

# **The Effects of Higher Minimum Wages on Welfare Reciprocity: Another Look**

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## I. INTRODUCTION

Recent studies suggest that welfare reform as well as a robust economy in the 1990s led to significant reductions in caseloads. Some policy makers have argued that a minimum wage increase is warranted to persuade welfare recipients to leave welfare for work. The Federal minimum wage was increased by 90 cents in two steps from \$4.25 to its current \$5.15 per hour beginning in September 1997. Senator Kennedy has proposed a \$1.50 increase in the federal minimum wage spread over three stages: (a) \$5.75 an hour beginning 60 days after the date of enactment; (b) \$6.25 an hour during the year beginning January 1, 2003; and, (c) \$6.65 an hour beginning January 1, 2004. Congressional Republicans have proposed a less progressive minimum wage increase--\$1 wage per hour increase spread over three years. Although, politicians have continuously increased the nominal minimum wage, there is no agreement as to whether increasing the minimum wage actually does increase employment of welfare recipients leading them to leave welfare altogether. In fact, some researchers believe that the opposite will occur--increasing the minimum wage would increase the number of welfare recipients. Given this disagreement and the purported adverse affect it has on teenagers and young adults, surprisingly few studies have focused on the effect of increasing the minimum wage on welfare reciprocity.<sup>1</sup>

Some economists and policy makers believe that a higher minimum wage will expand the welfare rolls because employers would hire fewer low-skilled workers. This perspective states that employers will find low-skilled workers too expensive and will, therefore, automate tasks previously done by low-skilled workers or assign them to more highly skilled workers. Recent research by the Employment Policies Institute contends that approximately 215,000 teen jobs disappeared following a 50-cent federal minimum wage increase in 1996 (EPI 1998).

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<sup>1</sup> Exceptions to this include: Nakosteen and Zimmer 1989; Martin and Giannaros 1990; Brandon 1995; and Page, Spetz, and Millar 1998; Turner 2001.

Given that employment is one of the main routes off welfare, this possible decline in low-skilled employment could reduce the number of welfare recipients able to find work and leave welfare.

On the other hand, proponents of a minimum wage increase argue that it would create an incentive for current welfare recipients to find work and leave welfare. Proponents also argue that higher minimum wages encourage single mothers *not* to take-up welfare, thus reducing welfare rolls. Some economists and policy makers contend that higher wages could make labor force participation worthwhile for welfare recipients that face fixed costs associated with work. The more formidable fixed costs associated with moving into the labor market include childcare and transportation. Pavetti (1993) found empirical evidence that some women wanted to make the transition from welfare to work, but felt that the wages were not high enough to cover the costs associated with work. She found that when welfare mothers took account of these additional expenses, many low-wage jobs did not pay enough for welfare recipients to leave welfare for the labor market. In response some progressive states like Oregon have passed significant increases in minimum wage levels in the hopes of making the transition from welfare-to-work more attractive for poor women.

Surprisingly, a scant amount of research has examined how changes in the state or federal minimum wage, i.e. mandated wage floors, affect welfare reciprocity. Two papers, one by Peter Brandon and the other by Marianne Page, Joanne Spetz, and Jane Millar, find that higher minimum wages are associated with higher welfare participation rates. Another paper by Mark Turner suggests the opposite--higher minimum wages are associated with lower welfare participation rates.

Brandon (1995), using the 1986, 1987, and 1988 SIPP panels, found that a higher minimum wage does not result in welfare recipients gaining employment and leaving welfare. Brandon, however, mistakenly includes 344 single mothers with on-going welfare spells, 35

percent of his sample, who had been on welfare for an indeterminate duration. Not knowing if these were protracted spells of welfare or if they were one of many short spells biases his estimates of exit rates. Unfortunately, the SIPP does not collect information on the timing and duration of any past use of public assistance. By not precisely controlling for spell duration, Brandon may underestimate the effect higher minimum wages have on welfare exit rates. Nevertheless, he finds that higher minimum wages prolong welfare dependency. His discrete hazard models control for individual-level characteristics (i.e., age, educational attainment, household transfer income, disability status, and family composition), state-level variables (i.e., state-specific minimum wage levels and AFDC benefit levels), and in some specifications, state and industry dummy variables. He also finds that among all working welfare mothers, those working in states with higher minimum wages work fewer hours and work shorter periods of time compared to working welfare mothers in states with lower minimum wages.

Page, Spetz, and Millar (1998), using state per capita welfare caseload and state and federal minimum wage data from 1981 to 1994, find that a 10 percent increase in the minimum wage is estimated to increase welfare caseloads by about 3.5 percent. These models control for state labor market conditions (average production wages, unemployment rate, population, gross state product), the state public assistance policies (AFDC and Food Stamp benefit levels, and whether the state provided AFDC to two-parent households), and state and time fixed effects.

