Contributions

Jamin D. Speer*

Wages, Hours, and the School-to-Work Transition: The Consequences of Leaving School in a Recession for Less-Educated Men

DOI 10.1515/bejeap-2015-0054

Published online September 10, 2015

Abstract: Using the NLSY's weekly work history data to precisely measure labor market outcomes and the school-to-work transition, I document severe but short-lived effects of leaving school in a recession for men with 9–12 years of education. I find significant effects of entry labor market conditions on wages, job quality, and the transition time from school to work. In contrast to published evidence on more educated workers, I also find large effects on work hours on both the extensive and the intensive margins. When workers leave high school in a recession, they take substantially longer to find a job, earn lower wages, and work fewer full-time weeks and more part-time weeks. A 4-point rise in the initial unemployment rate leads to an increase in the school-to-work transition time of 9 weeks, a 16% decline in year-one average wage, a 28% fall in hours worked in the first year, and a 45% decline in first-year earnings. However, effects of entry conditions are not persistent and are largely gone after the first year.

Keywords: labor market conditions, recessions, labor supply, school-to-work transition

1 Introduction

Hundreds of thousands of young workers leave school and enter the labor market each year. The economics literature has documented that economic conditions at the time of graduation can have large and persistent effects on the labor market outcomes of these entrants. Workers of similar ability who enter the labor market in different years may see radically different wages and job qualities for years to come.

*Corresponding author: Jamin D. Speer, Department of Economics, Fogelman College of Business and Economics, University of Memphis, 3675 Central Avenue, Memphis, Tennessee 38152, USA, E-mail: jspeer@memphis.edu

Most work on this topic has focused on workers with high levels of education.¹ For workers at the top end of the education distribution, Oyer (2006) and Oyer (2008) find large and persistent earnings and placement effects of entry conditions for MBA graduates and economics PhDs. Studies of college graduates in the United States (Kahn (2010), Altonji, Kahn, and Speer (2015)), Canada (Oreopoulos, von Wachter, and Heisz 2012), and Norway (Lu, Salvanes, and Sorensen 2012) also find substantial negative impacts of initial labor market conditions on earnings, wages, firm quality, and/or occupation quality. Hershbein (2012) studies high school graduates and above in the United States and finds smaller and less persistent effects than those for college graduates. Brunner and Kuhn (2014) study Austrian males and find substantial effects of initial conditions for both white-collar and blue-collar workers. Importantly, most of the papers using data from the United States or Canada do not find significant work hours effects for men.²

In this paper, I study a group for which the effects of early labor market conditions are less well-known: American males with low education. Labor markets for these workers are quite different from those of college graduates, and so too may be the effects of leaving school in a recession. Indeed, I find significant effects of initial economic conditions on work hours for this group of workers, which comes through a longer transition from school to work. I take advantage of weekly data, instead of only annual surveys, which allows me to study a broader set of outcomes than do previous papers. This is the first paper I am aware of to examine in detail the effects of entry economic conditions on the length of the school-to-work transition.

The previous literature described above suggests that the effect of starting conditions differs by the education or skill level of the worker. However, the direction of the effect is not obvious in theory. There are some reasons to believe that the effect of starting conditions on less-educated workers could be more severe or could take a different form from the effect on college graduates. The unemployment rate for less-educated workers typically increases more in a recession than does the rate for college graduates, and less-educated workers are also more likely to be out of the labor force. Both of these facts suggest that the effects of starting economic conditions may be larger for this sample than for more educated men, particularly for work hours, as that margin is not as relevant for more-educated workers. Less-educated workers are also less

¹ An exception is Genda, Kondo, and Ohta (2010), who study a sample similar to mine using a different data source. I discuss the differences between my paper and theirs below.

² The exception is Altonji, Kahn, and Speer (2015), who find effects on the probability of working full-time. However, they are unable to look directly at work hours in most of their sample.

geographically mobile than more-educated workers, which could leave them more vulnerable to negative labor market shocks.³ Looking at college graduates, Altonji, Kahn, and Speer (2015) find larger negative effects of graduating in a recession for lower-earning college majors. If this result is interpreted as showing larger graduation-time effects for lower-skilled workers, then one might expect to also find larger effects for less-educated workers.

On the other hand, some of the common explanations for the persistence of negative effects of conditions at labor market entry may be less salient for those with less education. If skill growth, training, and firm- or occupation-specific skills are not as critical for wage growth among these men, then a fall in initial firm or occupation quality may not be as damaging in the medium and long term. Another concern with recessions is the reduction in opportunities to upgrade wages through job mobility. However, less-educated workers change jobs less frequently than highly educated workers, so that a recession's effect on mobility may not be as important for them. Putting these thoughts together, one might expect to find that the effects of leaving school in a recession for less-educated workers are severe but not persistent. Indeed, that is what I find.

My data source is the National Longitudinal Survey of Youth's 1979 cohort (discussed in Section 2). Previous work using the NLSY has relied on the annual surveys. Instead, I use the weekly work history file which contains weekly information about hours worked, wages, and jobs held.

Use of the weekly data instead of the annual surveys provides two key advantages, both of which may lead to important policy implications. First, the weekly data allow me to measure some outcomes that I cannot measure using the annual data – particularly the transition time from school to work. I show that this is a key channel through which workers are affected when economic conditions are poor. The second advantage of using the weekly data is that I am able to show that some of the effects of leaving school in a recession fade very quickly; by the time the worker has found a full-time job, for example, the effects of economic conditions have already dissipated somewhat. In my sample, the median duration of the first job is about 6 months, which leaves open the strong possibility that the first annual survey after leaving school will not list the first job as the current job. This means that using the annual surveys, and potentially missing the first weeks out of school, may understate the negative effects of leaving school in a recession.

³ See Ladinsky (1967) and Greenwood (1975) for early evidence and Wozniak (2010) and Greenwood (1997) for more recent treatments. Malamud and Wozniak (2012) provide evidence that the relationship between education and mobility is causal.

Of course, when a worker leaves school to enter the labor market is endogenous to economic conditions. I deal with this by instrumenting for the actual entry unemployment rate with the unemployment rate at the time the worker “should have” left school given his birth date and years of education.

It is also true that the composition of the sample may change with the unemployment rate, as students make the decision to continue school or enter the labor market. I deal with this primarily by controlling for the AFQT score and parents’ education in all of my analysis. However, unobservable characteristics of labor market entrants may also vary over the business cycle, which is a more difficult problem to solve. I present the results as is and acknowledge that the sample selection may be different across recessions and booms.⁴

Among men with 9 to 12 years of education, I find severe but short-lived effects of leaving school in a recession. When starting conditions are poor, workers are paid less and work in lower-earning occupations and industries. Initial wages are reduced by about 6% per point of unemployment, with a fall in job quality explaining about half of the effect.

