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Dynamics of Minimum Wage Job Spells

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I. Introduction

Most of the literature on the minimum wage have been based on aggregate time-series data (e.g., Gramlich 1976 ; Mincer 1976) and to a lesser extent on aggregate cross-section (e.g., Welch and Cunningham 1978 ; Ehrenburg and Marcus 1979). This paper follows the work experience of those who first took a minimum wage job in 1983. Using a hazard model the risk of a good and a bad exit from this job are then estimated.

• A Job Duration Model for Minimum Wage Job Holders

Sample models of job hiring assume a competitive labor market with homogenous labor. All holders of minimum wage jobs are not equally productive. Workers on such jobs are heterogenous with respect to innate ability but still receive the same

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legally specified minimum wage rate. In order to achieve the same level of productivity, workers with less ability must put forth more effort when the minimum wage is imposed on the labor market.[1] This implies that the spike at the employment at the minimum wage level in most wage distribution studies contains economic rent for at least some minimum wage workers.[2] Thes potential economic rent should affect the duration of minimum wage job spells and their outcomes.

I basically assume that minimum wage workers are engaged in on-the-job search. Assuming abler workers have higher reservation wages, minimum wage workers with larger ecomomic rents should be more likely to be laid off or discharged, but less likely to quit. For workers who face discharge or layoff, the threat of job loss could play an important role in search decisions while employed. Some of these workers may choose to move on to lower wage jobs in the uncovered sector when they face layoffs before they are disemployed. Thus their employmemt status over time should be affected by the value of their productivity compared to the minimum wage over time. Workers who successfully overcome the minimum wage barrier to better employmint will either move on to better paying jobs or be promoted to a higher wage rate by their original employer.

The exit behavior of minimum wage workers should be affected by the reservation wage, which depends on market opportunities summarized in the job offer rate and supply side factors. Market opportunities also affect exit behavior from minimum wage jobs. The tighter the local labor markets, the more likely minimum wage workers are to exit to better paying jobs. On the supply side, a minimum wage worker's reservation wage should be lower than the legal minimum wage by varying amount. The difference should depend upon human capital and demographic variables.

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1) See Pettingill (1981).

2) Holtzer, Katz, and Krueger examined whether jobs that pay the minimum wage face an excess supply of labor as measured by the number of job applicants. The results indicate that openings for jobs that pay the minimum wage attract significantly more job applications than jobs that pay either more or less than the minimum wage. This spilke in the job application rate distribution indicates that ex-ante rents generated for employees by a market-level minimum wage are not completely dissipated by employer actions such as reducing expenditures on fringe benefits, or on-the-job training, or worsening working conditions, or requiring a faster work pace. See Holzer, Katz, and Krueger (1988).

Workers whose marginal product is relatively low when hired at the minimum wage job are more likely to face unemployment or to withdraw from the labor force over time.

Given our data, we estimate a reduced form proportional hazard function. I assume that the reservation wage is a function of human capital variables, demographic variables, job availability, and the current duration of the minimum wage job spell.

• Specification of the Hazard Model

The hazard rate is the conditional probability of escaping a minimum wage job of duration t, given that the spell has lasted until time t. The hazard rate is expressed as:

$$\Phi(t) = \frac{f(t)}{1-F(t)}$$

where f(t) and F(t) are the respective density and distribution function of time to exit. The hazard rate, Φ(t), can be expressed using the proportional hazard form as follows: [3]

$$\Phi(t) = \exp[X_t'\beta]\cdot\exp[t\alpha_1 + t^2\alpha_2]\cdot\exp[\varepsilon]$$

The hazard rate defined above is modeled as a function of a vector of exognous variables that are assumed to account for heterogeneity in the reservation wage and offer rate, elapsed duration t, and an individual-specific, unobservable random component. The first component is a vector of exogenous variables, including demographic variables, human capital variables, and job availability. The explanatory variables are entered linearly into an index $X_t'\beta$. The second component examines the time profile of escape from minimum wage jobs after controlling for individual differences in the propensity to escape. I use a quadratic form-- namely, exp [$t\alpha_1$ + t

3) In view of the nonnegativity of Φ(t), the natural form for Φ(t) is the exponential.