In contrast to these earlier articles, Turner (2001) suggests that a minimum wage increase would reduce welfare participation. Turner's methodological approach differs from Brandon's in two ways: (1) he uses more recent SIPP surveys--the 1990 and 1991 SIPP data, and (2) he excludes right-censored observations in assessing whether variations in minimum wages affect welfare exits and re-entries. The Brandon paper includes some long spells—

spells lasting more than two years—but does not control for spell length, while Turner excludes on-going observations—thus many welfare recipients in long-term spells are not included in his analysis.

Given these conflicting viewpoints, more research about the effects of a higher minimum wage on welfare reciprocity is necessary. This paper intends to help fill this void in the literature. We use the Panel Study of Income Dynamics (PSID) to study transitions in and out of welfare participation. The PSID includes a measure of annual AFDC participation as well as a comprehensive set of individual demographic and family characteristics. As we use a longitudinal data set we are able to analyze the effect minimum wages have on AFDC participation over time. In our analytical data set respondents are followed for up to 13 years.

Politicians and policy analysts have attributed some of the recent reductions in welfare caseloads to historically low levels of unemployment and steady wage growth. Yet, until recently, these labor demand factors had received little attention in the literature. It is important that policy analysts as well as politicians understand the link between local labor market conditions and welfare utilization. This study takes account of local labor market conditions together with individual and family level characteristics and then computes the isolated effect of minimum wages on welfare participation.

## **II. Data Description**

To analyze the effect of the minimum wage on the welfare participation of single mothers in the AFDC welfare program we use a dataset extracted from the Panel Study of Income Dynamics (PSID).<sup>2</sup> The data is annual and the sample period for this study is 1979-1992.

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<sup>2</sup> The PSID is a longitudinal study of a representative sample of U.S. individuals (men, women, and children) and the family units in which they reside. The analytical dataset used in this study is a subset of the Public Release II Data.

The individuals in the sample are women that were ever observed to be single heads of families with children under 18 within the sample period.<sup>3</sup> Therefore, the sample consists of women that ever were – as far as family characteristics are concerned – eligible for receiving AFDC benefits while they were observed within the sample period. The information available in the PSID dataset about these women is annual and includes the basic individual and family characteristics, as well as the state of residence of the individual and the unemployment rate of the county of residence of the individual.

#### *Minimum Wages and Local Labor Market Conditions*

We combine the PSID data with information about the federal and the state minimum wages and the state average manufacturing wages in years 1978-1992 extracted from the U.S. Bureau of Labor Statistics web page. The source of the levels of the state maximum AFDC benefits between 1979 and 1992 is the Green Book 1992 published by the U.S. House of Representatives. These state-specific data have been merged to the original dataset on the basis of the information about the state of residence of the respondent at the time of the interview. The unemployment rate measured at the county level (based on the county of the residence of the respondent in the time of the interview) is available directly from the PSID dataset (for its sources – see PSID web page).

The key dependent variable of the analysis is whether the single mother - being a head of the family - *entered, is on, or exited welfare* – i.e. whether she started, continues in, or stopped receiving AFDC benefits.

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<sup>3</sup> The information about heads (and wives) of the families in the PSID dataset is much more detailed than that of other individuals. We restrict our analysis to the single mothers identified as heads of the families. Single mothers that form only sub-families within a bigger family unit are omitted from the analysis, as there is no information about the welfare participation of individuals other than the head of the family and the wife/husband.

As documented in the existing research literature, welfare mothers sometimes misreport the AFDC benefits as a part of the general concept of other welfare. Similar to the methods followed in the literature, we define the welfare participation of a single mother as an annual receipt of more than \$500 of either AFDC or other welfare reported.<sup>4</sup>

The key independent variable in answering the postulated research question is the *effective minimum wage*: There are two kinds of minimum wage legislature in the U.S., federal minimum wage and state minimum wage, imposed by the federal and state governments respectively. The higher of the two is the minimum wage that is binding for the employers in a particular state. As for the time dimension of the potential effect of the minimum wage: we assume that there is a process of adjustment in response to the change of the minimum wage that causes a lag in the change of the single mother's decision whether to participate or not in the welfare program. Due to the annual nature of the data and lags in response likely prompted by changes in policy, the effect of a minimum wage is assumed to be lagged by one year. Therefore the key independent variable is the effective minimum wage from the previous year.