However, the wage effect dramatically understates the total effect of the unemployment rate on earnings. In contrast to published results for both high- and low-education samples, I find significant effects on work hours on both the extensive and intensive margins.⁵ When workers leave school in a recession, they work fewer full-time weeks and more part-time weeks in their first year in the labor market. Each point of unemployment also delays a worker’s time to finding his first job by more than 2 weeks and to finding a full-time job by more than 3 weeks. Overall, leaving school in a severe recession (an increase in the unemployment rate of 4 percentage points) leads to a 9-week increase in the school-to-work transition time, a 16% decline in year-one average wage, a 28% fall in hours worked in the first year, and a 45% decline in first-year earnings.

While previous work has found long-lasting effects for college graduates of graduating in a recession (Kahn (2010), Altonji, Kahn, and Speer (2015), Oreopoulos, von Wachter, and Heisz (2012)), I find that the effects for less-educated men are not persistent. There are no significant effects of entry conditions on earnings or hours worked after the first year.⁶

⁴ If there is a bias due to changes in the unobservable quality of the sample over the business cycle, the direction of the bias is not clear. I discuss this further in Section 3.1.

⁵ For college graduates, see Kahn (2010). For high school graduates and above, see Hershbein (2012). For a sample similar to mine but with a different data source, see Genda, Kondo, and Ohta (Winter 2010).

⁶ This finding is in contrast to that of Brunner and Kuhn (2014), who study Austrian males and find more persistent effects of initial conditions for blue-collar workers in comparison to white-collar workers.

The most similar paper to mine is that of Genda, Kondo, and Ohta (2010), who study less-educated American males as part of a comparison with results from Japan. They also find only temporary effects on earnings. The primary difference between their work and mine is the data source, and this difference is significant. They use the March supplement of the Current Population Survey, whereas I use the NLSY's weekly work history file. Using the March CPS, they are unable to identify the actual time of leaving school, whereas I can identify the time of leaving up to the month.⁷ More importantly, the March CPS allows one job/earnings observation per year and only contains work hours for those who are employed, and therefore does not allow careful study of work hours effects or of the school-to-work transition. My results show that these are important channels through which entry conditions operate. Finally, the NLSY contains the AFQT, a reliable ability measure, which is an important control variable and lets me investigate how the quality of labor market entrants varies over the business cycle.⁸

This paper contributes to the literature primarily by documenting the effects of entry conditions on work hours and the school-to-work transition. I also contribute accurate measures of annual earnings after leaving school and document with precision how quickly the effects of entry conditions fade. These contributions are all made possible by the use of the weekly data and are not possible using the annual surveys.

The rest of the paper is organized as follows. In Section 2, I describe the data and how I construct some key variables. Section 3 discusses the empirical strategy and how I deal with the endogeneity of the timing of leaving school. Section 4 gives the results on wages, job quality, weeks and hours worked, school-to-work transition time, and other key metrics. Section 5 contrasts my results with those for college graduates. Section 6 concludes with a discussion of how my results inform our thinking about the persistence and possible channels of initial labor market conditions.

⁷ By using the time someone "should have left school", Genda, Kondo, and Ohta (2010) are effectively using the reduced form of my instrumental variables strategy.

⁸ The key disadvantage to using the NLSY instead of the CPS is that the NLSY follows a specific cohort of young people and cannot therefore be used to compare outcomes across time. Furthermore, this cohort was born in the baby boom era (1957 to 1964) and therefore may face more crowding out in the labor market than cohorts from other time periods. The CPS allows study over a much longer period of time.

2 Data

My data source is the National Longitudinal Survey of Youth’s 1979 cohort (hereafter, NLSY). The NLSY consists of 12,686 respondents who were aged 14 to 22 in 1979 and were interviewed annually until 1994 and every other year since that time. I use data from 1979 through 2010.

The NLSY’s weekly work history file is ideally suited to my research questions. I observe hours worked for every week from 1978 through 2010. I also observe the start and stop dates for every job reported in each year and am able to link jobs across years to accurately measure the duration of each job. Additionally, I observe the wage associated with each reported job, and whether each job is full-time.

To study the effects of economic conditions for workers entering the labor market and not returning to school, I need to identify when a respondent was last enrolled. I start by finding the first time each respondent is not enrolled for two consecutive annual surveys *and* was not enrolled in any month between the two surveys. Then, I use the questions that ask year and month last enrolled to find the last month the worker was in school, counting backward from the first of the two surveys in which the worker was not enrolled. Combining this with monthly unemployment rates, I have a measure of economic conditions at the time the respondent left school. Table 1 tabulates the months and years when male respondents left school. Most respondents were last enrolled in May or June of a year, reflecting the typical end of a school year. Given that students

Table 1: Dates of last enrollment.

	Month												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
1978	19	16	12	12	64	148	3	7	25	12	18	23	359
1979	21	6	17	12	101	135	8	13	28	15	16	22	394
1980	10	4	13	7	86	106	6	7	13	15	13	29	309
1981	13	6	8	5	75	114	6	6	9	6	5	14	267
1982	11	3	7	5	71	112	4	6	8	6	14	13	260
1983	4	2	4	3	34	50	0	4	4	5	6	11	127
1984	3	1	0	0	4	9	1	0	1	1	3	2	25
1985	1	0	0	0	0	3	1	0	0	0	0	1	6
1986	0	0	0	0	0	0	0	1	0	0	0	0	1
1987	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	82	38	61	44	435	677	29	44	88	60	75	116	1,749

who leave school in a non-graduation month may be different in many ways from those who leave at graduation, I will include month-last-enrolled dummies in my analysis.

By converting the month and year last enrolled to a week last enrolled (by taking the first week of the month), I can measure the weeks, hours, full-time weeks, and part-time weeks worked in any given period of time since leaving school. This is superior to relying on the annual surveys, which ask for weeks worked since the last interview and in the last calendar year.

The unemployment rate varied a great deal during the period in which NLSY respondents were leaving school. Figure 1 shows the (national) unemployment rate by month and year from 1978 to 1990. The early-1980s recession was severe, with unemployment peaking at 10.8% in late 1982, but relatively brief.⁹

Figure 1: Monthly unemployment rate.

Because the month a worker leaves school is endogenous, I instrument for the actual entry unemployment rate with the unemployment rate at the time the worker would have left school had he left “on time” given his level of education.¹⁰ Specifically, I use the average of the May and June unemployment

⁹ The variation in initial economic conditions for NLSY respondents has been exploited by, among others, Kahn (2010) and Hershbein (2012).