$^2\alpha_2$]-- to test for the pattern of time dependence suggested by table analysis.[4] This might proxy a signalling effect on the job offer which we can not measure directly. The parameter α_1 is expected to be positive while α_2 should be negative if the time profile of the failure rate is concave. The third component controls the unmeasured error (for example, ability and mobility). This unmeasured heterogeneity differs among individuals and may also differ over time for the same person.[5] A log-normality assumption is employed to integrate this heterogeneity out of the hazard model.

I have identified six possible exit routes from minimum wage jobs according to the individual's employment status and wage rate after the end of each minimum wage spell. For ease of calculation, I reduce the six exits to two: "good exits" (exits to higher wage jobs, getting a higher wage with the same employer, or withdrawal from the labor force and return to school within a specified period)[6] and "bad exits" (exits to lower wage jobs, unemployment, or dropping out of the labor force but mot to return to school within 12 months following the end of the minimum wage spell).[7]

● Estimation of the Univariate Interval Hazard Model

The probability of good exits is:

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4) I found that the time-discrete hazard rate increases until month 4 and decreases after that. Therefore, the time dependence is assumed to be quadratically concave.

5) The control of the unmeasured heterogeneity improve the derivation of the spell distribution. Ignoring heterogeneity when it is present results in downward-biased estimates of duration dependence effects,. See Hecman and Borjas (1980) for details.

6) It is well known that an increase in the minimum wage tends to increase school enrollment. See Matitila (1978) or Ehrenberg and Marcus (1980). In the present study, the workers counted as returning to school fall into two groups: (a) those who continued their education beyond high school for at least 8 months within the 12 months following the end of the minimum wage spell, and (b) those who held minimum wage jobs at least for 12 months and returned to school no more than four months before the end of the minimum wage spell and then withdrew from the labor force later on. The former accounts for 7% of the sample and the latter accounts for 4% of the sample used for the hazard estimation.

7) Cross-tabular analysis shows that those workers who withdraw from the labor force receive wage offers 40 cents lower on average than those who were unemployed when they reentered the labor market. This seems to support the hypothesis that minimum wage workers who withdraw from the labor force are discouraged in job searching.

$$L_1(t_1, t_2) = \int_{-\infty}^{\infty} \int_{t_1}^{t_2} f_1(t \mid \varepsilon_1) \cdot g(\varepsilon_1) dt \; d\varepsilon_1$$ [8]

The probability of bad exits is:

$$L_1(t_1, t_2) = \int_{-\infty}^{\infty} \int_{t_1}^{t_2} f_1(t \mid \varepsilon_2) \cdot g(\varepsilon_3) dt \; d\varepsilon_2$$

The probability that one will stay at a minimum wage job is:

The likelihood function is now specified as the product of the appropriate terms for each observation:

$$L(t_1, t_2) = \prod_{j=1}^{N_j} L_i(t_1, t_2) \cdot \prod_{j=1}^{N_0} L_0(t_1, t_2)$$

j = an individual ; j = 1, · · · · · · · · , n

i = exit route ; 1, 2

where N_i is the number of observations escaping to exit route i. N_0 is the workers whose observations were censored or workers who held minimum wage jobs until the end of the survey.

An interval proportional hazard model is estimated.[9] The form of the model is assumed to follow a Weibull distribution. The hazard rate calculated under the discrete time assumption first increases and then generally falls with duration, so a Weibull distribution seems to be appropriate.

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8) Time is measured discretely in months so $t_1 = t_2 - 1$ in the likelihood functions.

9) I use software recently developed by J. S. Butler for the estimation. If time (or duration) is measured only in intervals and not at points, an interval hazard estinmation is appropriate. The point hazard is a limiting case of the interval hazard as the interval becomes arbitrarily small. In our data set, duration is measured in months.