### *CROSS-SECTIONAL ANALYSIS*

For the purpose of the static analysis we look at the observations in one particular year of all the single mothers who are heads of the households and therefore are, in principle (as far as family characteristics are concerned), eligible for AFDC benefits. Over the sample period (1979-1992) the variation of the effective minimum wage across the states in the U.S. differs substantially. Cross-state variation in effective minimum wage levels has a significant impact on our ability to statistically measure the correlation between minimum wage levels and welfare participation in

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<sup>4</sup> The information about the amount of welfare receipt before 1985 is available only for the head and wife together. However, as we identify and consider only the single-headed families (i.e. no wife/husband), the figure is compatible with the information about the welfare receipt by the head only, as available from 1985 onwards.

particular years. The problem that can arise in the cross-sectional estimation is that the binding minimum wage for the particular states the observed single mothers reside in will not have enough variation that would enable the estimation of the effect of the minimum wage on the welfare participation in a particular year. We choose as a representative year for the cross-sectional analysis 1992 because of the increased number of states with minimum wages above the federally mandated level.<sup>5</sup>

The cross-sectional dataset consists of 755 single mothers, all of which are – as far as the family characteristics are concerned – eligible for the receipt of AFDC benefits in 1992. Eligibility is defined as being a female head of household with resident children less than 18-years-old. Nearly 40 percent of respondents (223 single mothers) receive welfare. This sample has the following characteristics: almost 80 percent are nonwhite, over 30 percent do not have a high school degree, around 42 percent have a high school degree, and almost 26 percent have at least some college education. Over 90 percent have some work experience and almost 18 percent report having either a physical or mental disability.

Taking into account one-year lag in the minimum wage variable, the federal minimum wage in 1991 was \$3.80 (656 respondents from 37 states) and the bidding state minimum wage levels were: \$3.85 (2 respondents from Maine), \$4.25 (64 respondent from California, Connecticut, Iowa, Minnesota, and Washington), \$4.75 (11 respondents from Oregon), and \$4.85 (22 respondents from Washington, DC). The distribution of welfare participants and welfare non-participants by binding and non-binding minimum wage levels are illustrated in Figure 1. This graphs shows that in states with binding minimum wage levels (where the state minimum wage exceeded the federal minimum) 37 percent of eligible respondents were observed to be on welfare, while 28 percent of those residing in states without binding state minimum wages were

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<sup>5</sup> Seven states had minimum wage levels that were higher than the federal minimum of \$4.25.

on welfare. This simple univariate analysis does not account for any of the confounding factors that likely affect welfare participation. We use multivariate logit models and control for local labor market, individual, and family characteristics to isolate the effect of binding minimum wage levels on welfare participation.

The basic choice model of welfare participation posits that single mothers choose whether to participate by comparing utility on and off welfare. Multivariate logit models are used to estimate how higher minimum wages might influence the probability of receiving welfare. These models assume a latent variable structure of the form:

$$W_{ij}^* = \alpha L_j + \beta X_i + \xi_{ij}$$

where  $W_{ij}^*$  is the net benefit of receiving welfare. We observe that  $w_{ij}=1$  if  $W_{ij}>0$ , indicating individual  $i$  received welfare, otherwise  $w_{ij}=0$ .  $L_j$  is a vector of variables measuring the effective minimum wage lagged by 1-year, manufacturing wages, unemployment rates, and maximum welfare benefit levels for state  $j$ .  $X_i$  is a vector of variables measuring age, family structure, educational attainment, work experience, other family income, and lagged welfare participation. The term  $\xi_{ij}$  is an extreme value distribution error term. Single mother  $i$ 's probability of receiving welfare is  $P(w_{ij}=1)$ . Marginal effects for each explanatory variable are calculated by multiplying the regression coefficient by the probability density function evaluated at values for a reference individual defined in the accompanying tables.

The empirical results shown in Table 2 suggest that higher minimum wages have a statistically significant and qualitatively non-trivial negative effect on welfare participation. Moreover, our estimates for other independent variables meet expectations. For instance, respondents with higher levels of educational attainment are estimated to have a lower likelihood of being welfare recipients. Consistent with other empirical research, we find that the more children a mother has the greater probability of being a welfare recipient. And as expected, generous welfare

benefit levels are positively correlated with a higher incidence of welfare participation; living in a state with a weak labor market—high unemployment rates—increases single mothers' chances of being welfare participants; higher welfare participation rates are associated with previous spells of welfare participation; and, mother's employment during the previous year is associated with lower welfare participation rates.

To facilitate the interpretation of the empirical results, we calculated the estimated probabilities of welfare participation at two different minimum wage levels by past welfare participation, and work experience for a reference individual. The reference individuals were given the following characteristics: 7% county unemployment rate, \$330 monthly AFDC benefits, \$10 state average manufacturing wage rates, high school degree, two children, 35 years-old, \$3,000 in other family income, not disabled, and nonwhite. Table 3 shows the predicted welfare participation probabilities at an initial minimum wage level, evaluated at \$3.80, and then evaluated after a 10 percent minimum wage increase. In Table 3, six out of the eight types of reference individuals evaluated are estimated to have a lower probability of welfare participation following a hypothetical minimum wage increase. In general, reference individuals with no work experience are less likely to be welfare participants following a minimum wage increase. For example, a 10 percent minimum wage increase is estimated to reduce the estimated probability welfare participation from 20.5 percent to 7.5 percent for respondents who had not received welfare the previous year, and had no work experience. Another commonality is that reference individuals who were employed during the previous year are less likely to be on welfare following a minimum wage increase. For instance, the reference individual with a minimum of 10-years of work experience who was employed and had received welfare during the previous year, is estimated to decrease the likelihood of welfare participation from 61.1 percent to 48.4 percent following a hypothetical 10 percent minimum wage increase. The two