¹⁰ Kahn (2010) adopts a similar strategy for college graduates. She instruments for the graduation-year unemployment rate with the unemployment rate in the year the worker turned 22. However, because I have dropouts as well as graduates, it does not make sense to use the “graduation” unemployment rate for all workers.

rates in the year the worker would have left school if he were leaving at the normal time for his level of education.¹¹

I define a week of work as a week in which the respondent reports that he worked more than 5 hours. A part-time week of work is a week with between 5 and 35 hours of work, and a full-time week of work is a week with 35 or more hours. Results are not sensitive to these definitions.

I identify the first job, first full-time job, and first “stable” job held by the respondent after leaving school by using the start and stop date information. The first job started after the week last enrolled is the first job. The first full-time job is the first job started that is reported as full-time. The first stable job is the first full-time job that lasts at least 6 months.

I also construct measures of occupation and industry quality based on the recorded three-digit codes. To do this, I use the March CPS from 1980 to 1999 to get occupation fixed effects.¹² I regress log annual wage income on education, experience, race, and occupation dummies for those aged 30 to 45, and take the occupation coefficients as my measure of occupation quality. This measure can be interpreted as the earnings premium of the occupation net of worker characteristics. I do the same for industry.

My results suggest that using the weekly data to identify the first job gives a clearer picture of the immediate effects of leaving school in a recession than simply using the annual surveys. I show that the effect of the unemployment rate on the *first wage* and on the *average wage over the first year* is quite different, because a portion of the effect of the initial unemployment rate on wages fades quickly. The weekly data allow me to document those effects in a way the annual surveys do not.

To reduce the influence on my estimates of workers going back to school after being un-enrolled, I only consider workers once they have been out of school for two consecutive interviews. Wages are deflated by the annual CPI-U and are top-coded at \$200 per hour. Ability measures include the AFQT score and years of education. AFQT is standardized by age to be mean zero and variance one (in a more representative NLSY sample which includes more educated workers), while education is measured in years. Education is measured as years of education completed when the respondent first leaves school according to my definition; if he goes back to school after this (including getting a

¹¹ For a high school graduate, this is equal to year of birth plus 18 if the worker was born in August or earlier, and birth year plus 19 if the worker was born after August. For a worker with 11 years of education, it is the same, but using year of birth plus 17 or 18 instead of 18 or 19. The pattern is the same for those with 9 or 10 years of education.

¹² I work with March CPS extracts from the IPUMS data set created by Ruggles et al. (2015).

GED), I do not update his years of education. I also use parents’ education as an ability and family background measure. This is the average of the father’s and mother’s years of education; if one parent’s education is missing, I use the non-missing value.

Because women may make labor supply decisions differently from men, I consider only men in my analysis. I delete men who left school before 1978, because I am unable to observe their initial labor market experiences. I also delete any men who have not been un-enrolled in two consecutive surveys by 1998, the last year in which the enrollment questions are asked. Some other respondents have missing values for year and month last enrolled and are also deleted. I restrict to those who have obtained some full-time job in the first 4 years (208 weeks) after leaving school. There is also the usual attrition in the survey, so that some workers drop out of the survey before leaving school. I only consider those with between 9 and 12 years of education, inclusive. About 300 respondents do not report parents’ education and are not included. The remaining sample contains 1,749 men, and Table 2 presents summary statistics.

Table 2: Descriptive statistics.

	<i>n</i>	Mean	Standard deviation
Initial ue-rate (%)	1,749	7.23	1.66
AFQT	1,749	−0.26	0.86
Education	1,749	11.58	0.89
Parents’ educ	1,749	10.40	2.68
Black	1,749	0.27	0.45
Hispanic	1,749	0.17	0.37
Male	1,749	1.00	0.00
Northeast	1,749	0.18	0.39
South	1,749	0.36	0.48
Midwest	1,749	0.26	0.44
West	1,749	0.20	0.40
Time to any job	1,749	38.16	46.73
Time to FT job	1,749	42.18	49.41
Time to stable job	1,749	45.08	54.22

3 Empirical Strategy

I estimate the following regression equation for each outcome variable:

$$Y_i = \beta X_i + \gamma u_i + \text{month}_i + \varepsilon_i$$

where Y is the outcome variable (first wage, first occupation, etc.), X is a set of individual characteristics including education and AFQT score, u_i is the unemployment rate at the time worker i left school, and the month dummies are dummies for the month the worker was last enrolled in school. I use the regional unemployment rate (based on the four Census regions of south, northeast, Midwest, and west), taking the region as the region in which the respondent reported in his year of last enrollment. Results are similar when using the national rate.¹³ I also include region fixed effects.

I cluster the standard errors ε_i at the level of the region-year-quarter of leaving school, because this approximates the level of the dependent variable of interest (the regional unemployment rate when the worker left school). Because the vast majority of the sample leaves school in May, June, December, or January, using the quarter is almost the same as using the month, and avoids the possibility of artificially lowering the standard errors by needlessly increasing the number of clusters.

3.1 The Timing of Leaving School

There are two important problems to discuss. The first is that the month when a worker leaves high school is clearly endogenous. Workers may adjust the timing of their graduation or drop-out decision in response to economic conditions. This can occur either across years (e.g., by staying in school one year longer) or within years (e.g., by graduating in December instead of May). Thus, the independent variable of interest, the unemployment rate in the month the worker left school, is an endogenous regressor. To deal with this, I instrument for the entry unemployment rate with the unemployment rate at the time the worker's "on-time" school-leaving unemployment rate, as described in the previous section. Table 8 has the results of the first-stage regression. The endogenous regressor and the instrument are strongly correlated.

The second problem is more difficult to deal with. The composition of the sample itself is endogenous and may fluctuate with the business cycle. I include workers in my sample who (i) left high school and did not complete any years of college (either by graduating high school or by dropping out); (ii) were not enrolled in school for two consecutive surveys by 1998; and (iii) obtained some full-time job in the first four years after leaving school. Each of these

¹³ Results are also similar when using a quarterly unemployment rate or a 2- or 3-month average rate instead of the monthly rate. One could use a more localized unemployment rate, such as the state-level rate, but state-level unemployment rates are very volatile from month to month.

sample selection procedures may make the composition of the sample differ across recessions and booms.

The direction of the potential bias is not immediately clear. On one hand, it is plausible that the composition of the sample is of lower quality in recessions than in booms; in recessions, marginal workers are more likely to continue on to college and not enter my sample. This would lead to my results being an *overstatement* of the causal effect of the unemployment rate. On the other hand, I also condition on finding full-time work within a few years of leaving school, which is more difficult in a recession. Thus, the marginal workers who do enter the labor force in a recession could be excluded based on this criterion, leaving the recession sample to be of higher quality than the boom sample. This would lead to my results being an *understatement* of the causal effect.