II. Data and Variables

The data are obtained from the SIPP data set,. a 3-year longitudinal survey covering the period from June 1983 to May 1986.[10] I tracked each spell of minimum wage work until it ends in either a good or bad outcome. I also determined the status of each worker one month after the end of the spell as well as one year afterwards.

The SIPP sample contains 3,970 individuals who were employed at the minimum wage rate at least once between 1983 and 1986. A subsample used in our hazard analysis contains 780 workers whose first spells occurred between June and September of 1983.[11]

I define a spell of minimum wage work as beginning in the first month of employment at the minimum wage (which remained $ 3.35 throughout the survey period) and as ending when the worker's wage was no longer $ 3.35 or he (she) no

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10) One of the main purposes of the SIPP data set is to examine the distribution of income, wealth, and poverty. I compared the income distribution in the SIPP to that of the CPS to examine whether the SIPP data are sampled randomly.

The distribution of all low wage workers aged 17-64 by the household income-to-needs ratio in 1984, based on March 1985 CPS data, was as follows: less than 1 (18%), 1.00-1.49 (17%), 1.50-1.99 (13%), 2.00-2.99 (21%), 3.00 or above (31%).

The distribution of minimum wage workers aged 15 and above by the household income-to-needs ratio in the first half of 1983, based on June 1983 SIPP data, was as follows: less than 1 (17%), 1.00-1.49 (12%), 1.50-1.99 (14%), 2.00-2.99 (22%), 3.00 or above (35%).

The differences in the age range and the sample period should contribute to the difference in the income distribution. The SIPP had slightly fewer poor, considerably fewer near-poor, and considerably more well-to-do minimum wage workers than the CPS. Overall, however, the two distributions are so similar that one cannot reject the null hypothesis that both come from the same population.

11) This is the first reference period of the SIPP data set. During the first reference period, 1,300 workers held minimum wage jobs. However, 520 workers whose minimum wage job spells had begun before the beginning of the first reference period were excluded from the hazard estimation to avoid a bias from left-censored spells.

longer had a job.[12]

The explanatory variables included in the model are as follows:

X_1 = years of school completed (in years)

X_2 = age (in years)

X_3 = female (a dummy variable that equals one if the worker is female and zero if male)

X_4 = nonwhite (a dummy variable that equals one if the worker is nonwhite and zero if white)

X_5 = post high school enrollment (a dummy variable that equals one if enrolled in school beyond high school for at least one month, and zero otherwise)

X_6 = income-to-needs ratio (INR) of the worker's household after deducting the income contributed by the minimum wage worker

X_7 = the average monthly unemployment rate of the state where the minimum wage worker lived (June 1983 to May 1986)

X_8 = rural area (a dummy variable that equals one if the worker lived in a rural area and zero otherwise)

X_9 = manufacturing job (a dummy variable that equals one if the minimum wage job was in the manufacturing sector and zero otherwise)

X_{10} = part-time job (a dummy variable that equals one if the subject worked less than 35 hours per week, zero otherwise)

X_{11} = number of children under 18 years old in the household

X_{12} = not married (a dummy variable that equals one if not married and zero otherwise)

X_{13} = duration of minimum wage job (in months)

In my estimation I employ four time-varying independent variables: the worker's

12) The spell on the minimum wage was created with the SIPP monthly employment classification categories reported in the appendix. Employment statuses 1-5 are considered as a month with some work and statuses 6-8 as a month with no work.

If a worker changed from one minimum wage job to another without an intervening period of nonemployment, we regarded it as one continuous minimum wage employment spell. But such cases amount to no more than 2.3 percent of all spells.

education, the unemployment rate of the state in which the worker lives, part-time work, and post high school enrollment.[13] The rest were treated as invariant during the spell; each was set equal to its value at the time the person began the minimum wage job.

Ⅲ. Empirical Results

Table 1 looks at the labor market status of minimum wage workers one month after leaving the minimum wage job. Workers with more year of schooling are significantly more likely to exit to better paying jobs, but there is no significant association between education and bad exits for the whole minimum wage populatio n.[14] For teenagers, education is not as important as age in taking good exits one month later.

