not significant, and higher taxes lower desire to work, indicating again an added-worker effect.

Finally, for demographic characteristics, individuals with the highest expected lifetime return from work are the most likely to want to work: young, highly educated, men are the most likely to want to work.[33] Being married lowers desire for work, as well as being in school.

Digging deeper into sub-groups, Table 3 also presents the coefficient estimates for prime-age females and individuals younger than 25. Overall, the results are similar and consistent with our aggregate regression.

5.4 The welfare reform and wage gains of the 90s

Before discussing the predictions of the model, it is helpful to briefly discuss two changes in the returns to employment and nonparticipation during the 90s that were of particular relevance for low-income non-single households, the group most affected by the decline in desire to work: (i) the provision of "welfare" was dramatically re-organized in the mid-90s, (ii) real wages increased strongly across the income distribution, propped up by a booming economy.

5.4.1 The welfare reforms of the mid-90s

A major re-organization of the provision of welfare took place in the mid-90s with the aim to "end welfare as we know it" (Clinton, 1996) and to move welfare recipients into work.

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[32] In 1988, the Job Opportunity program was created and required a much larger number of welfare recipients to engage in work-related activities (Moffitt, 2003). The legislation also strongly encouraged states to conduct some human capital, education, and training programs meant to facilitate return to employment.

[33] The coefficient estimates for demographic characteristics are shown in the Appendix.

First, traditional welfare was dramatically re-organized by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996. The Aid to Families with Dependent Children program, a federal assistance program that provided financial assistance to low-income families with children (see Moffitt, 2003 for a detailed review of the program), was replaced by the stricter (in terms of eligibility and time limits) Temporary Assistance for Needy Families program. With TANF the duration of benefits is limited to five years and the emphasis on return to work is strengthened with sanctions for non-complying applicants (Moffitt, 2003). Following the reform, the number of welfare caseloads declined massively (Figure 14) as well as federal spending devoted to AFDC/TANF (Figure 15).[34]

Second, the Earned-Income Tax Credit (EITC) program, a program aimed at offsetting the social security payroll tax for low-income families with children, was expanded in order to encourage work effort (Rothstein and Nichols, 2014). Figure 15 shows the dramatic changes in the organization of "welfare" that took place in the 90s, as a large increase in federal spending devoted to EITC compensated the decline in AFDC/TANF spending.

Note that both the AFDC/TANF program and the EITC program are targeted at individuals who are (i) low income and (ii) with children, which are precisely the individuals affected by the decline in desire to work.

5.4.2 Strong wage growth over 1995-2000

The second half of the 90s also coincides with strong positive growth in real wages for all deciles of the income distribution.[35]

Since higher wage leads to higher search intensity of primary workers, strong wage growth is unlikely to explain the decline in desire to work through its effect on primary earners. However, large gains in wage income imply large gains in real family income, which can, through the added-worker effect, lead to lower desire to work among secondary workers. Interestingly, Figure 16 shows a striking correlation between real median family income and the fraction of nonparticipants who want a job (on a negative scale).

A mechanism going through an added-worker effect is consistent with our earlier observation that desire to work only declined among non-single households (for which an added-worker effect is active).

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[34]One can note an interesting correlation between welfare caseloads and the share of "want a job" nonparticipants: both increased in the early 70s and then decreased markedly over the second-half of the 90s.

[35]Figure 5 in the appendix shows the cumulative changes in real wages since 1994 for different percentiles of the wage distribution.

5.5   Predicted changes in desire to work

With the estimated coefficients in hand, we can isolate the contribution of a given characteristic or income variable to the change in the share of "want a job" nonparticipants. Specifically, the contribution of characteristic x_i to the decline in desire to work between 1994 and 2006 is given by:[36]

$$m_{06} - m_{94} = \beta_i \left(\bar{x}_{i,06} - \bar{x}_{i,94} \right)$$

with $\bar{x}_{i,t}$ the average value of characteristic i in year t, $\bar{x}_{i,t} = \sum_i \varpi_{it} x_{it}$ with ϖ_{it} the share of nonparticipant of type i at time t.

The first column of Table 4 shows that, excluding time fixed effects, our model explains about 53 percent of the decline in the fraction of nonparticipants reporting to want a job.

According to our model, the main factors behind the decline in desire to work are changes in welfare benefits and in insurance transfers (mainly disability insurance). Together, they lowered the share of nonparticipants wanting to work by a total of 2.6 ppt. Most of this effect is driven by the program participation dummies. As the number of individuals on disability increased, aggregate desire to work declined. And as the number of individuals participating in welfare decreased (Figure 14), aggregate desire to work declined. We return to this point in our discussion section.

Family income and the added-worker effect had a small effect on desire to work because two forces compensated each other. On the one hand, higher family earnings due to higher wages lowered desire to work by 0.5 ppt, but on the other hand, lower income from social transfers raised desire to work by 0.3 ppt.

Finally, age, sex, education, the fraction of nonparticipants in school, the structure of the household or the number of children do not explain the decline in desire to work.

Looking into sub-groups, the model accounts for respectively 62 and 42 percent of the decline in the share of "want a job" nonparticipants for prime-age women and young workers. The added-worker effect seems to have played the largest role for young workers, as higher family earnings lowered their desire to work by 0.7 ppt.

All in all, our model, estimated in the cross-section, does a good job at accounting for a large share of the decline in desire to work since 1994, particularly among prime-age female; the largest group affected by the decline in desire to work. While we are still short of explaining all of the decline in desire to work, our approach is likely to be downward biased. The income information if the March CPS is self-reported and thus likely plagued with measurement error. In particular, welfare or social security income, which play la large role in our story, are the income categories with the most measurement error (2010 CPS documentation). We have

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[36]We compare 1994 to 2006 in order to avoid cyclical phenomena linked the the Great Recession.

tried to control for measurement error through IV estimation, but some effects may remain. Relatedly, EITC payments may not be reported by respondents, and the previous analysis may miss the effect of the EITC expansion that could have also contributed to the decline in desire to work (through an added worker effect), a point to which we turn next.[37]

5.6 Difference-in-difference estimates

Our previous results suggest that an important factor behind the decline in desire to work is a change in the provision of social transfers. Since welfare reforms of the mid-90s are promising candidates for such changes, this section tries to identify the causal effects of (i) the expansion of EITC and (ii) the AFDC/TANF reform.

To do so, we build on Eissa and Hoynes (1996, 2004) and Mc Kernan et al. (2000), and we use a difference-in-difference strategy that exploits the facts that households without children receive little EITC or AFDC/TANF benefits and were little affected by the reforms. First, we identify the effects of the EITC expansion on desire to work by focusing on married individuals, who are eligible to EITC but not to AFDC. Then, we focus on single women with the aim of getting a lower bound on the effect of the AFDC-TANF reform.

5.6.1 EITC expansion and desire to work among married mothers

Our first empirical implementation follows Eissa and Hoynes (2004): Eligibility to EITC depends on the presence of a qualifying child in the family, and we will estimate the effect of the EITC expansion on desire to work by comparing the outcome of the affected group (married women with children) to the outcome of a comparison group that is little affected by the program (married women without children).[38]

We restrict the sample to married women between 25 and 55. To determine EITC eligibility, we treat as a dependent child any member of the tax-filing unit younger than 19. To better select women that are most likely to receive EITC, the sample is limited to individuals with no level of education higher than a high school degree.

We estimate the following formulation

$$P(M|N)_{it} = \gamma \eta_{gt} + \eta_g + \eta_t + \beta X_{it} + \varepsilon_{it} \tag{8}$$

[37]In theory, EITC payments are parts of social transfers. However, we fear that they are unlikely to be reported as such by respondents, since the transfer-related survey questions never mention receipts of any tax credit.