I deal with potential bias primarily by controlling for the AFQT score and parents' education in all of my analysis.¹⁴ This takes care of bias on observable factors, but unobservable factors could also differ over the business cycle. One thing I can do is check whether the restriction of finding full-time work within a few years of leaving school causes a bias in the sample. I regress an indicator for "finding a job within four years" on the regional unemployment rate, and the coefficient is 0.0005, with a standard error of 0.004. The result is similar when ability controls are included, or when the national unemployment rate is used. There does not seem to be any variation in this sample restriction over the business cycle. I acknowledge, however, that there could be a bias in unobservable factors that I am not detecting. One should be careful not to interpret my results as strictly causal because of this potential bias.

4 Results

4.1 Initial Wage and Job Quality

Table 3 has results for the log wage in the first job after leaving school, the first occupation quality, the first industry quality, the probability that the first job is full-time, and the duration (in weeks) of the first job.¹⁵ The effects of economic

¹⁴ When I regress the worker's AFQT score on the regional unemployment rate when he leaves school, the coefficient is 0.026, significant at the 5% level. This suggests that the quality of workers in the sample is slightly higher when the unemployment rate is high.

¹⁵ Particularly for the jobs that are not the "current" job at the time of the annual interview, wages and occupation codes are sometimes missing. Thus each table may have slightly different numbers of observations.

Table 3: First job characteristics.

	(1) log wage	(2) occ level	(3) ind level	(4) full-time	(5) duration	(6) log wage
ue-rate	−0.060*** (0.012)	−0.028*** (0.005)	−0.026*** (0.005)	−0.022*** (0.005)	−1.809 (6.431)	−0.038*** (0.007)
AFQT	0.035*** (0.013)	0.008 (0.006)	−0.002 (0.008)	0.011 (0.010)	−0.431 (8.538)	0.029*** (0.010)
educ	0.057*** (0.013)	0.016** (0.007)	0.012 (0.008)	0.017* (0.010)	10.544 (7.723)	0.042*** (0.009)
Constant	1.366*** (0.166)	−0.546*** (0.081)	−0.330*** (0.098)	0.734*** (0.116)	153.279* (87.392)	1.459*** (0.116)
Observations	1,557	1,557	1,557	1,557	1,557	1,707
R ²	0.067	0.050	0.038	0.021	0.028	0.060

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: All regressions also include parents' education, race, region, and month-last-enrolled fixed effects. I instrument for entry unemployment with unemployment at time of normal high school graduation. Column 6 reports results for the first stable job, defined as a job that is full-time and lasts at least 26 weeks (6 months). Standard errors are clustered at the region-year-quarter of leaving school level. See the text for details.

conditions are large. A one-point rise in the initial unemployment rate lowers the starting wage by about 6%.¹⁶ Starting occupation and industry level are each lowered by about 3% in wage terms, suggesting that about half of the wage effect operates through job quality. This is consistent with other research (e.g., Devereux (2002)) showing that fluctuations in occupation quality occur over the business cycle.¹⁷

The dependent variable in column 4 is an indicator for working full-time (at least 35 hours per week) in the initial job. A one-point rise in the unemployment rate implies a 2.2 percentage point lower probability of the first job being full-time, relative to a mean of 92%.¹⁸ Column 5 reports that there are no significant effects of

16 Years of education is included on the right-hand side in all regressions, but this is an endogenous variable if it is affected by the unemployment rate. When education is excluded from all regressions in this paper, the coefficient on the unemployment rate is similar, suggesting that the endogeneity of education is not biasing the effect of the unemployment rate.

17 Firm quality is also likely at work here; Oreopoulos, von Wachter, and Heisz (2012) find a significant role for firm quality in explaining the effects of graduating in a recession, and Kahn (2008) shows that the quality of firms hiring workers changes over the business cycle. I am unable to evaluate the firm effects in this data set.

18 It is likely that job information (such as hours) is missing more often for part-time jobs, which may be responsible for such a high rate of initial full-time employment.

the initial unemployment rate on first job duration. Together, the results in these two columns are suggestive that there may be effects on hours worked. I will investigate this further in the next section.

If a recession involves a 4-point increase in unemployment, then a worker who leaves school in a recession will earn a 25% lower starting wage and will be almost 9 percentage points (almost 10%) less likely to be working full-time.¹⁹

The first job may not be representative of the early effects if workers are able to quickly transition to other jobs. Column 6 of Table 3 looks at the wage of the first “stable” job, defined as the first job that lasts at least 6 months and is full-time. The wage effect is smaller than for the first job (column 1), but still large at about 4%. The difference in results between the first job and first stable job – coefficients of -0.060 vs. -0.038 – illustrates one major advantage of the weekly data over the annual surveys. The median duration of the first job in my sample is about 6 months. Waiting for the first annual survey after the worker leaves school may miss the first job and therefore may understate the total effect of leaving school in a recession.

4.2 Work Hours and School-To-Work Transition Times

The results above showed that workers who leave school in a recession are more likely to be working part-time in their first jobs, suggesting that economic conditions may have effects on work hours for this sample. For college graduates, the evidence is mixed. Both Kahn (2010) and Oreopoulos, von Wachter, and Heisz (2012) find little evidence of work hours effects, while Altonji, Kahn, and Speer (2015) show that the effect of initial conditions on the probability of finding full-time work may account for about half of the total earnings effect for U.S. college graduates. Studying less-educated men in the United States in the March CPS, Genda, Kondo, and Ohta (2010) do not find work hours effects, although they do find a small effect on the probability of working full-time.

To investigate this issue for my sample, I use the weekly data to calculate weeks worked, full-time weeks worked (at least 35 hours), part-time weeks worked (5 to 34 hours), and total hours worked in the first year (52 weeks) after leaving school. I then estimate equations of the form

$$\exp_i = \beta X_i + \gamma u_i + \text{month}_i + \mu_i.$$

¹⁹ Table 9 repeats Table 3 using OLS rather than instrumenting for unemployment. Results there are broadly similar to the IV results, although the IV results generally give larger estimates. This is as expected if workers time leaving school to minimize the negative effects of the economy.

Table 4: Work time effects in year one.

	(1) Weeks	(2) FT weeks	(3) PT weeks	(4) Hours
ue-rate	-1.529*** (0.305)	-1.905*** (0.371)	0.376* (0.225)	-83.198*** (15.610)
AFQT	1.852*** (0.664)	1.507** (0.651)	0.345 (0.518)	86.129*** (28.915)
educ	2.523*** (0.493)	2.177*** (0.533)	0.346 (0.382)	108.884*** (25.051)
Constant	-3.860 (5.995)	-2.108 (6.486)	-1.752 (4.267)	-228.341 (309.619)
Observations	1,641	1,641	1,641	1,641
R ²	0.103	0.102	0.030	0.117

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: All regressions also include parents' education, race, region, and month-last-enrolled fixed effects. I instrument for entry unemployment with unemployment at time of normal high school graduation. Standard errors are clustered at the region-year-quarter of leaving school level. See the text for details.