Female minimum wage workers are less likely to take bad exits than males. A possible reason for this will be explored in the next section. Less surprisingly, nonwhites are significantly more likely than whites to make bad exits from minimum wage work. There is also some evidence that they are less likely to make good exits although this result is only marginally significant. The minimum wage clearly affects the exit behavior of nonwhites to a relatively greater extent than whites.[15] One of the principal concerns in this study is the degree to which the income-to-needs ratio is correlated with outcomes. As Table 1 shows, workers living in poor households

13) A merit of a hazard analysis is that we can take into account the effect of potentially time-varying explanatory variables during a certain status. In our estimation, however, Age and INR were treated as time-invariant because the change of age is quite heavily correlated with the duration of minimum wage jobs. INR was also treated as time-invariant in order to reduce the effect of the random change of the household income to the exit behavior.

14) But high school dropouts are much more prone to suffer the unemployment. A cross tabular analysis using 3,970 minimum wage workers shows that high school dropouts are 2.5 times one month later and 4 times one year later more likely to be unemployed than the high school graduates.

15) Cross tabular analysis with a larger sample also supports this. (See appendix Table B1)

are more likely to make bad exits from minimum wage jobs and less likely to make good exits than workers in nonpoor households, at least in the short run.[16] Both results are statistically significant at the 5 percent level. Evidently, the barrier to better post-minimum wage employment is more of an obstacle for workers from low income households, whom the Fair Labor Standards Act was intended to assist.

Table 1. Parameter Estimates for the Hazard Function over the Whole Minimum Wage Population and Teenagers: One Month Later (standard error in parentheses)

	Whole population		Teenagers	
Independent Variable	Bad Exits	Good Exits	Bad Exits	Good Exits
Constant	0.101	-2.506***	-0.561	-8.774***
	(0.839)	(0.865)	(2.440)	(2.670)
Education	0.031	1.727***	-0.816	2.567
	(0.438)	(0.445)	(1.658)	(1.827)
Age	-1.158	1.074	5.524	35.219**
	(0.870)	(0.793)	(14.441)	(17.053)
Female	-0.477**	-0.174	-0.495*	-0.255
	(0.209)	(0.157)	(0.300)	(0.231)
Nonwhite	0.559**	0.372*	0.857*	-0.388
	(0.226)	(0.216)	(0.457)	(0.393)
Post High	-0.683***	0.353**	-0.442	0.333
School	(0.238)	(0.144)	(0.289)	(0.207)
Income-to-	-0.116**	0.090**	-0.096	0.119**
Needs Ratio	(0.059)	(0.037)	(0.081)	(0.055)
Unemployment	0.123	-0.330	-0.064	-0.942*
Rate	(0.396)	(0.352)	(0.604)	(0.581)
Rural Area	0.038	-0.149	0.220	-0.643**
	(0.171)	(0.164)	(0.286)	(0.267)
Manufacturing	0.109	0.707***	0.189	1.105*
Sector	(0.275)	(0.261)	(0.616)	(0.574)
Part-time	0.382***	0.065	0.405*	0.020
	(0.132)	(0.098)	(0.214)	(0.164)
Duration	1.844	2.000***	2.202	1.195
	(2.315)	(0.762)	(3.589)	(1.275)
Duration	-1.518	-0.687**	-1.415	-0.224
Squared	(1.383)	(0.342)	(1.965)	(0.552)

Source : Survey of Income Program Participation

*** : significant at 1% **: significant at 5% *: significant at 10%

Note : Incidence of exits for whole population (N=780) : bad exits, 352; good exits, 327; censored, 101. Incidence of exits for teenagers (N=381) : bad exits, 194; good exits, 132; censored, 55.

16) Cross tabular analysis with a larger sample also supports this. (See appendix Table B2)

Although the minimum wage was kept pretty low relative to the hourly wage rate during the period of this study, the minimum wage does not appear to have been favorable to the working poor. Workers in poverty would seem to be more likely to live in low income areas with fewer job opportunities; they may also have lower quality education, which increases the chances of being paid lower wages, being unemployed, or withdrawing from the labor force. For teenagers, the correlation between low wages and low household income is weaker than that for adults, but the income-to-needs ratio is positively associated at the 10% level with good exits by teenagers.