exceptional cases occurred with reference individuals who were not employed last year but had more than 10-years of work experience. These reference individuals have an increased likelihood of welfare participation following a minimum wage increase. For instance, a reference individual with these characteristics who had not received welfare benefits during the previous year is estimated to increase the likelihood of welfare participation from 13.9 percent to 23.4 percent following a hypothetical 10-percent minimum wage increase. An otherwise similar reference individual that had received welfare benefits during the previous year has an increased incidence of welfare participation, from 75.6 percent to 82.7 percent, following a hypothetical 10-percent minimum wage increase.

#### *DYNAMIC ANALYSIS - EXIT MODELS*

To better identify the correlation and possible causal relationship between welfare participation and minimum wage levels, we next turn to a dynamic analyses using discrete hazard models. The dataset for the dynamic analysis is comprised of spells of subsequent years in which a single mother is observed to enter, stay in and exit the welfare program. As the models employed suggest, we include both the completed spells – spells where both entry and exit are observed - as well as the right-censored spells - spells where only entry is observed and the single mother is still on the welfare in the last year for which the information about her is available. The unit of observation for these models is a person-year.

Even though we use the monetary variables over the time, we assume away the effects of the inflation and do not deflate them. The reason is the following: to be consistent in deflating all the nominal variables would require deflating also the values of the minimum wage. However, doing so would mean to introduce an additional variation to the minimum wage other than the one arising from the change in the legislature based on the change in the policy. As

the primary interest of the analysis is to evaluate the effect of the minimum wage as an available policy tool, this would obscure the results and complicate their interpretation. Therefore, we leave the nominal variables as they are. The person-year structure of the data implies that the values for each observation are consistent contemporaneously.

In the interview-based datasets there is always a problem with missing variables – we exclude the observations that do not include all the information necessary for the presented analysis. If the observations with missing variables are not random, omitting those observations/individuals could, in principle, introduce a selection bias. However, there is no reason to believe that this is the case.

***Description of Welfare Spells***--There are 775 spells in total used for the estimation of the exit model. The length of the spell ranges from 1 to 14 years with the majority of 340 one-year and 155 two-year spells. For some single mother we observe only one spell, while other single mothers have multiple welfare spells. Out of the 775 spells, 480 (over 60 %) are complete and 295 (almost 40%) are right censored. There are 634 single mothers (503 of non-white ethnic origin, 131 white) for which at least one (complete or right censored) but potentially multiple spells are observed. There are 516 single mothers with only 1 spell observed, 98 single mothers with 2 spells, 18 single mothers with 3 spells and 1 with 4 and 1 with 5 spells observed. There are 619 spells of single mothers with non-white ethnic origin and 156 spells of white single mothers. Figure 2 illustrates spell length broken down by the ethnic origin. Slightly fewer non-white respondents (63.6 percent) had welfare spells that lasted less than two years compared to white respondents (64.7 percent). There were noticeable differences in welfare spell length by race when examining long-term welfare recipients. Only 6.4 percent of white respondents had welfare spells that last seven or more years, while 11.5 percent of non-white respondents had comparable welfare spells.

Although we do not include the left-censored spells into the analysis (we do not know the beginning of those spells), we use the information in identifying the number of times a single mother was previously on the welfare. There are 532 “first time observed” spells (i.e. no spell observed prior to this spell), 195 spells observed as second, 40 as third, 6 fourth and 2 fifth spell in the order as observed for a particular single mother.

The dependent variable is dichotomous that is equal to 1 if the respondent is on welfare, and is 0 if she is not observed to be on welfare in a particular year. The independent variables are basically the same as in the static model – see the variable description in the Appendix for further information.

**Dynamic Analysis** -- The Minimum wage level’s influence on the decision to leave welfare can be estimated using discrete time hazard models. These models exclude respondents who had on-going welfare spells at the beginning of the survey (left-censored observations). Such models estimate the probability that an event (in this case, welfare exit) occurs at a specific time, given that it has not already occurred. Using a standard logistic parameterization of the hazard rate, we can express the probability that a single mother stops receiving welfare conditional on receipt of welfare during the previous year, on local labor market conditions, and on her demographic characteristics as:

$$Exit(t) = \Pr[w_{ijt} \mid w_{ij(t-1)} = 1; L_{jt}, X_{it}] = \frac{e^{\alpha L_{jt} + \beta X_{it}}}{1 + e^{\alpha L_{jt} + \beta X_{it}}}$$

where  $Exit(t)$  is the probability of welfare nonparticipation in month  $t$ ,  $\alpha$  and  $\beta$  are vectors of coefficients to be estimated, and  $L_{jt}$  and  $X_{it}$  are the full set of explanatory variables, similar to the static model above. In contrast to the static model, this specification allows time-variant factors to influence a single mothers’ welfare participation decision over time. The unit of observation is a person-year. Each single mother who begins a welfare spell remain at-risk of exiting welfare