[38]A caveat of this approach is that, while AFDC/TANF is primarily targeted to non-married individuals, a small fraction (about 7%) of AFDC/TANF caseloads are married couples with children. This is because a program called AFDC-UP provided cash benefits for 2-parent families when the primary earner was unemployed. As a result, our estimate of the effect of EITC may be contaminated by the effect of the AFDC/TANF reform.

where i, g, and t index individual, group, and time respectively, and with X_{it} a vector of controls (age, sex, education, family income, and number of children), η_g a fixed (group) effect equal to 1 if the woman has a child or more and zero otherwise, η_t a common time effect equal to 1 for any tax year after 1993, and η_{gt} the interaction between fixed group and time effect. Thus, γ measures the relative change in desire to work for single women with children after 1993, the year of the EITC expansion. Our estimation period is again 1988-2010.

Table 5 presents the results. After controlling for characteristics, we find that the EITC explains 71 percent of the decline in low-educated married mothers' desire to work between 1988-1993 and 1994-2010.

5.6.2 AFDC/TANF reform and desire to work among single mothers

Our second empirical implementation follows Eissa and Hoynes (1996) and Mc Kernan et al. (2000) and focuses on single mothers. To identify the effect of the AFDC/TANF reform on single mothers' desire to work, we compare the outcome of the affected group (single women with children) to the outcome of a comparison group that is unaffected by the program (single women without children) after the reform in 1996.

We use the same specification as with married women, except that the time dummy η_t equals 1 after 1996, the year of the AFDC/TANF reform. Table 5 presents the results. After controlling for characteristics, our coefficient estimate suggests that the AFDC/TANF reform explains 52 percent of the decline in low-educated single mothers' desire to work between 1988-1995 and 1996-2010.

A caveat is that since single mothers are eligible to both EITC and AFDC/TANF, our difference-in-difference estimate may be contaminated by the EITC expansion, which happened only two years before the AFDC/TANF reform. However, since the EITC expansion should increase desire to work, our estimate can also be seen as a lower bound on the effect of the AFDC/TANF reform on single mothers' desire to work.

5.7 Discussion: from welfare to disability?

Both our cross-sectional estimates (section 5.5) as well as our difference-in-difference estimate (section 5.6) indicate that the AFDC/TANF reform led to a decline in desire to work among nonparticipants. This set of result is surprising in light of a large literature on the effects of the welfare reforms on the labor market. Indeed, it is well accepted that the reform brought many nonparticipants, in particular single mothers, into the labor force (Blank, 2002). However, our findings suggest that the welfare reform pushed nonparticipants away from the labor force.[39]

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[39]Recall that a stock-flow decomposition of the share of "want a job" nonparticipants shows that the mid-90s decline is mostly due to nonparticipants moving away from the labor force. It is not due to marginal

In this section, we argue that these two views are not necessarily incompatible, and we speculate that the strong work requirements introduced by the AFDC/TANF reform could have, through a kind of "sink or swim" experience, pushed the "stronger" welfare recipients into the labor force *and* pushed the "weaker" welfare recipients outside of welfare and further away from the labor force, and possibly into disability insurance.

While employment and participation increased for many nonparticipants following the welfare reform, a significant minority of traditional welfare recipients were left both jobless and without welfare support. The decline in the number of caseloads was substantially larger than the corresponding gains in employment: for instance, while employment among single mothers rose by approximately 820,000 between 1995 and 2001, welfare caseloads fell by approximately twice as much (Blank, 2002), suggesting that a number of traditional welfare recipients ended up neither employed nor on welfare. Consistent with this suggestive evidence, welfare leavers' studies (which follow individuals over time after they leave welfare) find that only about 60 percent of welfare leavers are working at some future point (Cancian et al., 1999, Loprest, 2001), and Martinson (2000) finds that 20 percent of leavers never work in a four-year follow-up of work programs.

The emergence of a minority of traditional welfare recipients both jobless and without welfare support could have been caused by the AFDC/TANF reform. The reform made eligibility for welfare much stricter with (i) time limits and (ii) stronger work requirements and the use of sanctions for noncompliant applicants (Blank, 2002).[40] This made the receipt of welfare strongly conditional on the recipient's ability to find a job. For individuals with poor job finding prospects and strong barriers to employment (e.g., mildly disabled, in poor health, emotionally disturbed, mentally slow or addicted to drugs or alcohol),[41] this requirement can be hard to fulfill, leaving them ultimately out of the welfare system and without financial support.[42]

In turn, the need for financial support could have led a number of these traditional welfare recipients to apply for disability insurance, and in particular non-elderly SSI (which provides income support for low-income disabled individuals). A number of papers have argued that

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nonparticipants moving into the labor force.

[40]First, adult applicants can only receive benefits for a lifetime maximum of 60 months, and about 20 states chose to impose shorter time limits. Second, according to the Federal provision of TANF, states must require recipients to engage in work activities and must impose sanctions (by reducing or terminating benefits) if an individual does not participate. Half of the families receiving TANF assistance must be engaged in a work activity for at least 30 hours a week (20 for single parents with young children). Job search, job readiness activities, or vocation training can only count as a satisfactory work activity for a limited amount of time.

[41]For instance, Dworsky and Courtney (2007) find that most of the TANF applicants in Milwaukee face such barriers to employment.

[42]Consistent with this idea, Grogger (2000) finds that welfare time limits lowered the number of caseloads by about 200,000 during the second-half of the 90s.

there is some degree of substitutability between AFDC/TANF and non-elderly SSI (e.g., Kubik, 1999), and that some of the increase in SSI caseloads can be attributed to the AFDC/TANF reform.[43] Indeed, both programs serve disadvantaged populations that tend to have low levels of education, minimal work history, and high rates of both physical and mental impairments. Schmidt (2012) even suggests that SSI may be partially playing the role of an alternative safety net in the post-welfare reform era.

However, SSI and AFDC/TANF differ in one important aspect: their emphasis on return to work. While welfare recipients are expected to ultimately return to the labor force, disability recipients are not. In fact, one of the requirements to receive disability benefits is that the "impairment prevents any other work that exists in the national economy" (Daly and Burkhauser, 2003). Thus, our conjecture raises an interesting possibility: While the "welfare to work" reform was designed to do bring welfare recipients into the labor force, the reform could have had the opposite effect on the "weaker" nonparticipants by shifting them from a program with some connection to the labor force (welfare) to a program with no connection to the labor force (disability insurance).

6 Conclusion

This paper uncovers a new factor behind the trends in unemployment and participation: The share of nonparticipants who report wanting to work declined over the past 35 years, with a particularly strong decline in the second-half of the 90s. The decline affects mainly to prime-age females, and, to a lesser extent, young individuals, and reflects nonparticipants moving further away from the labor force, i.e., a decline in desire to work.

A downward trend in desire to work lowers both the unemployment rate and the participation rate, because a nonparticipant who wants to work has a high probability to join the unemployment pool in the future, while a nonparticipant who does not want to work has a low probability to ever enter the labor force. We quantify the effect of the decline in desire to work in the late 90s on aggregate labor market variables and find that the unemployment rate was lowered by about 0.5 ppt and the participation rate by about 1.75 ppt. Taken together, population aging and lower desire to work explain the bulk of low-frequency movements in unemployment since the late 60s.

We explore possible explanations for the decline in desire to work using cross-sectional

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[43]Schmidt and Sevak (2004) find that the pre-reform state-level welfare waivers –pre-reform experiments of a welfare system with stronger work requirements– led to a significant increase in the likelihood that single-mother families reported SSI receipt. Schmidt (2012) finds that the TANF sanction policies significantly increased SSI caseloads share for both adults and children. Kubik (2003) also argues that switching from AFDC/TANF to SSI has financial advantages both for the individuals as well as the state.

estimates of a model of nonparticipants' propensity to want a job as well as difference-in-difference estimates of the effects of the mid-90s welfare reforms.

Our findings suggest that the mid-90s "welfare to work" reforms –the 1993 EITC expansion and the 1996 AFDC/TANF reform– played an important role in lowering desire to work among nonparticipants. Our cross-sectional estimates imply that changes in the provision of welfare and social insurance explain about 60 percent of the decline in desire to work among prime-age females, while the difference-in-difference estimates attribute between 50 and 70 percent of the decline in mothers' desire to work to the welfare reforms.