The unemployment rate reflecting local labor market conditions is insignificant in the global analysis, but high unemployment significantly restricts teens from taking good exits.

Generally, part-time workers are more likly to suffer bad exits. It is also consistent with the results of earlier minimum wage studies showing that less productive workers are more likely to work part time. This finding is consistent with the findings of Matilla (1981).

The job search model implies that the hazard rate is affected by the job offer rate and the reservation wage. The higher the quality of labor, the higher the rate of job offer arrivals, and vice versa. A short-term stayer is likely to be more productive and seems to face a higher job offer rate, while a long-term stayer who is perceived to be less productive appears to face a lower job offer arrival rate.[17] Therefore, as Table 1 shows, a significant concave time dependence relationship obtains for the good exit function. Taking good exits is more likely the longer one holds a minimum wage job up to some threshold value, but then this probability decreases nonlinearly with time. The same time dependence pattern exists for bad exits but it is not significant.s[18]

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17) Cross-tabular analysis also shows that short termers (less than 4 months) are significantly more likely to move on to better paying jobs and less likely to withdraw from the labor force or to be unemployed than long termers (9-36 months) one month later.

18) As Table 4 shows, the maximum hazard of bad exits, other things being equal, occurs at 1.844/2 (1.518) =0.7 months, and that of good exits happens at 2.000/2 (0.687) = 1.5 months. This shows that quite a few of the victim group is forced out of the labor market or to a lower-paying jobs within a month, while quite a few of the beneficiary group escapes the

Table 2. Parameter Estimates for the Hazard Function over the Whole Minimum Wage Population and Teenagers: One Year Later (standard error in parentheses)

	Whole population		Teenagers	
Independent Variable	Bad Exits	Good Exits	Bad Exits	Good Exits
Constant	0.429	-1.618*	6.300***	-4.734*
	(0.786)	(0.936)	(2.412)	(2.700)
Education	-0.530	1.128**	-4.334**	1.760
	(0.413)	(0.461)	(2.063)	(1.753)
Age	0.340	-0.213	-7.764	11.925
	(0.665)	(0.819)	(14..033)	(13.060)
Female	-0.101	-0.219	-0.264	-0.152
	(0.161)	(0.156)	(0.261)	(0.221)
Nonwhite	0.254	-0.235	0.831**	-0.288
	(0.202)	(0.210)	(0.422)	(0.347)
Post High School	-0.228	0.029	0.103	0.187
	(0.170)	(0.144)	(0.244)	(0.207)
Income-to-Needs Ratio	-0.039	0.043	-0.063	0.079
	(0.044)	(0.034)	(0.070)	(0.053)
Unemployment Rate	-0.126	0.077	-1.131	0.249
	(0.378)	(0.347)	(0.692)	(0.560)
Rural Area	-0.318*	-0.017	-0.141	0.006
	(0.182)	(0.157)	(0.279)	(0.236)
Manufacturing Sector	0.067	0.553**	1.554**	0.438
	(0.274)	(0.274)	(0.677)	(0.588)
Part-time	0.492***	0.079	0.659**	0.006
	(0.161)	(0.096)	(0.276)	(0.161)
Duration	2.430	2.348	3.855	2.029
	(2.962)	(1.631)	(3.572)	(3.016)
Duration Squared	-2.138	-1.265	-2.603	-1.413
	(1.944)	(0.781)	(2.216)	(1.591)

Source : Survey of Income Program Participation

*** : significant at 1% ** : significant at 5% * : significant at 10%

Note : Incidence of exits for whole population (N=780) : bad exits, 311; good exits, 281; censored, 188. Incidence of exits for teenagers (N=381) : bad exits, 124; good exits, 152; censored, 105.