Again, I instrument for unemployment and cluster the standard errors, as described above. Table 4 has the results. I find significant effects for work hours both on the extensive and on the intensive margins. A one-point increase in starting unemployment leads to a reduction of 1.5 weeks worked in the first year out of school. This understates the total effect on hours worked, however, because the reduction in full-time weeks is even larger, with part-time weeks going up. Overall, the effect of a point of unemployment on hours is 83 hours, or a reduction of about 7%. A severe recession, then, would imply a 28% reduction in first-year hours.

It is worth pointing out that even using an hours measure may be understating the negative consequences of leaving school in a recession. If part-time work has a low future return, as some recent work suggests (Blundell, Dias, Meghir and Shaw 2015), then a part-time hour should count for less than a full-time hour.

What is the mechanism for this effect on hours worked? We have seen already that poor economic conditions make the first job more likely to be part-time. Another possible channel is a longer transition from school to a job or from school to a full-time job. Using the weekly data, I can measure these transition times well by comparing the week last enrolled (the first week of the reported month last enrolled) and the start date of the first job and first full-time

Figure 2: Transition time densities.

job after leaving school. Here I exclude jobs that began before the week last enrolled.²⁰

Figure 2 has densities of the transition time to any job, to a full-time job, and to a stable job. We see significant variation in transition times. The median transition time is 19 weeks for any job, 22 weeks for a full-time job, and 24 weeks for a stable job.

One might imagine that any or all of these densities would be affected by the unemployment rate. In a bad economy, fewer jobs may be available, available jobs may be more likely to be part-time, and layoffs may increase, reducing stability. There is evidence that early job stability is reduced in a bad economy, with long-term negative consequences (Neumark 2002).

In Table 5, I regress the transition time measures, in weeks, on controls, month-last-enrolled dummies, and the unemployment rate (again instrumenting for the unemployment rate). Effects are large and significant. A one-point rise in initial unemployment increases the time to find a job by 2.3 weeks and time to find a full-time job by 3.3 weeks. The increase in transition time more than explains the drop in first-year weeks worked. In column 4, I use an alternative definition of transition time that counts only weeks unemployed between school and the first job, and not time out of the labor force. The point estimate of 0.801 shows that about two-thirds of the total effect on transition time (2.281, from column 1) comes through additional time spent out of the labor force.

²⁰ It is possible that entry conditions affect what happens to jobs held at the time of last enrollment. A poor economy might induce workers to make these jobs permanent. However, only a small number of workers in my sample report a current job during the week of last enrollment, so it is difficult to look at this issue.

Table 5: Transition times (in weeks).

	(1) Any job	(2) FT job	(3) Stable job	(4) Any job	(5) Number of jobs
ue-rate	2.281** (1.135)	3.266** (1.340)	2.983** (1.430)	0.801* (0.454)	−0.208** (0.098)
AFQT	−0.327 (1.355)	−0.522 (1.555)	0.089 (1.710)	−1.265*** (0.457)	0.329*** (0.119)
educ	1.444 (1.133)	−0.329 (1.288)	−0.916 (1.536)	−1.307*** (0.464)	0.267*** (0.102)
Constant	22.578 (14.865)	52.989*** (16.737)	61.435*** (16.877)	25.117*** (6.089)	0.638 (1.184)
Observations	1,712	1,712	1,712	1,712	1,712
R ²	0.027	0.024	0.025	0.079	0.030

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: Transition time is defined as the number of weeks from leaving school to starting the job, except in column 4, where it only counts weeks the worker is unemployed (rather than out of the labor force). A stable job is defined as a job that is full-time and lasts at least 26 weeks (6 months). All regressions also include parents' education, race, region, and month-last-enrolled fixed effects. I instrument for entry unemployment with unemployment at time of normal high school graduation. Standard errors are clustered at the region-year-quarter of leaving school level. See the text for details.

Column 5 regresses the number of different jobs held in the first year on the same variables. We see that a higher unemployment rate reduces the number of jobs held in the first year, which is unsurprising given the positive effect on transition time and the insignificant effect on the first job's duration (Table 3, column 5).

The transition time analysis is not possible using the annual surveys and illustrates a key advantage of the weekly NLSY data. By measuring the transition times, I have identified an important channel through which entry conditions impact labor market outcomes. This finding clearly has policy implications that are different from those if one only looks at wage effects.

In summary, effects on hours worked in the first year are large and significant. A recession implies a 28% drop in first-year hours worked. A longer transition from school to work – 9 extra weeks to find a job in a large recession, driven mostly by time spent outside the labor force – seems to explain these effects. Because of this, the impact of the unemployment rate on wages will significantly understate the effect on earnings.

4.3 Effects on First-Year Earnings

The NLSY provides data on hourly wage rates for each job and hours worked each week. To compute annual earnings, I find the job(s) the worker worked in each week, and multiply the hours worked in that week by the wage associated with that week’s job. I then add up these measures for the first 52 weeks after leaving school to get a measure of annual earnings.

Table 6: Annual earnings in year one.

	(1) log earnings	(2) log avg wage	(3) log hours worked
ue-rate	−0.106*** (0.022)	−0.039*** (0.014)	−0.067*** (0.017)
AFQT	0.118*** (0.030)	0.026 (0.017)	0.092*** (0.027)
educ	0.173*** (0.039)	0.056*** (0.017)	0.117*** (0.039)
Constant	6.818*** (0.486)	1.274*** (0.216)	5.544*** (0.452)
Observations	1,279	1,279	1,279
R-squared	0.116	0.053	0.108

Standard errors in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Note: All regressions also include parents’ education, race, region, and month-last-enrolled fixed effects. I instrument for entry unemployment with unemployment at time of normal high school graduation. Standard errors are clustered at the region-year-quarter of leaving school level. See the text for details.

Table 6 reports a regression of log earnings in year one on controls and the unemployment rate at time of last enrollment. The effect is 0.106 log points, or 11.2%; this is much larger than the estimated effect on the starting wage. To separate this into a wage effect and an hours effect, I cannot simply use the starting wage results, because the starting wage is not the same as average wage in the first year. Instead, I define the average wage in year one as earnings divided by total hours. Columns 2 and 3 regress log average wage in year one and log hours in year one on the same variables. The work

hours effect accounts for about two-thirds of the total earnings effect. Average year-one wages are reduced by about 4%, with hours reduced by about 7%.²¹

Because Kahn (2010) uses the same data set and time period to get her estimates of impacts for white male college graduates, it is useful to compare the effects. She finds a 9% effect of the unemployment rate on wages, with little to no effect on hours worked. In contrast, I find a 4% reduction in year-one average wages with a large effect on hours worked. The total earnings effect for college graduates seems a bit smaller than for my sample (at least in year one), and the composition of the effects is quite different. My results are more similar, however, to Altonji, Kahn, and Speer (2015), who also study college graduates combining multiple data sets over a longer time span.