We conjecture that two mechanisms could explain these results. First, the EITC expansion raised family income and reduced secondary earners's (typically women) incentives to work. Second, the strong work requirements introduced by the AFDC/TANF reform would have, through a kind of "sink or swim" experience, left the "weaker" welfare recipients without welfare and pushed them away from the labor force and possibly into disability insurance.

Our conjecture raises an interesting possibility: While the "welfare to work" reform was designed to strengthen the incentives to work and to bring welfare recipients into the labor force, the reform could have had the opposite effect on some nonparticipants, either by giving secondary earners less incentives to work, and/or by shifting the "weaker" nonparticipants from a program with some connection to the labor force (welfare) to a program with no connection to the labor force (disability insurance). Exploring this possibility is an important task for future research.

We conclude this paper by speculating about possible future values for the unemployment and participation rates at the next business cycle peak. As of March 2015, more than five years since the end of the recession (as defined by the NBER), the unemployment stands at 5.5 percent and the participation rate at 62.8 percent. The "long-run" forces that drove the unemployment rate to a 40 year low of 3.8% in April 2000, –aging and lower desire to work–, are still present today (Figure 8), but are masked by a low job finding rate that is still 20 percent below its pre-recession peak of 2006 and 30 percent below its 2000 peak (see Appendix). Bringing workers' transition rates back to their 2000 levels and holding the share of "want a job" nonparticipants at its current level imply an unemployment rate at 3.8 percent and a participation rate at 66.3 percent (Figures 8 and 10). Perhaps more realistically, bringing workers' transition rates back to their 2006 pre-recession levels would imply an unemployment rate of 4.5 percent and a participation rate of 65.8 percent, suggesting that both the unemployment and participation rate have substantial room for improvement.