until one of the following happens: getting married, no longer having resident children less than 18, or leaving welfare due to other reasons. These discrete time hazards models are estimated by compiling all “at-risk” person-years and running a standard logit regression. Similar to the static model above, explanatory variables include measures of the local labor market (i.e., effective minimum wage lagged by 1-year, state manufacturing wages, unemployment rates, and AFDC benefit levels), and respondents’ demographic characteristics (i.e., age, family structure, educational attainment, work experience, and other family income and other program participation parameters). All time-varying variables take on their appropriate year  $t$  values; the minimum wage variable is lagged by one year.

Empirical evidence shown in Table 4 suggests that a hypothetical 10 percent minimum wage increase would boost welfare exits. The coefficient associated with the effective minimum wage is positive and statistically significant at the 1-percent level. Moreover, the estimated coefficients for other independent variables “made sense.” For instance, respondents with higher levels of educational attainment are estimated to have a higher incidence of welfare exits. Consistent with other empirical research, we find that the more children a mother has the less likely she is to experience a welfare exit. And as expected, living in a state with high levels of unemployment leads to a reduced likelihood of exiting welfare.

To facilitate the interpretation of the empirical results, we calculated the estimated probabilities of exiting welfare at two different minimum wage levels by previous employment status (not employed vs. employed), length of welfare spell (1-2 year vs. 7+ year welfare spell), and work experience (no work experience vs. 10+ years of work experience). The reference individuals had same base-line characteristics as those specified in the static models above. Table 5 shows the predicted welfare exit probabilities at an initial minimum wage level, evaluated at \$3.80, and then evaluated after a 10 percent minimum wage increase, evaluated at

\$4.18. In Table 5, all of the eight types of reference individuals evaluated are estimated to have a higher probability of welfare exiting welfare following a hypothetical minimum wage increase. In general, long-term welfare recipients, those with spells lasting at least 7-years, are noticeably more likely to exit welfare than short-term recipients. For example, a hypothetical 10 percent minimum wage increase is estimated to increase welfare exit rates by 7.8 percentage points for short-term welfare recipients, while long-term welfare recipients are 15.7 percentage points more likely to leave.<sup>6</sup> Another commonality is that reference individuals who were employed during the previous year are more likely to leave welfare following a minimum wage increase. For instance, employed reference individual are estimated to increase the likelihood of exiting welfare from 31.6 percent to 42.2 percent following a hypothetical 10-percent minimum wage hike. In comparison, non-employed reference individuals are predicted to increase their chances of exiting welfare from 23.8 percent to 39.5 percent.<sup>7</sup>

Women leave welfare for a variety of reasons, including work, marriage, and loss of eligibility through a youngest child turning 18 or leaving the household. Given the emphasis on women going to work under TANF, we are particularly interested in estimating the effect of minimum wages on leaving welfare for work versus leaving welfare for other reasons.

**Competing Risk Models**—For the purposes of this analysis we model two means by which a welfare spell can end. First, a spell can end because of an increase in earned income. A welfare spell is coded as ending due to an increase in earnings if during the year following the end of the welfare spell, earnings increased by more than \$500. Secondly, a spell can end because of some reason other than an earnings increase. Other studies typically include

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<sup>6</sup> The reference individuals described in this example did not work during the previous year and had no work experience. The impact of higher minimum wages on welfare exit rates yield consistent differences in magnitude by the length of spell length for varying intensities of work experience and employment status.

<sup>7</sup> The reference individuals described in this example were long-term welfare recipients and had no prior work experience.

marriage as a route off of welfare. However, there are not enough marriage exits in the PSID to adequately estimate the influence of minimum wages on welfare exits due to marriage.

Competing risk models are used to identify how, and perhaps why, respondents exit welfare in response to a minimum wage hike. Results from competing risk models are presented by simulating the effect of a 10 percent minimum wage increase would have on the probability of being in each of the following states: an earnings-related welfare exit, other type of welfare exit, and no welfare exit. The probability of being in each of these states is first calculated at an initial level, \$3.80. The probabilities are re-estimated following a 10 percent minimum wage increase, \$4.18. Simulations in Table 6 show that a higher minimum wage would have a qualitatively and statistically significant effect on welfare exits attributable to higher earnings, particularly for long-term welfare recipients. For instance, long-term welfare recipients are predicted to increase the likelihood of an earnings-related welfare exit by 10.8 percentage points. In comparison, an otherwise similar short-term respondent is 5.1 percentage points more likely to have an earnings-related welfare exit following a hypothetical 10 percent minimum wage increase.<sup>8</sup> In short, these models suggest that a higher minimum wage would increase the frequency of welfare exits that result in higher earnings.