4.4 Persistence of Effects

Perhaps the most striking thing about the effects of graduating in a recession for college graduates is not their severity, but their persistence. Kahn (2010) finds that the negative effects of a bad starting economy are still present after at least 15 years of labor market experience. In my results, the difference in effects on the starting wage (6%) and the average year-one wage (4%) is already suggestive that some effects for less-educated men may die out quickly. To investigate the persistence of the unemployment rate's impacts, I look at the unemployment rate's effect on annual earnings, wages, and hours in the years following year one.

Results are in Table 7. Each cell is a different regression, and I report only the coefficient on the unemployment rate at the time of last enrollment. The dependent variable changes across columns: column 1 is log annual earnings, column 2 is the log average wage, and column 3 is log hours worked. As one goes down the rows, the years increase. Row 1 is the first year (52 weeks) after leaving school, row 2 is the second year, and so on. The first row's results are the same as those in Table 6.

²¹ The earnings effects I estimate here are larger than those estimated by Genda, Kondo, and Ohta (2010) using the March CPS. This may be due to the fact that I can precisely measure the time of one year from leaving school, whereas they must rely on an annual survey, which may allow time for the earnings effect to diminish.

Table 7: Persistence of effects.

	(1) log earnings	(2) log avg wage	(3) log hours worked
year 1	−0.106*** (0.022)	−0.039*** (0.014)	−0.067*** (0.017)
year 2	−0.039 (0.034)	−0.002 (0.020)	−0.037 (0.025)
year 3	−0.021 (0.022)	−0.020 (0.013)	−0.001 (0.015)
year 4	−0.033 (0.027)	−0.035** (0.016)	0.002 (0.021)
year 5	−0.023 (0.047)	0.024 (0.035)	−0.047 (0.036)
year 6	0.004 (0.035)	0.009 (0.023)	−0.005 (0.019)
year 7	−0.045 (0.048)	−0.021 (0.037)	−0.024 (0.034)
year 8	−0.066 (0.044)	−0.024 (0.029)	−0.041 (0.031)
year 9	−0.023 (0.018)	−0.005 (0.018)	−0.018 (0.016)
year 10	−0.047 (0.030)	−0.050*** (0.018)	0.004 (0.023)

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: Each cell represents a different regression, and I only report the coefficient on the unemployment rate in the month last enrolled. All regressions also include AFQT, years of education, parents' education, race, region, the contemporaneous regional unemployment rate, and month-last-enrolled fixed effects. I instrument for entry unemployment with unemployment at time of normal high school graduation. Standard errors are clustered at the region-year-quarter of leaving school level. See the text for details.

The effects of entry conditions are not persistent for this sample. There are no significant effects on earnings or hours worked after year one. The point estimates for the first few years are negative, suggesting that the effect of entry conditions may not be completely gone, but they are not even marginally significant. There is also some hint of a lasting effect on wages – significant negative effects in year four and year ten – but the evidence is not strong.

The results in Table 7 also include the contemporaneous unemployment rate, so that the estimates presented are the effect of the entry conditions, not

the sum of conditions faced by the worker. In Table 10, I repeat the same exercise excluding the contemporaneous unemployment rate. In this case, there is an effect into year two, but not beyond. A worker leaving school in a recession, then, will experience two years of significantly reduced earnings, but the second year is due to the fact that if the unemployment rate is high when he leaves school, it is likely to still be high in the second year.

As a caveat, I emphasize that these results are coming from only one time period, the early 1980s. Most of the variation in starting unemployment is coming from the single peak in the unemployment rate in 1982. This recession, unlike the three that have followed it, was characterized by a sharp peak and a fast recovery. It is possible that those leaving school in more recent recessions have longer-lasting impacts, because the economic recoveries themselves are slower.²² However, even in the sharp and brief recession of the early 1980s, the effects for college graduates seem to have persisted for much longer than that of my less-educated sample (Kahn 2010). I investigate this further in the next section.

5 Comparison with College Graduates

Kahn (2010), also using the NLSY, studies the effect of entry conditions on white male college graduates and finds large wage effects but no significant labor supply effects. My results for the low-education sample are quite different; I find large effects on both wages and work hours. Because my methods are different from Kahn's – I use the weekly work history data while she uses the annual surveys – it is useful here to extend my analysis to college graduates to see if the difference in results is due to sample selection or to the data used.

In Tables 11 through 13, I present selected results for college graduates.²³ Table 11 is analogous to Table 3 showing the effect of the entry unemployment rate on the characteristics of the first post-enrollment job. I instrument for the entry unemployment rate with the “on-time” college graduation

²² For example, Altonji, Kahn, and Speer (2015) provide evidence that college graduates from the Great Recession faced much more severe initial earnings and wage effects than graduates from previous recessions.

²³ I use all male college graduates, rather than just white males as Kahn (2010) used, to allow better comparison with the rest of my results.

unemployment rate. The results show about a 9.5% fall in the first wage for a 1-point increase in entry unemployment; this is almost exactly the same effect estimated by Kahn (2010) and is larger than the effect in Table 3. The effect of entry conditions on the probability of the first job being full-time is not significant (whereas it was negative and significant for my sample), suggesting that the work hours effects will indeed be different across the two samples.²⁴

Table 12 is analogous to Table 4, measuring the effect of entry conditions on weeks worked, full-time weeks worked, part-time weeks worked, and hours worked. Recall from Table 4 that the effect of a 1-point rise in initial unemployment was a reduction of 83 hours worked in the first year. In Appendix Table 5, this effect is only 18 hours (insignificant) for college graduates. There is some suggestion that a higher initial unemployment rate induces college graduates to work more part-time and less full-time, but the effects are fairly small and not significant.

Finally, Table 13 (analogous to Table 5) looks at transition times from school to work. Table 5 showed sizeable positive effects of entry conditions on transition times for the less-educated sample. Here, the difference between the two samples is not as clear; the point estimates for college graduates are similar in magnitude to those for the less-educated men, but they are not significant.

Overall, it appears that there are real differences in the effects of entry conditions on workers of differing education levels. The effects for college graduates are concentrated on wages, with small (if any) effect on work hours. On the other hand, almost two-thirds of the overall earnings effect for less-educated men comes through work hours.