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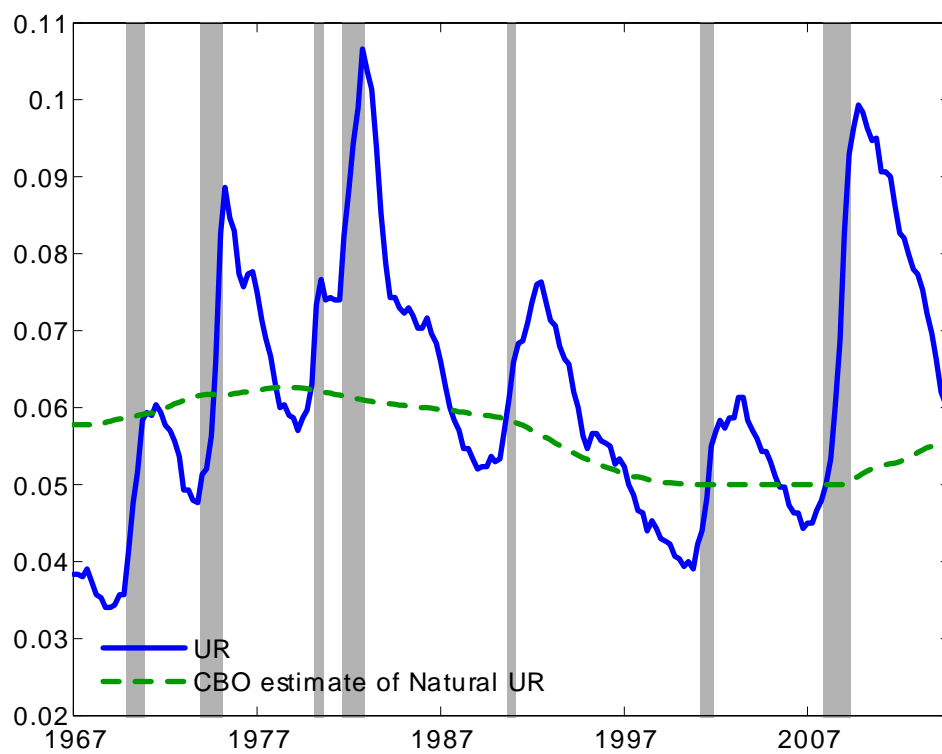
Figure 1: Unemployment rate (U) and CBO estimate of the natural rate of unemployment, 1967-2014.
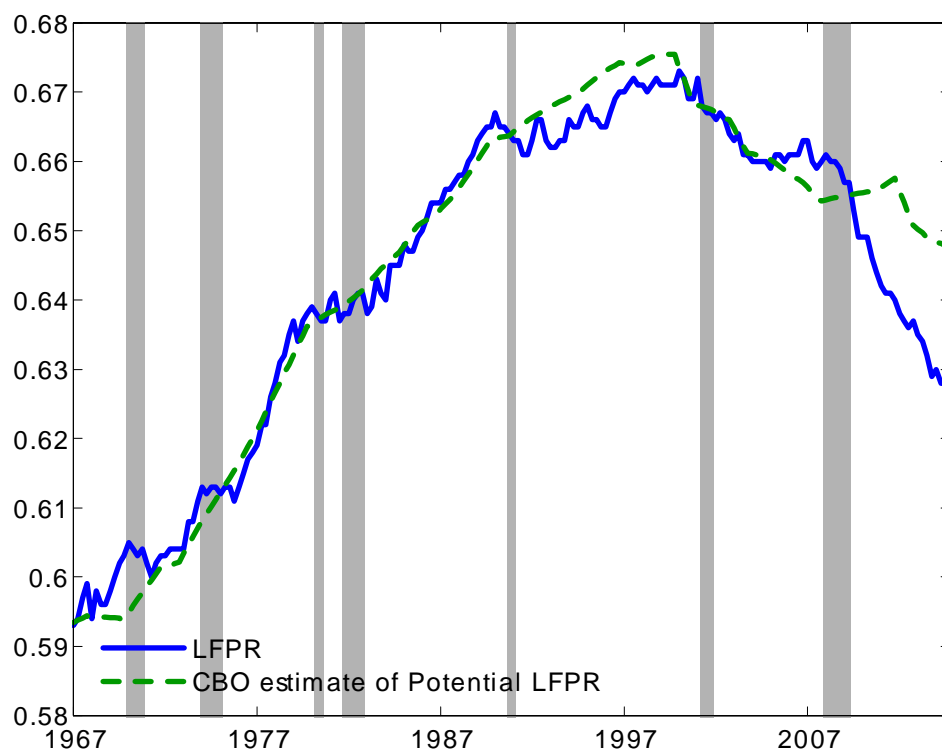
Figure 2: Labor force participation rate (LFPR) and CBO estimate of the potential LFPR, 1967-2014.
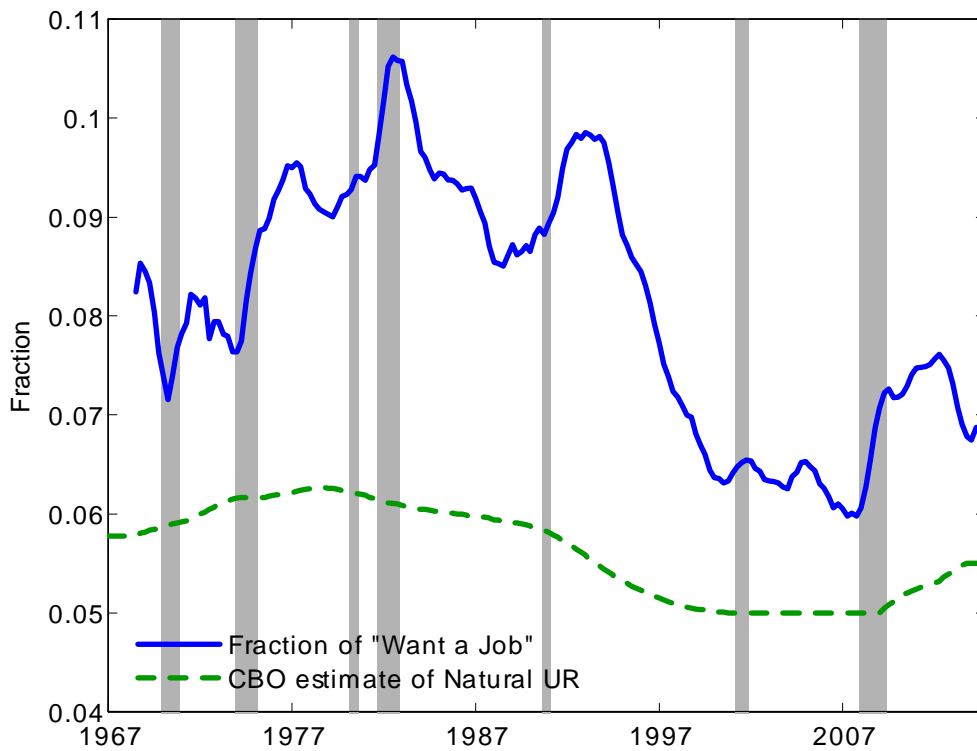
Figure 3: Fraction of nonparticipants who report "wanting a job" (solid line, 4-quarter moving averages) and unemployment (dashed line), 1967-2014.
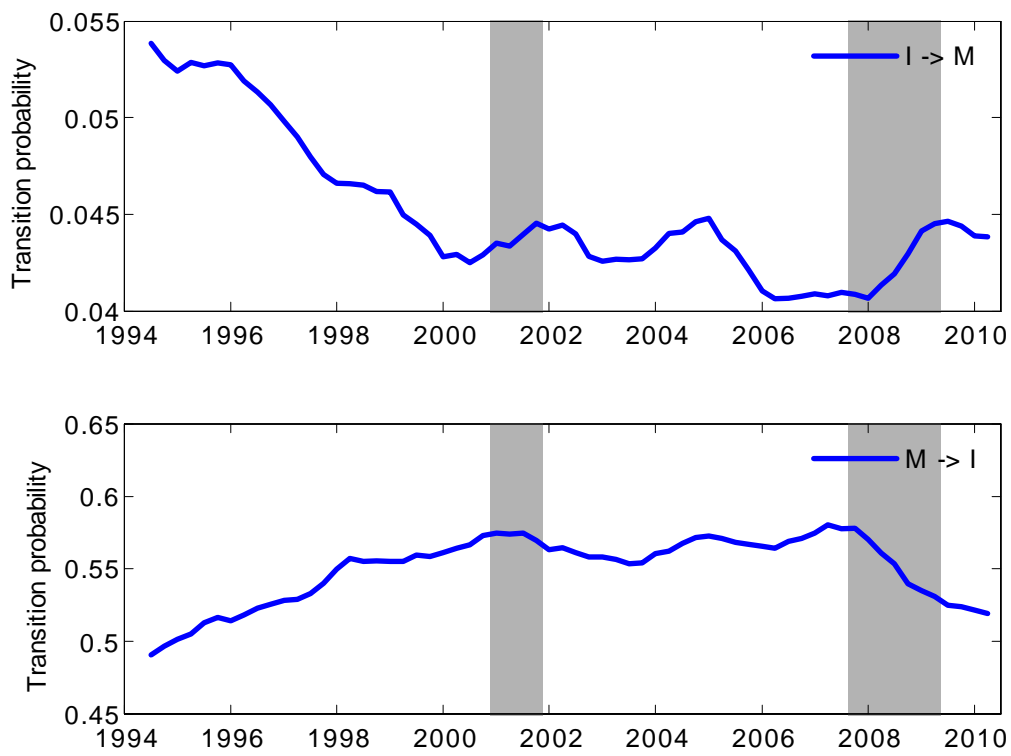
Figure 4: The $I - M$ transition rate (probability that someone who did not want a job to starts wanting a job, upper-panel) and the $M - I$ transition rate (probability that someone who wanted a job to stops wanting a job, lower panel). 4-quarter moving averages, 1994-2010.
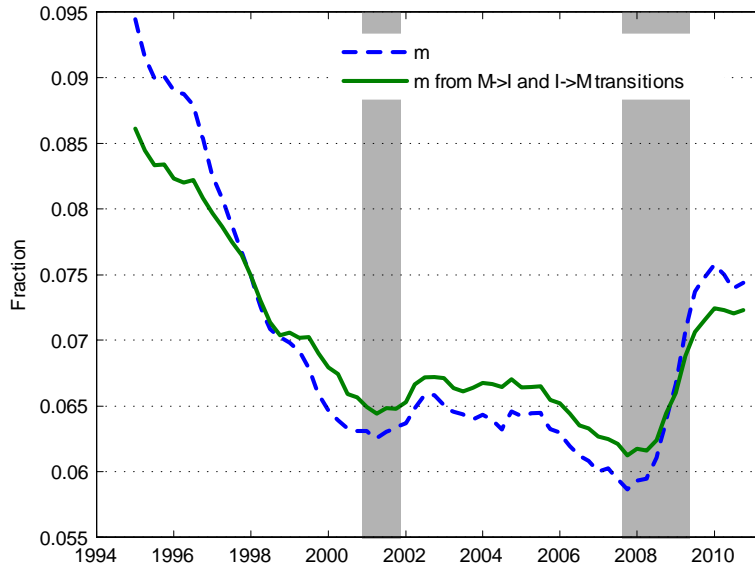
Figure 5: Fraction of nonparticipants who report "wanting a job" (m) along with the movements in m generated solely by changes in the $I - M$ and $M - I$ transition rates. 4-quarter moving averages, 1994-2010.
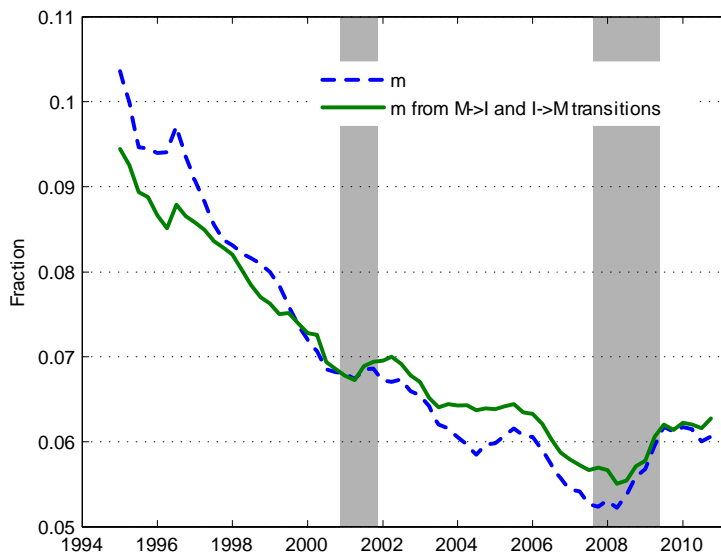
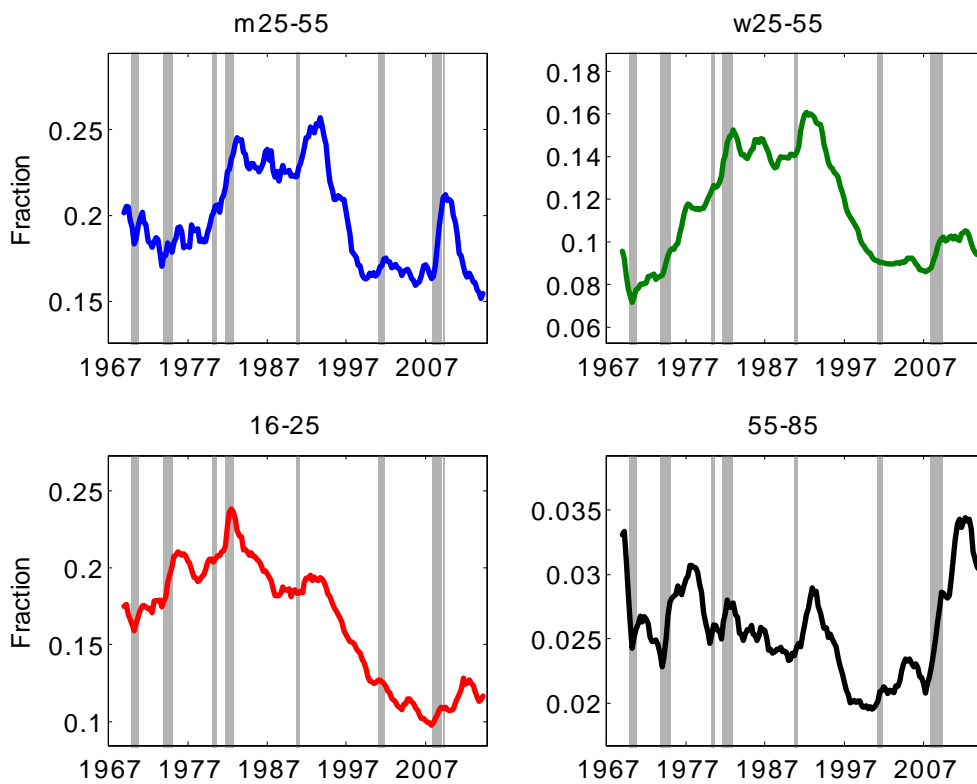Figure 6: Fraction of nonparticipants who report "wanting a job" (m) for individuals younger than 25 along with the movements in m generated solely by changes in the $I - M$ and $M - I$ transition rates. 4-quarter moving averages, 1994-2010.