### **III. Conclusion**

This paper has investigated the effect of high minimum wages on welfare participation using micro-data from the Panel Study of Income Dynamics. Our empirical results suggest that an increase in the minimum wage would reduce welfare participation. The qualitatively and statistically significant reductions in welfare caseloads are validated by results that suggest that welfare leavers earn more. In contrast to earlier studies by Peter Brandon and Mark Turner we

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<sup>8</sup> The reference individuals described in this example were employed during the previous year and had no prior work experience.

were able to distinguish between short and long-term welfare recipients. In contrast to our initial hypothesis, we found consistent empirical evidence that long-term welfare recipients benefited from higher minimum wages by more than short-term welfare recipients.

Unfortunately, the period of analysis is pre-welfare reform. Some policy makers and minimum wage advocates may use this study as evidence that the proposed minimum wage will further reduce welfare caseloads today. There are at least two reasons why these predictions may not hold. First, welfare reform may have significantly changed how single mothers respond to local labor market conditions. For example, TANF requires welfare recipients to actively seek employment and imposes sanctions for noncompliance while the old AFDC program did not. In addition, TANF mandates time limits on welfare receipt; the old AFDC program did not. These two policy changes among others implemented under welfare reform may have weakened the inducement that higher minimum wages have on welfare-to-work transitions. Second, under TANF welfare caseloads have fallen dramatically, likely leaving single mothers less responsive to higher minimum wages on welfare. Regardless of our academic reservations, policy makers should consider welfare recipients when deciding whether and by how much to increase the minimum wage.

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**Table 1. Variable Definitions and Basic Statistics**

<b>Variable Name</b>	<b>Definition</b>	<b>Mean (Standard Deviation)</b>
Welfare Participation	1 if welfare participant, 0 otherwise	0.295 (0.457)
Welfare participation last year	1 if welfare participant during the previous year, 0 otherwise	0.285 (0.452)
Lagged minimum wage	Effective minimum wage lagged by one year	3.883 (0.236)
Number of children	The number of resident children	1.989 (1.128)
Other family income	Family income minus transfer payments and mother's earnings	2,908.756 (9,479.798)
Work experience	Years of work experience	10.525 (9.874)
Nonwhite	1 if nonwhite (black, Hispanic, or other), 0 otherwise	0.784 (0.412)
Disabled	1 if physically or mentally disabled, 0 otherwise	0.176 (0.381)
Worked last year	1 if worked during the previous year, 0 otherwise	0.687 (0.464)
Unemployment rate	County unemployment rate	6.903 (2.022)
AFDC benefit levels	Maximum state AFDC benefit levels for a family of 3	328.163 (143.407)
Manufacturing wage rate	Average state manufacturing wage rates	9.623 (1.073)
Number of Observations		755

Note: Basic statistics in 1992.

**Table 2. Effect of Lagged Minimum Wages on Welfare Participation**

<b>Independent Variable</b>	<b>Marginal Effect (Standard Error)</b>
Lagged minimum wage	-3.045 (1.688)
Previous welfare participation	5.069 (4.629)
Previous welfare participation*Lagged minimum wage	-0.555 (1.193)
Work experience last year	8.812 (4.254)
Work experience last year*Lagged minimum wage	-2.498 (1.099)
Work experience: 1-5 years <sup>1</sup>	-19.094 (7.946)
Work experience: 5-10 years <sup>1</sup>	-19.217 (7.657)
Work experience: 10+ years <sup>1</sup>	-18.458 (7.056)
Work experience: 1-5 years*Lagged minimum wage <sup>2</sup>	5.105 (2.053)
Work experience: 5- 10 years*Lagged minimum wage <sup>2</sup>	4.856 (1.971)
Work experience: 10+ years*Lagged minimum wage <sup>2</sup>	4.733 (1.819)
Educational attainment: High school dropout <sup>3</sup>	0.723 (0.557)
Educational attainment: High school graduate <sup>3</sup>	0.669 (0.560)
Educational attainment: Some college <sup>3</sup>	0.076 (0.598)
Other family income	9.41e-7 (1.04e-5)
Nonwhite	-0.259 (0.302)
Age	-.0109 (0.014)
Disabled	0.470 (0.327)
Number of children	0.270 (0.104)
Unemployment rate	0.064 (0.060)
Maximum AFDC benefits	2.87e-3 (1.32e-3)
State Manufacturing Wage	-0.160 (0.164)
Number of Observations = 755	Pseudo R2 = 0.4315

Note: Cross-sectional data in 1992.

Logit model.