6 Discussion

Leaving school in a recession has severe negative effects on labor market outcomes. In this paper, I have focused on the effects of the starting unemployment rate on the wages, hours worked, and earnings of men with at most a high school education. Workers who leave school in a recession take much longer to

²⁴ The lack of an effect for full-time is surprising, given that Altonji, Kahn, and Speer (2015) find large effects on this margin using a much larger and broader sample of college graduates.

find jobs, and the jobs they find pay lower wages and are more likely to be part-time. A 4-point rise in the initial unemployment rate is associated with a 9-week increase in the school-to-work transition time, a 16% decline in year-one average wage, a 28% fall in hours worked in the first year, and a 45% decline in first-year earnings. To my knowledge, this paper is the first to document the work hours and transition time effects for this type of sample. These results stand in stark contrast to the lack of work hours effects found in previous research for more-educated workers.

Negative effects do not persist past the first year, however. My effects are larger than those estimated by Genda, Kondo, and Ohta (Winter 2010), but both this paper and theirs find that the effects are temporary. This is in contrast to prior estimates for college graduates in the same data set (Kahn 2010), in which effects of starting conditions persist for at least two decades. The contrast between the two groups may provide insight into what channels might be driving the persistence of early labor market condition effects for college graduates.

One potential model, which my results would seem to contradict, is based on a scarring effect of early unemployment or underemployment. If future employers discriminate against workers who have previously been unemployed, have worked in lower-level occupations, or have worked part-time, and do not fully account for economic conditions at the time of those events, then a worker who leaves school in a recession would be more likely to be scarred long-term and might see persistent negative effects on his wages. However, the results presented here suggest that this scarring is not present for less-educated men. Poor initial conditions push workers into part-time work and lower-level occupations and industries, but the effects die out quickly.

A model possibly more consistent with my findings is based on human capital accumulation in high-skill jobs. If occupation- or industry-specific human capital is important in high-skill jobs (or if human capital is general but its accumulation is linked to the skill level of the job), then starting out in a worse occupation or industry can have lasting effects by leaving the worker permanently behind in terms of human capital. If this is only true for higher-skill jobs, then this could explain the different results for high- and low-skill workers. Even if one accepts this explanation, the question of why skill accumulation is important in high-skill jobs and not low-skill jobs still remains. Either of these explanations requires there to be something fundamentally different about high-skill labor markets and low-skill labor markets, and I cannot provide a definitive answer.

One further observation to add to this discussion is that my results run counter to some results from other countries. Brunner and Kuhn (2014) study Austrian men and find more persistent effects of entry conditions for blue-collar workers in comparison to white-collar workers. Genda, Kondo, and Ohta (2010) find that entry effects are persistent for less-educated men in Japan, but not in the United States (in agreement with my findings). They hypothesize that the difference between results in the two countries may be due to institutional differences; for instance, in Japan, high schools play a key role in the matching process between graduates and employers, and dismissing workers is costly. It is therefore possible that legal and institutional factors of the labor market play a role in the lack of persistence of effects for less-educated men in the United States.

I emphasize once again that my sample selection procedures may bias the results slightly, although I do not find evidence that the sample quality varies greatly over the cycle, and I control for observable characteristics in my analysis. Still, this is an important caveat to the results.

An interesting extension of this project (and others like it) would be to compare the effects of economic conditions on new labor market entrants to those on workers already in the labor market, or those unemployed. In other words, is there something special about new entrants and entry conditions, or are the effects similar for those already in the labor market? With both groups, there are selection issues that must be dealt with carefully (particularly for those already unemployed). This is a topic for future research.

In providing these estimates, I have contributed to the literature by documenting large effects on transition times and first-year work hours that have not previously been reported. In particular, my use of the weekly work history data from the NLSY allows me to identify transition times from school to work as a key channel for the effects of entry conditions on earnings. In this important way, the effects of leaving school in a recession are very different for less-educated men than for college graduates. These results call for more research on business cycle effects for less-educated workers.

Acknowledgements: I thank Joseph Altonji, Lisa Kahn, and Fabian Lange for their guidance and support on this project. I am also indebted to two anonymous referees for their helpful comments. All errors are my own.

Appendix

Table 8: First stage regression for entry unemployment rate.

	(1)
	actual ue-rate at entry
On-time ue-rate	0.733*** (0.070)
AFQT	0.001 (0.048)
educ	0.071* (0.040)
Parents' educ	−0.011 (0.011)
black	0.134 (0.087)
Hispanic	0.129* (0.077)
northeast	−0.146 (0.301)
south	−0.149 (0.323)
midwest	0.338 (0.392)
Constant	−6.182*** (0.688)
Observations	1,712
R^2	0.501
F -statistic	103.945***

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: Regression also includes month-last-enrolled fixed effects. The unemployment rate on the right hand side is the average of the unemployment rates in May and June of the year the worker would leave high school if he left “on time” after his level of education is complete. Standard errors are clustered at the region-year-quarter of leaving school level. See the text for details.

Table 9: First job characteristics (OLS).

	(1) log wage	(2) occ level	(3) ind level	(4) full-time	(5) duration
ue-rate	−0.048*** (0.009)	−0.025*** (0.004)	−0.023*** (0.004)	−0.012*** (0.004)	4.928 (3.673)
AFQT	0.035*** (0.013)	0.008 (0.006)	−0.003 (0.008)	0.011 (0.009)	−1.349 (8.464)
educ	0.055*** (0.012)	0.013** (0.006)	0.008 (0.008)	0.012 (0.009)	7.095 (7.518)
Constant	1.410*** (0.151)	−0.493*** (0.080)	−0.270*** (0.094)	0.794*** (0.108)	194.304** (86.420)
Observations	1,592	1,592	1,592	1,592	1,592
R ²	0.068	0.044	0.037	0.024	0.029

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: All regressions also include parents' education, race, region, and month-last-enrolled fixed effects. Standard errors are clustered at the region-year-quarter of leaving school level.

Table 10: Persistence of effects, without contemporaneous unemployment rates.

	(1) log earnings	(2) log avg wage	(3) log hours worked
year 1	−0.106*** (0.022)	−0.039*** (0.014)	−0.067*** (0.017)
year 2	−0.071*** (0.025)	−0.017 (0.016)	−0.054*** (0.016)
year 3	−0.019 (0.022)	−0.020 (0.013)	0.000 (0.015)
year 4	−0.002 (0.024)	−0.018 (0.014)	0.016 (0.018)
year 5	0.004 (0.022)	−0.010 (0.016)	0.015 (0.015)
year 6	0.002 (0.021)	−0.003 (0.015)	0.005 (0.011)
year 7	−0.017 (0.018)	−0.015 (0.013)	−0.002 (0.011)
year 8	−0.029* (0.018)	−0.014 (0.010)	−0.015 (0.013)
year 9	−0.022 (0.015)	−0.006 (0.015)	−0.016 (0.014)
year 10	−0.054** (0.027)	−0.055*** (0.017)	0.001 (0.020)

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: Each cell represents a different regression, and I only report the coefficient on the unemployment rate in the month last enrolled. All regressions also include AFQT, years of education, parents' education, race, region, and month-last-enrolled fixed effects. I instrument for entry unemployment with unemployment at time of normal high school graduation. Standard errors are clustered at the region-year-quarter of leaving school level. See the text for details.