Figure 7: Fraction of nonparticipants who report "wanting a job" by demographic group: male 25-55, female 25-55, younger than 25, and older than 55. 4-quarter moving averages, 1969-2014.
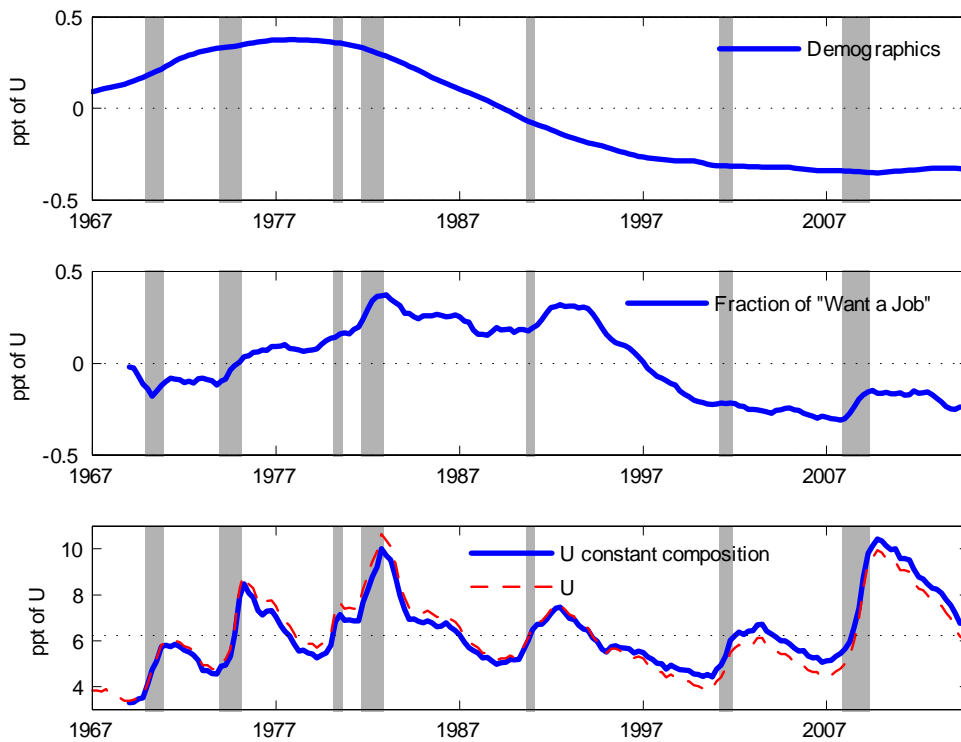
Figure 8: Contributions of changes in composition to aggregate unemployment rate (U). Upper panel: contribution of demographics. Middle panel: contribution of changes in the share of nonparticipants willing to work. Bottom panel: aggregate unemployment rate (dashed line) and unemployment rate holding demographics and share of "want a job" constant (solid line). The plotted series are 4-quarter moving averages. 1967-2014.
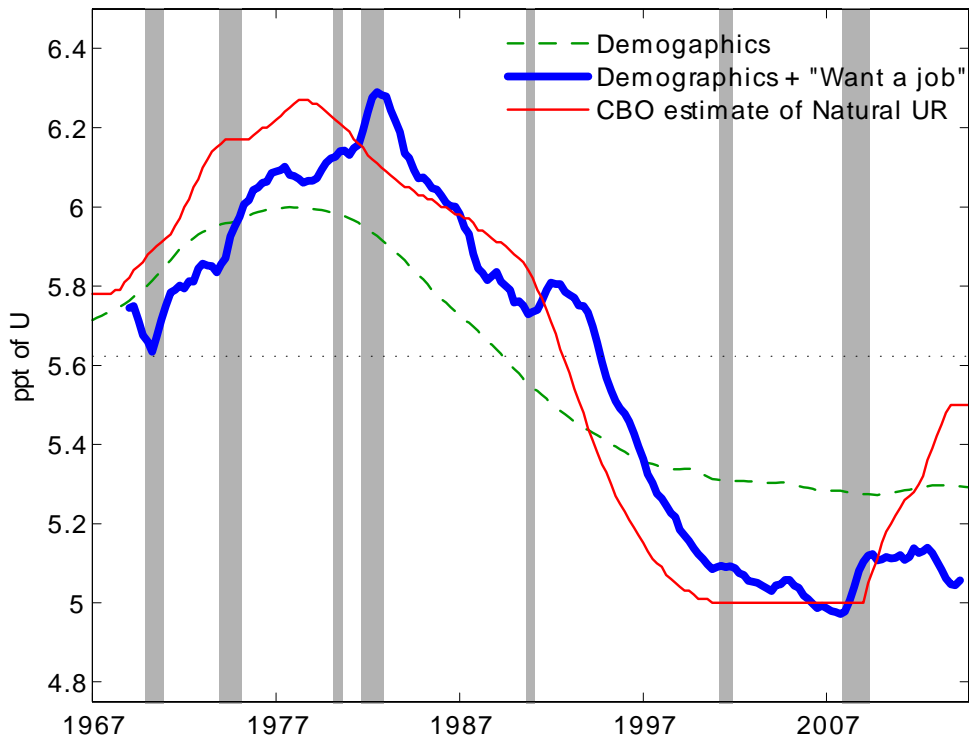
Figure 9: Contribution of demographics ("Demographics"), demographics and changes in desire to work ("Demographics + Want a job") to movements in unemployment along with the CBO estimate of the natural rate of unemployment, 1967-2014.
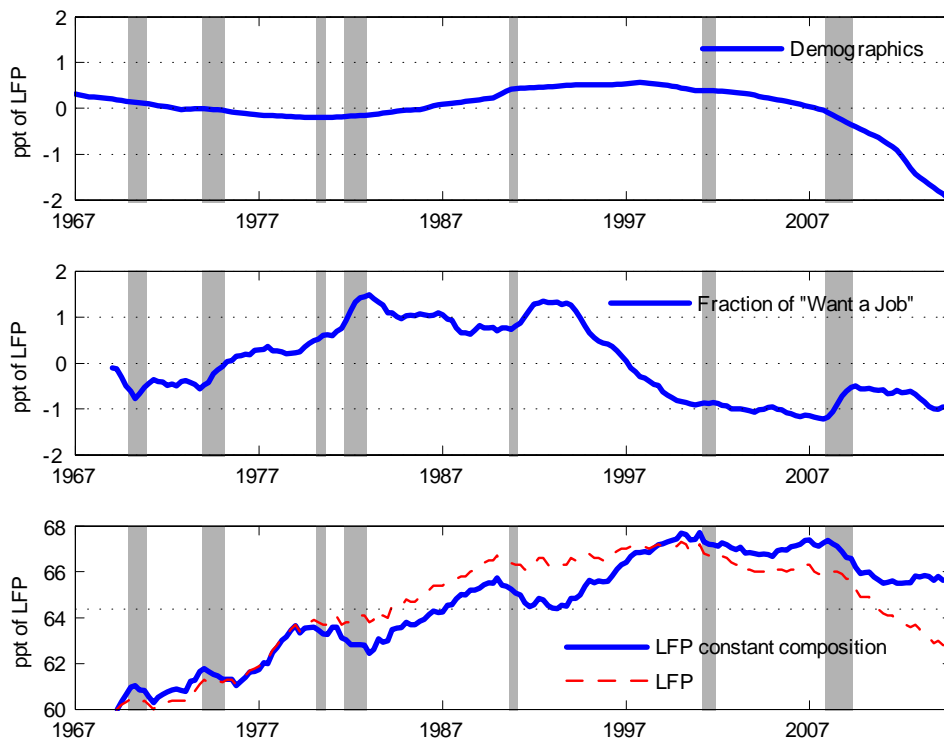
Figure 10: Contributions of changes in composition to aggregate labor force participation rate (LFPR). Upper panel: contribution of demographics. Middle panel: contribution of changes in the share of nonparticipants willing to work. Bottom panel: aggregate participation rate (dashed line) and participation rate holding demographics and share of "want a job" constant (solid line). For clarity of exposition, the contribution of each component is set to 0 in 1979Q4. The plotted series are 4-quarter moving averages. 1976-2010.
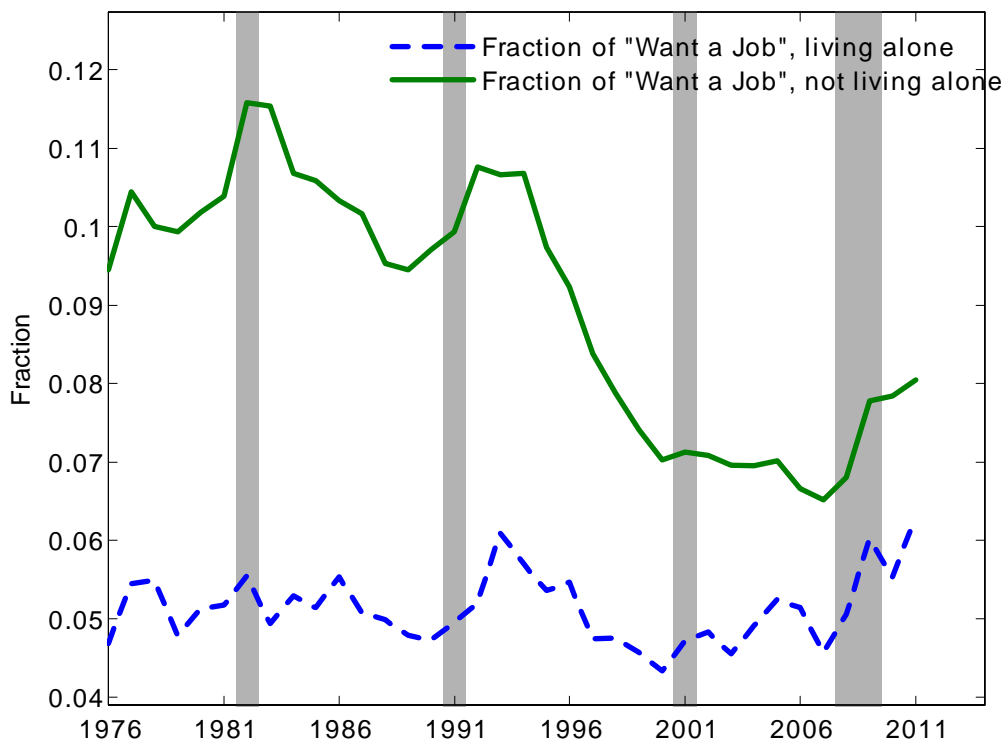