Table 2 uses the same model but now we look at labor market status one year following exit from a minimum wage job. Our model is generally less successful in explaining employment statuses after one year. This could be because of the high rate of sample censoring after one year or it could be because the impact of the minimum wage diminishes rapidly with time. What should be noted is that higher education plays a different role for teenagers in the long run; it significantly restricts

minimum wage job in about 2 months.

teenagers from escaping to bad exits, while encouraging good exits for the whole minimum wage population. Teenage blacks are significantly more likely to take bad exits in the long run. What is surprising is that the income-to-needs ratio is not significant at all, implying no significant long-run effects of income-to-needs status on exits from minimum wage jobs.

● Effects for Females and Males

Table 3 separates Table 1 by gender. It indicates that there are some differences for women and men. Men are more likely to be restricted by unemployment in the local labor market than women. Female part-time workers are significantly more likely to take bad exits. Female workers in poorer households are notably more likely to take bad exits and less likely to take good exits, but this pattern is not significant for males. The unadjusted data show a higher percentage of female workers taking bad exits than males (52% of females, 40% of males) but the hazard estimation, which takes unmeasured heterogeneity into account, shows that other things being equal, females are significantly less likely to take bad exits (see Table 1).

Female workers have been discriminated in the employment as well as in the promotion. But what is puzzling is that female minimum wage workers are significantly less likely to take the bad exits.[19] This seems to be that because female workers who overcome the barrier to employment put forth more effort to keep jobs since they cnow employment discrimination are practiced. In addition, Table 3 shows that females with post-high school education (including vocational and technical school as well as college) are significantly less likely to take bad exits, but the post-high school enrollment does not prevent males from escaping to bad exits. This also might reflect that female unskilled workers attending post-high school institutions are more motivated to keep minimum wage jobs once they overcome the barrier to employment.

19) Cross-tabular analysis with a larger sample also seems to support the conclusion that females are more likely to be gainers. (See Appendix Table B4)

Table 3. Parameter Estimates for the Hazard Function over Males and Females: One Month Later. (standard error in parentheses)[a]

	Whole population		Teenagers	
Independent Variable	Bad Exits	Good Exits	Bad Exits	Good Exits
Constant	0.311	-1.835	-0.160	-3.010**
	(1.485)	(0.142)	(1.151)	(1.162)
Education	-0.523	2.031***	0.293	1.564***
	(0.757)	(0.698)	(0.571)	(0.601)
Age	-1.680	0.272	-1.075	1.059
	(1.666)	(1.437)	(1.172)	(1.154)
Nonwhite	0.710	-0.164	0.513*	-0.310
	(0.460)	(0.396)	(0.291)	(0.281)
Post High	-0.495	0.695**	-0.885**	0.256
School	(0.330)	(0.343)	(0.349)	(0.218)
Income-to-	-0.047	0.038	-0.202**	0.137***
Needs Ratio	(0.082)	(0.071)	(0.097)	(0.051)
Unemployment	0.403	-1.859***	-0.213	0.553
Rate	(0.634)	(0.694)	(0.557)	(0.447)
Rural Area	0.049	-0.154	0.117	-0.267
	(0.288)	(0.309)	(0.233)	(0.218)
Children	-0.787	0.880	-1.568	0.142
	(1.406)	(1.471)	(1.033)	(1.017)
Marital	-0.098	0.192	0.167	-0.345
Status	(0.474)	(0.456)	(0.271)	(0.273)
Manufacturing	0.068	0.688	0.125	0.609**
Sector	(0.518)	(0.664)	(0.342)	(0.298)
Part-time	0.242	0.070	0.500***	0.034
	(0.216)	(0.189)	(0.181)	(0.123)
Duration	4.268	2.461	0.854	2.143**
Duration	(4.970)	(1.754)	(2.446)	(0.862)
Squared	-4.163	-0.879	-0.685	-0.654

Source : Survey of Income Program Participation

*** : significant at 1% **: significant at 5% *: significant at 10%

Overall incidence of exits for males (N=350): bad exits, 139 ; good exits, 172; censored, 39.