<sup>1</sup>No work experience

<sup>2</sup>No work experience\*Lagged minimum wage

<sup>3</sup>Educational attainment: Did not enter high school

**Table 3. Predicted Welfare Participation Rates Resulting from a Minimum Wage Increase**

Minimum Wage	Employment Status Last Year = Not Employed			
	Not Welfare Participant Last Year		Welfare Participant Last Year	
	<u>No Work</u>	<u>Work Experience</u>	<u>No Work</u>	<u>Work Experience</u>
	<u>Experience</u>	<u>&gt; 10 years</u>	<u>Experience</u>	<u>&gt; 10 years</u>
<i>Initial level</i>	0.205	0.139	0.833	0.756
<i>10% increase</i>	0.075	0.234	0.559	0.827
	Employment Status Last Year = Employed			
	Not Welfare Participant Last Year		Welfare Participant Last Year	
	<u>No Work</u>	<u>Work Experience &gt;</u>	<u>No Work</u>	<u>Work Experience</u>
	<u>Experience</u>	<u>10 years</u>	<u>Experience</u>	<u>&gt; 10 years</u>
<i>Initial level</i>	0.151	0.075	0.774	0.611
<i>10% increase</i>	0.131	0.057	0.701	0.484

**Definitions:**

Welfare participation = welfare status in year=t-1

Employment status last year = employment status in year= t-1

Work experience = cumulative work experience through year =t-2 (excluding year=t-1)

These probabilities are calculated using a reference individual with the following characteristics: 7% county unemployment rate, \$330 monthly AFDC benefits, \$10 state average manufacturing wage rates, high school degree, two children, 35 years-old, \$3,000 in other family income, not disabled, nonwhite, and no past welfare participation. The initial minimum wage level is \$3.80, while the new minimum wage (resulting from a 10% minimum wage increase) is \$4.18.

**Table 4. Effect of Lagged Minimum Wages on Exiting Welfare**

<b>Independent Variable</b>	<b>Marginal Effect (Standard Error)</b>
Lagged minimum wage	0.180 ((0.063)
Welfare spell: 3-6 years <sup>1</sup>	0.159 (0.191)
Welfare spell: 7 or more years <sup>1</sup>	-0.266 (0.366)
Welfare spell: 3-6 years*Lagged minimum wage <sup>2</sup>	-0.011 (0.056)
Welfare spell: 7 or more years*Lagged minimum wage <sup>2</sup>	0.088 (0.105)
Worked last year	0.147 (0.169)
Worked last year*Lagged minimum wage	-0.017 (0.049)
Work experience: 1-5 years <sup>3</sup>	0.298 (0.234)
Work experience: 5- 10 years <sup>3</sup>	0.452 (0.253)
Work experience: 10+ years <sup>3</sup>	0.375 (0.247)
Work experience: 1-5 years*Lagged minimum wage <sup>4</sup>	-0.086 (0.068)
Work experience: 5- 10 years*Lagged minimum wage <sup>4</sup>	-0.117 (0.074)
Work experience: 10+ years*Lagged minimum wage <sup>4</sup>	-0.098 (0.072)
Educational attainment: High school dropout <sup>5</sup>	-0.011 (0.031)
Educational attainment: High school graduate <sup>5</sup>	0.045 (0.031)
Educational attainment: Some college <sup>5</sup>	0.031 (0.034)
Other family income	2.87e-6 (1.43e-6)
Nonwhite	-0.016 (0.020)
Age	2.16e-3 (9.38e-4)
Disabled	-0.017 (0.020)
Number of children	-0.032 (6.58e-3)
Unemployment rate	-7.43e-3 (3.08e-3)
Maximum AFDC benefits	-6.96e-5 (7.43e-5)
State Manufacturing Wage	-6.98e-3 (7.33e-3)
Number of Observations = 2,564	Pseudo R <sup>2</sup> = 0.0705

There are 2,564 person-year observations.

<sup>1</sup>Length of welfare spell: 1-2 years

<sup>2</sup>Length of welfare spell: 1-2 years\*Lagged minimum wage

<sup>3</sup>No work experience

<sup>4</sup>No work experience\*Lagged minimum wage

<sup>5</sup>Educational attainment: Did not enter high school

**Table 5. Predicted Probability of Exiting Welfare Resulting from a Minimum Wage Increase**

Minimum Wage	Employment Status Last Year = Not Employed			
	Welfare spell: 1-2 years		Welfare spell: 7+ years	
	<u>No Work</u>	<u>Work Experience</u>	<u>No Work</u>	<u>Work Experience</u>
	<u>Experience</u>	<u>&gt; 10 yrs</u>	<u>Experience</u>	<u>&gt; 10 yrs</u>
Initial level	0.158	0.161	0.238	0.241
10% increase	0.236	0.193	0.395	0.337
	Employment Status Last Year = Employed			
	Welfare spell: 1-2 years		Welfare spell: 7+ years	
	<u>No Work</u>	<u>Work</u>	<u>No Work</u>	<u>Work Experience</u>
	<u>Experience</u>	<u>Experience &gt;</u>	<u>Experience</u>	<u>&gt; 10 years</u>
		<u>10 yrs</u>		
Initial level	0.218	0.257	0.316	0.365
10% increase	0.256	0.293	0.422	0.467

**Definitions:**

Welfare spell = length of welfare spells through year=t-1

Employment status last year = employment status in year= t-1

Work experience = cumulative work experience through year =t-2 (excluding year=t-1)

There are 2,564 person-year observations.