Figure 11: Fraction of nonparticipants who report "wanting a job" for nonparticipants living alone (solid line) and nonparticipants not living alone (dashed line). 1976-2011.
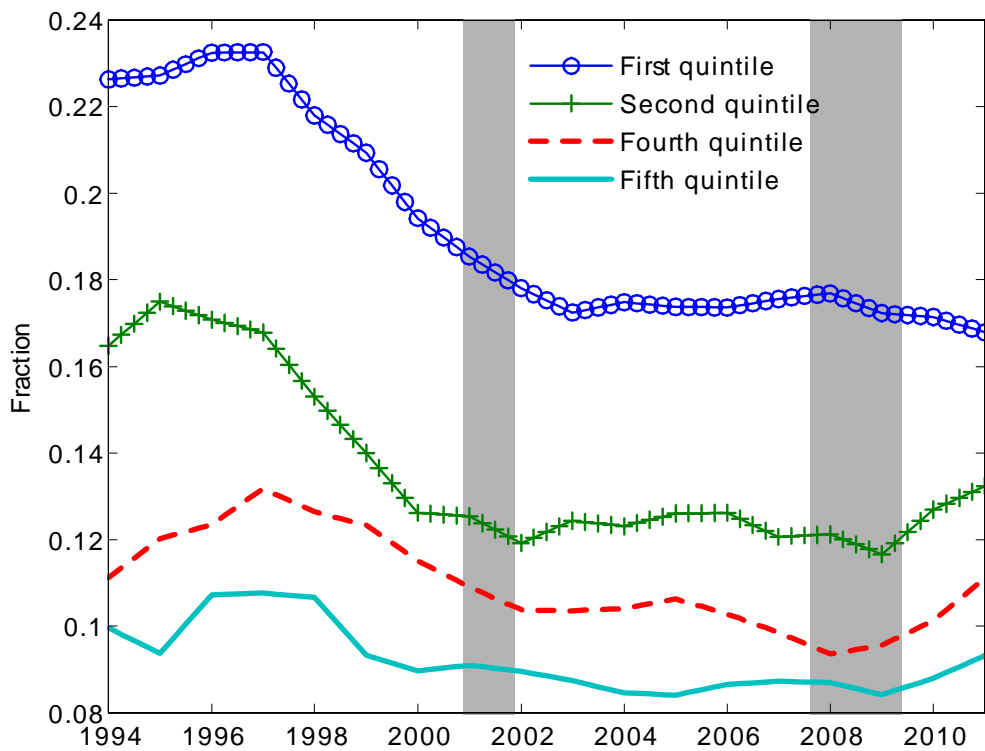
Figure 12: Fraction of nonparticipants who report "wanting a job" for individuals with family income in the first, second, fourth and fifth quintile. 1994-2011.
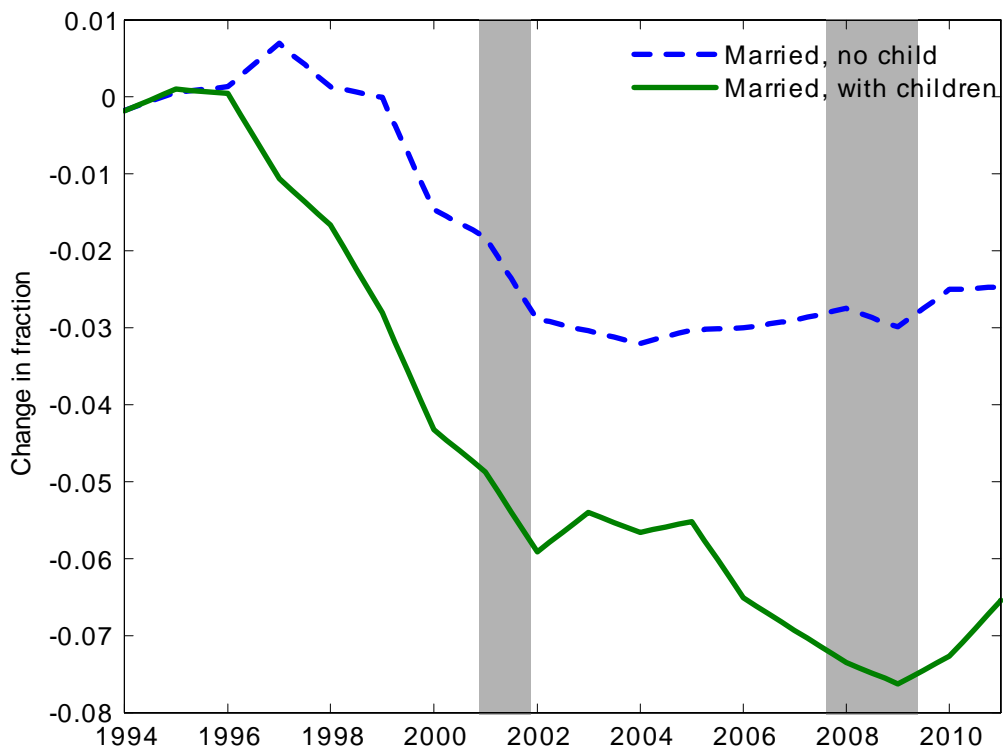
Figure 13: Changes in the fraction of nonparticipants who report "wanting a job" for married individuals with children and married individuals without children. The sample is restricted to families in the bottom half of the family income distribution. 1994-2011.
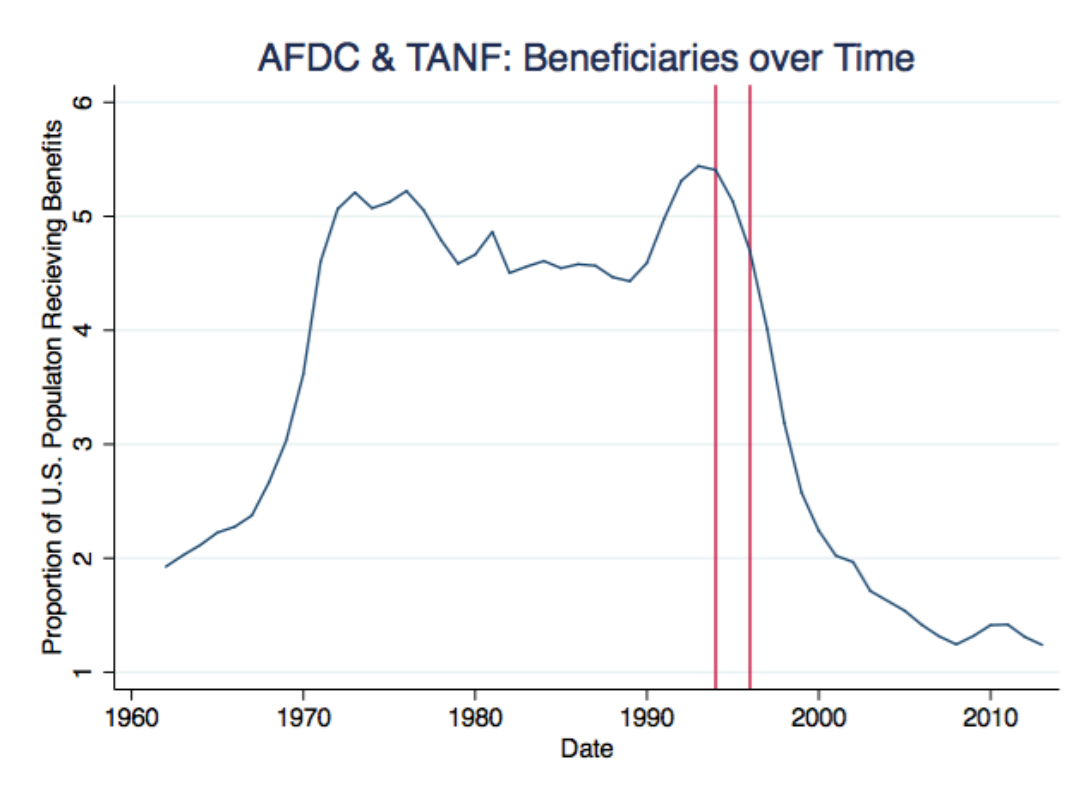
Figure 14: Share of population receiving AFDC/TANF benefits, 1963-2012. The first red line denotes 1994, when many states requested and were granted waivers to tighten welfare restrictiveness. The second red line marks 1996, when AFDC was replaced by TANF.
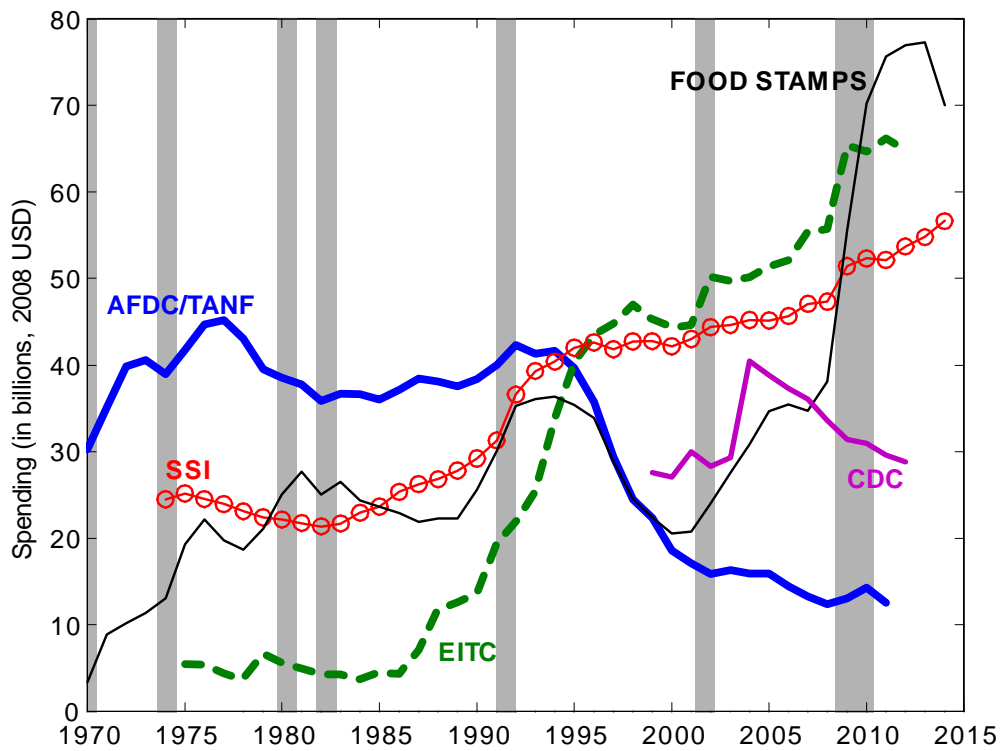
Figure 15: Welfare spending (in 2008 US$) for the Aid to Families with Dependent Children/Temporary Assistance for Needy Families (AFDC/TANF) program, which provides cash assistance to poor families with dependent children; the Supplemental Security Income program (SSI), which pays cash to low-income people disabilities or over 65; the Earned Income Tax Credit (EITC), which provides a tax credit to low-to-middle income families; the Child Tax Credit (CTC), which gives tax relief for low-to-middle income families with children, and food stamps.