Overall incidence of exits for females (N=410): bad exits, 213 ; good exets, 155 ; censored, 62.

a One year later, for males only the unemployment rate and education were marginally significant in explaining good exits, and only part-time was significant (5% level) in explaining bad exits. For females only education and manufacturing sector were marginally significant in explaining good exits, and part-time and post high school were significant (5% level) in explaining bad exits.

Table 4. Parameter Estimates for the Hazard Function for Workers Becoming Unemployed or Getting Higher Wage Jobs, One Month Later and One Year Later (standard error in parentheses)

	Whole population		Teenagers	
Independent Variable	Bad Exits	Good Exits	Bad Exits	Good Exits
Constant	1.724**	-2.200*	0.847	-1.529*
	(0.861)	(1.216)	(0.705)	(0.915)
Education	-0.505	0.556	-0.515	1.109**
	(0.565)	(0.601)	(0.409)	(0.459)
Age	-2.072*	2.379**	0.447	-0.201
	(1.145)	(1.107)	(0.655)	(0.818)
Nonwhite	0.736**	-0.485	0.270	-0.236
	(0.301)	(0.335)	(0.203)	(0.211)
Post High School	-0.404*	-0.213	-0.221	0.028
	(0.245)	(0.256)	(0.164)	(0.143)
Income-to-Needs Ratio	-0.088	0.107*	-0.036	0.042
	(0.069)	(0.063)	(0.043)	(0.143)
Unemployment Rate	-0.321	0.449	-0.174	0.073
	(0.505)	(0.498)	(0.378)	(0.347)
Rural Area	0.181	-0.191	-0.304	-0.017
	(0.211)	(0.233)	(0.178)	(0.156)
Manufacturing Sector	0.041	0.395	-0.127	0.542**
	(0.329)	(0.336)	(0.271)	(0.276)
Part-time	0.589***	0.070	0.482**	0.113
	(0.174)	(0.135)	(0.202)	(0.108)
Duration	1.544	3.485**	1.321	2.168
	(3.173)	(1.572)	(2.687)	(1.549)
Duration Squared	-2.409	-1.072	-1.738	-1.200
	(2.434)	(0.948)	(1.842)	(0.744)

Source : Survey of Income Program Participation

*** : significant at 1% ** : significant at 5% * : significant at 10%

Note : Overall incidence of exits one month later (N=425):
unemployment exits, 155 ; better job exits, 270.
Overall incidence of exits one year later (N=425):
unemployment exits, 72 ; better job exits, 292 ;
cenlored, 61.

As Table 4 indicates, nonwhites and part-time workers significantly more likely to be unemployed one month later, but not one year later. Table 4 also shows that females are less likely to be unemployed than males one month later. It is hard to tell if women are helped more or less than men by the minimum wage, since it depends on the criteria used for judgement. If one regards unemployment as the

most serious outcome of an increase in the minimum wage, women seem to be gainers.

Ⅳ. Conclusion

This study examines whether experience on a minimum wage job translates into higher earnings following that job, and what factors affect the employment statuses of minimum wage workers over time. The outcomes are mixed. This is not surprising given the very heterogenous population of minimum wage workers.

About half of all minimum wage workers failed to have another job lined up when they left their minumum wage job. About 20% of minimum wage workers are unemployed one month after the end of the minimum wage spell (see appendix Table B1). While workers (especially females) from poor households are more likely to take bad exits, workers from high income households are more likely to take good exits one month later. This pattern, however, is not significant one year later.

Experience on a minimum wage job is likely to benefit better educated persons more than those with less schooling. The effect of education is positive and significant in explaining good exits in the short run, although it is just marginally significant for teenagers. The effect of education is quite persistent : this is one of the few variables which is quite significant even after one year. What is interesting is that education plays different roles in the minimum wage population as a whole and for teenagers in the long run. For all workers, education tends to increase significantly the probability of taking good exits, but for teenagers, it also tends to reduce the incidence of bad exits.

Experience on a minimum wage job also seems to be more helpful to females than males. Females are less likely to take bad exits and more likely to take good exits than males. Females are less restricted by high unemployment in the local labor market in taking good exits. Nonwhites, especially teenagers, are significantly more likely to take bad exits even one year after the end of a minimum wage spell.