Table 11: First job characteristics, for college graduates.

	(1) log wage	(2) occ level	(3) ind level	(4) full-time	(5) duration	(6) log wage
ue-rate	−0.091* (0.051)	−0.082*** (0.028)	−0.039** (0.018)	0.002 (0.012)	11.580 (22.805)	−0.096* (0.052)
AFQT	−0.043 (0.033)	0.018 (0.015)	0.007 (0.013)	−0.011 (0.008)	−6.422 (14.128)	0.033 (0.036)
educ	−0.003 (0.021)	−0.007 (0.014)	−0.010 (0.009)	0.003 (0.005)	30.007*** (10.562)	0.014 (0.022)
Constant	2.500*** (0.424)	−0.225 (0.260)	0.083 (0.167)	0.966*** (0.085)	−87.692 (228.449)	2.237*** (0.410)
Observations	617	617	617	617	617	610
R ²				0.018	0.032	0.032

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: All regressions also include parents’ education, race, region, and month-last-enrolled fixed effects. Column 6 reports results for the first stable job, defined as a job that is full-time and lasts at least 26 weeks (6 months). I instrument for entry unemployment with unemployment at time of normal college graduation. Standard errors are clustered at the region-year-quarter of leaving school level. See the text for details.

Table 12: Work time effects in year one, for college graduates.

	(1) Weeks	(2) FT weeks	(3) PT weeks	(4) Hours
ue-rate	−0.661 (1.422)	−0.976 (1.738)	0.315 (1.020)	−18.202 (83.684)
AFQT	−0.204 (0.912)	−0.211 (1.005)	0.007 (0.648)	−25.024 (48.764)
educ	0.141 (0.483)	0.301 (0.623)	−0.160 (0.431)	86.307** (38.622)
Constant	43.060*** (9.594)	30.997** (13.562)	12.063 (11.080)	613.935 (781.492)
Observations	600	600	600	600
R ²	0.062	0.058	0.046	0.082

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: All regressions also include parents’ education, race, region, and month-last-enrolled fixed effects. I instrument for entry unemployment with unemployment at time of normal college graduation. Standard errors are clustered at the region-year-quarter of leaving school level. See the text for details.

Table 13: Transition times (in weeks), for college graduates.

	(1) Any job	(2) FT job	(3) Stable job	(4) Number of jobs
ue-rate	2.846 (3.675)	2.362 (3.690)	2.742 (3.790)	−0.021 (0.357)
AFQT	−1.456 (2.282)	−1.080 (2.328)	−0.612 (2.401)	−0.159 (0.252)
educ	1.627 (1.492)	1.552 (1.493)	1.699 (1.596)	−0.387*** (0.133)
Constant	19.308 (30.049)	21.320 (30.044)	17.269 (32.376)	10.485*** (2.664)
Observations	677	677	677	677
R ²	0.036	0.037	0.044	0.040

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: A stable job is defined as a job that is full-time and lasts at least 26 weeks (6 months). All regressions also include parents’ education, race, region, and month-last-enrolled fixed effects. I instrument for entry unemployment with unemployment at time of normal college graduation. Standard errors are clustered at the region-year-quarter of leaving school level. See the text for details.

References

Altonji, J. G., L. B. Kahn, and J. D. Speer. 2015. “Cashier or Consultant? Entry Labor Market Conditions, Field of Study, and Career Success.” *Journal of Labor Economics*. Forthcoming.

Blundell, R., M. C. Dias, C. Meghir, and J. Shaw, March 2015. Female Labor Supply, Human Capital and Welfare Reform. Working Paper.

Brunner, B., and A. Kuhn. 2014. “The Impact of Labor Market Entry Conditions on Initial Job Assignment and Wages.” *Journal of Population Economics* 27 (2):705–38.

Devereux, P. J. September 2002. “Occupational Upgrading and the Business Cycle.” *Labour* 16 (3):423–52.

Genda, Y., A. Kondo, and S. Ohta. Winter 2010. “Long-Term Effects of a Recession at Labor Market Entry in Japan and the United States.” *Journal of Human Resources* 45 (1):157–96.

Greenwood, M. J. 1975. “Research on Internal Migration in the United States: A Survey.” *Journal of Economic Literature* 13 (2):397–433.

Greenwood, M. J. 1997. “Internal Migration in Developed Countries.” In *Handbook of Population and Family Economics*, edited by M. R. Rosenzweig and O. Stark, 647–720. Amsterdam: Elsevier Science.

Hershbein, B. J. 2012. “Graduating High School in a Recession: Work, Education, and Home Production.” *The B.E. Journal of Economic Analysis and Policy* 12 (1):1–30.

Kahn, L. B. 2008. Job Durations, Match Quality, and the Business Cycle: What We Can Learn from Firm Fixed Effects. Working Paper.

- Kahn, L. B. April 2010. "The Long-Term Labor Market Consequences of Graduating From College in a Bad Economy." *Labour Economics* 17 (2):303–16.
- Ladinsky, J. Autumn 1967. "The Geographic Mobility of Professional and Technical Manpower." *Journal of Human Resources* 2 (4):475–94.
- Lu, K., K. G. Salvanes, and E. O. Sorensen. August 2012. Good Skills in Bad Times: Cyclical Skill Mismatch and the Long-Term Effects of Graduating in a Recession. IZA Working Paper.
- Malamud, O., and A. K. Wozniak. 2012. "The Impact of College Education on Geographic Mobility." *Journal of Human Resources* 47 (4):913–50.
- Neumark, D. August 2002. "Youth Labor Markets in the United States: Shopping Around Vs. Staying Put." *The Review of Economics and Statistics* 84 (3):462–82.
- Oreopoulos, P., T. von Wachter, and A. Heisz. 2012. "Short- and Long-Term Career Effects of Graduating in a Recession." *American Economic Journal: Applied Economics* 4 (1):1–29.
- Oyer, P. Summer 2006. "Initial Labor Market Conditions and Long-Term Outcomes for Economists." *Journal of Economic Perspectives* 20 (3):143–60.
- Oyer, P. December 2008. "The Making of an Investment Banker: Stock Market Shocks, Career Choice, and Lifetime Income." *The Journal of Finance* 63:2601–28.
- Ruggles, S., J. Trent Alexander, K. Genadek, R. Goeken, M. B. Schroeder, and M. Sobek. 2015. *Integrated Public Use Microdata Series: Version 5.0* [Machine-readable database]. Minneapolis: University of Minnesota.
- Wozniak, A. K. 2010. "Are College Graduates More Responsive to Distant Labor Market Opportunities?" *Journal of Human Resources* 45 (4):944–70.