Figure 16: Median real income per household (in thousands of 2010 US$, right scale) and fraction of nonparticipants who report "Not wanting a job" (left scale), 1976-2010.

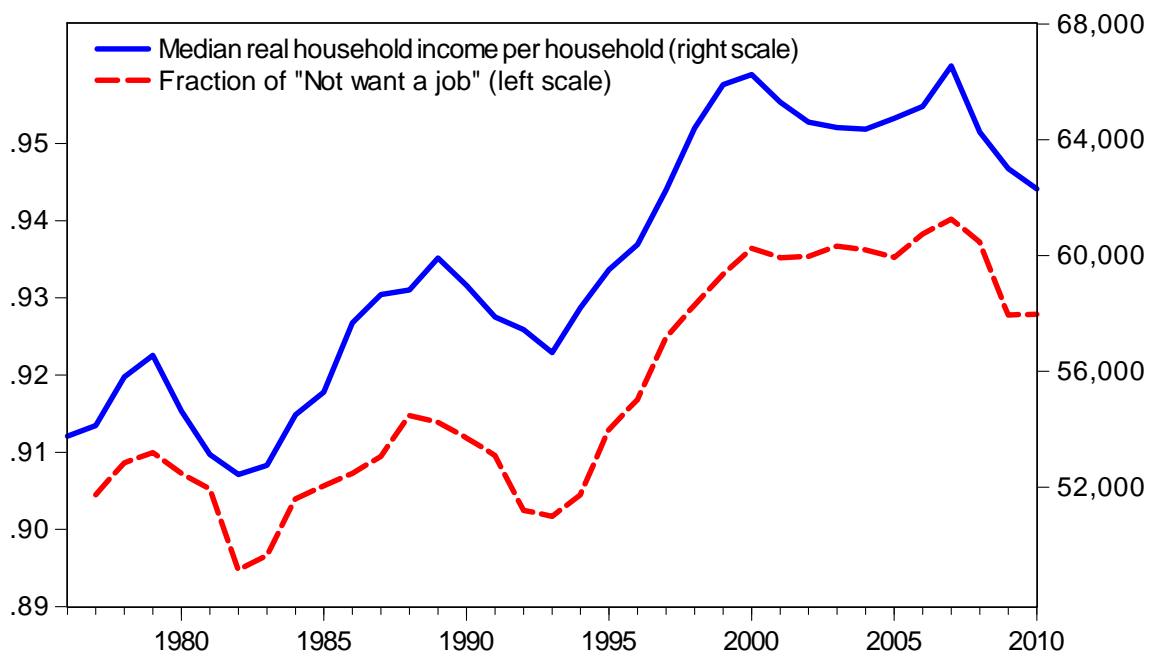**Table 1a: Transition rates out of Nonparticipation (N) for "want a job" (M) and "not want a job" (I)**