These probabilities are calculated using a reference individual with the following characteristics: 7% county unemployment rate, \$330 monthly AFDC benefits, \$10 state average manufacturing wage rates, high school degree, two children, 35 years-old, \$3,000 in other family income, not disabled, and nonwhite. The initial minimum wage level is \$3.80, while the new minimum wage (resulting from a 10% minimum wage increase) is \$4.18.

**Table 6. Predicted Probability of Exit by Type Resulting from a Minimum Wage Increase**

Minimum Wage	Employment Status Last Year = Not Employed			
	Welfare spell: 1-2 years		Welfare spell: 7+ years	
	No Work	Work	No Work	Work
	Experience	Experience >	Experience	Experience >
		10 yrs		10 yrs
Initial level	Work=0.041 Other=0.114	Work=0.079 Other=0.071	Work=0.068 Other=0.164	Work=0.128 Other=0.102
10% increase	Work=0.060 Other=0.170	Work=0.086 Other=0.090	Work=0.108 Other=0.278	Work=0.161 Other=0.155
	Employment Status Last Year = Employed			
	Welfare spell: 1-2 years		Welfare spell: 7+ years	
	No Work	Work	No Work	Work
	Experience	Experience >	Experience	Experience >
		10 yrs		10 yrs
Initial level	Work=0.153 Other=0.073	Work=0.192 Other=0.078	Work=0.237 Other=0.099	Work=0.288 Other=0.103
10% increase	Work=0.204 Other=0.073	Work=0.208 Other=0.090	Work=0.345 Other=0.113	Work=0.346 Other=0.137

**Definitions:**

Welfare spell = length of welfare spells through year=t-1

Employment status last year = employment status in year= t-1

Work experience = cumulative work experience through year =t-2 (excluding year=t-1)

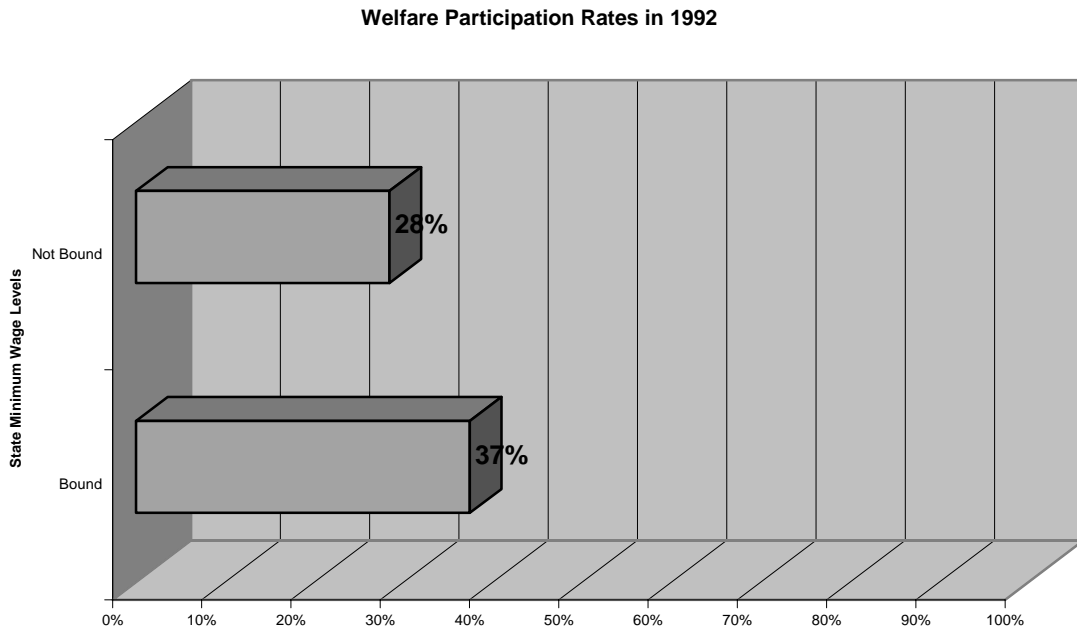
Work = welfare exit where earnings increase by at least \$500

Other = welfare exit where earnings did not increase by at least \$500

There are 2,564 person-year observations. Pseudo R<sup>2</sup> is 0.0795. The omitted outcome is continued welfare participation.

These probabilities are calculated using a reference individual with the following characteristics: 7% county unemployment rate, \$330 monthly AFDC benefits, \$10 state average manufacturing wage rates, high school degree, two children, 35 years-old, \$3,000 in other family income, not disabled, and nonwhite. The initial minimum wage level is \$3.80, while the new minimum wage (resulting from a 10% minimum wage increase) is \$4.18.

**Figure 1.**



In 1992, there were 755 eligible single mothers in the PSID analytical dataset. On average, 29.5 percent were observed receiving welfare benefits.

**Figure 2.**