Part-time workers are much more likely to take bad exits in the short run as well as in the long run.

A significant concave time dependence appears for the good exit over the whole minimum wage population, but the same pattern is not significant for bad exits. It follows that beyond some point, even the beneficiaries of the minimum wage job found it harder to move on to better jobs.

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Appendix

This appendix is in two parts. Appendix A reports in detail the employment status codes used in the SIPP data set and appendix B shows exit distributions from minimum wage jobs, by race or sex, one month later.

Appendix A

1. With a job entire month, worked all weeks.
2. With a job entire month, missed one or more weeks work, no time on layoff.
3. With a job entire month, missed one or more weeks work, spent time on layoff.
4. With a job one or more week, but not all month ; no time spent looking or on layoff.
5. With a job one or more weeks, but not all month ; spent one or more weeks looking or on layoff.
6. No job during month ; spent entire month looking or on layoff.
7. No job during month ; spent one or more weeks looking or on layoff.
8. No job during month ; no time spent looking or on layoff.

Appendix B

Table B1. Frequency Distribution of Exit Routes from Minimum Wage Spells, One Month later and One Year Later

	1 month later		1 year later	
Exit Route	Frequency	%	Frequency	%
Higher Wage Jobs with Same Employer	741	21.4	255	11.7
Higher Wage Jobs with Another Employer	484	14.0	691	31.8
Other Minimum Wage Jobs	44	1.3	203	9.3
Subminimum Wage Jobs	372	10.7	337	15.5
Unemployed	664	19.2	202	9.3
Withdrawn from the Labor Force	1,157	33.4	488	22.4
Censored	508	1,794		
Total	3,970	100.0	3,970	100.0

Source : Survey of Income Program Participation

Table B2. Frequency Distribution of Exits from Minimum Wage Spells by Poverty Status, One Month Later

	Income-to-Needs Ratio		While Holding		Minimum Wage Job	
	< 1.0 (poor)	1.0 - 1.5 (near poor)	>1.5		(non poor)	
Exit Route	Frequency	%	Frequency	%	Frequency	%
Higher Wage Jobs with Same Employer	135	16.2	86	21.6	520	23.3
Higher Wage Jobs with Another Employer	116	13.9	54	13.5	314	14.1
Other Minimum Wage Jobs	13	1.6	7	1.8	24	1.1
Subminimum Wage Jobs	78	9.4	50	12.5	244	10.9
Unemployed	225	27.0	87	21.8	352	15.8
Withdrawn from the Labor Force	266	31.9	115	28.8	776	34.8
Censored	183		60		256	
Total	1,016	100.0	468	100.0	2,486	100.0

Source : Survey of Income Program Participation

Table B3. Frequency Distribution of Exits from Minimum Wage Spells, by Race, One Month Later

	Whites		Non-Whites	
Exit Route	Frequency	%	Frequency	%
Higher Wage Jobs with Same Employer	598	21.5	143	21.2
Higher Wage Jobs with Another Employer	414	14.9	70	10.2
Other Minimum Wage Jobs	37	1.3	7	1.0
Subminimum Wage Jobs	291	10.4	81	12.0
Unemployed	491	17.6	173	25.6
Withdrawn from the Labor Force	955	34.3	202	30.0
Censored	423		85	
Total	3,209	100.0	761	100.0

Source : Survey of Income Program Participation

Table B4. Frequency Distribution of Exits from Minimum Wage Spells, by Sex, One Month Later

	Males		Females	
Exit Route	Frequency	%	Frequency	%
Higher Wage Jobs with Same Employer	269	18.8	472	23.2
Higher Wage Jobs with Another Employer	208	14.5	276	13.6
Other Minimum Wage Jobs	23	1.6	21	1.0
Subminimum Wage Jobs	136	9.5	236	11.6
Unemployed	312	21.8	352	17.3
Withdrawn from the Labor Force	483	33.8	674	33.3
Censored	197		311	
Total	1,628	100.0	2,342	100.0

Source : Survey of Income Program Participation