	Transitions NU		Transitions NE	
	MU	**IU**	**ME**	**IE**
	0.47	0.01	0.15	0.04

Note: Average monthly transition rates computed over 1994-2010. I denotes being an inactive ("not want a job") nonparticipant, M denotes being a marginal ("want a job") nonparticipant, E denotes being employed and U denotes being unemployed.

Table 1b: Transition rates of labor force entrants

Transitions	UN (UM+UI)	EN (EM+EI)	UE	EU
Former M	.44 (.33+.11)	.16 (.08+.09)	.20	.08
Former I	.57 (.25+.32)	.27 (.03+.24)	.22	.03
Other	.19 (.13+.06)	.02 (.01+.01)	.27	.01

Note: Average monthly transition rates computed over 1994-2010. "Former M" refers to a participant who was a marginal ("want a job") nonparticipant one month ago, "Former" I refers to a participant who was an inactive ("not want a job") nonparticipant one month ago, "Other" refers to other labor force participants.

Table 2: Variance decomposition of the share of "want a job" nonparticipants

	Transitions IM	Transitions MI	Transitions out of U	Transitions out of E	Transitions out of M	Transitions out of I
	IM	**MI**	**UE+UI+UM**	**EU+EI+EM**	**MU+ME**	**IU+IE**
Aggregate	0.47	0.27	0.09	0.13	0.03	0.01
Less than 25	0.64	0.13	0.01	0.11	-0.05	0.16

Note: Variance decomposition computed over 1994-2010. I denotes being an inactive ("not want a job") nonparticipant, M denotes being a marginal ("want a job") nonparticipant, E denotes being employed and U denotes being unemployed. The row "Aggregate" reports the result of the variance decomposition for all individuals aged over 16. The row "Less than 25" reports the result of the variance decomposition for all individuals aged between 16 and 25.

Table 3: Coefficient estimates

		Aggregate	Females 25-55	Young 16-24
Disabled		-17.2***	-13.9***	-6.4
		(11.9)	(7.1)	(1.2)
On welfare		17.5***	22.9***	14.4*
		(4.9)	(5.2)	(1.9)
Individual income	Social insurance	-0.7***	-0.6***	-1.5***
		(9.6)	(5.1)	(2.9)
	Welfare income	0.1	-1.0	1.4
		(0.1)	(1.3)	(0.6)
Family income	Earnings	-4.5***	-4.0***	-3.9***
		(10.7)	(6.6)	(4.8)
	Social transfers	-2.07***	-4.4***	-0.5
		(3.2)	(3.5)	(0.4)
Asset income		-3.8	-0.7	-0.9
		(0.9)	(0.9)	(0.9)
Taxes		8.3***	4.5*	5.9
		(3.7)	(1.9)	(1.1)
Married		-6.3***	-8.3***	-4.2***
		(15.6)	(14.1)	(4.0)
Nb of children		-0.1	-0.1	-0.4**
		(0.9)	(0.6)	(2.1)
Demographic controls		Yes	Yes	Yes
Year dummies		Yes	Yes	Yes
Nb. Obs.		65,586	31,960	23,899

Note: The estimation period is 1988-2010. t-statistics are reported in parentheses. "Disabled" denotes the coefficient on a dummy equal to 1 when the individual receives disability insurance. "On welfare" " denotes the coefficient on a dummy equal to 1 when the individual receives welfare income. Demographic controls include age group, age, sex, education level, married or not, school status, position in household, and number of children.

Table 4: Actual and predicted change in the share of "want a job" nonparticipants

		Aggregate	Females 25-55	Young 16-24
Actual		-4.0	-4.4	-5.7
Predicted, total		-2.2	-2.7	-2.4
Predicted, detail				
Demographics		+0.6	+0.4	0.1
Individual income	Disability	-1.1	-1.4	-0.3
	Welfare	-1.5	-1.8	-1.6
Family income	Earnings	-0.5	-0.4	-0.7
	Social transfers	+0.3	+0.4	+0.2
Other		+0.0	+0.1	-0.1

Note: "Actual" denotes the observed decline in the share of "want a job" nonparticipants between 1994 and 2006, "Predicted" reports the decline in the share of "want a job" nonparticipants as predicted by the model (excluding time fixed effects). In the category "Individual income", "Disability" combines the effect coming from the disability dummy with the effect coming from changes in the level of social insurance income, and "Welfare" combines the effect coming from the welfare participation dummy with the effect coming from changes in the level welfare income.

Table 5: Difference in difference estimates of desire to work for women with and without children

	Married women	Single women
Policy change	EITC	AFDC/TANF
Source	Eissa and Hoynes (2004)	Mc Kernan et al. (2000) Eissa and Hoynes (1996)
γ	-2.3*** (2.6)	-3.6*** (10.3)
Demographic controls	Yes	Yes
Total decline	-3.2	-6.8
% explained	71%	52%

Note: The estimation period is 1988-2010. t-statistics are reported in parentheses. In the first column ("married women"), γ measures the relative change in desire to work for low-educated married women with children after the EITC 1993 reform. In the second column ("single women"), γ measures the relative change in desire to work for low-educated single women with children after the AFDC/TANF 1996 reform. Controls include age group, the number of children and an "in school" dummy. "Total decline" depicts the total decline between the post- and pre- reform sample period. "% explained" is the percentage of "total decline" attributed to the policy change.