EXTENDED ABSTRACT

The Great Recession has had widespread economic consequences, especially for relatively recent labor market entrants. Over 9 percent of 25-34 year olds were unemployed from February, 2009 through January, 2012 (Bureau of Labor Statistics). In 2011, half of recent college graduates were jobless or underemployed (Yen 2012). Graduating high school or college during previous recessions caused 20 percent wage deficits that persisted for at least ten years (Oreopoulos et al. 2012; Kahn 2010). While the economic downturn had negative effects across society, several scholars (e.g., Elsby et al. 2010; Carnevale et al. 2011; Hoynes et al. 2012) have noted that men with low levels of education suffered the greatest job losses due to the recession. These studies, which have typically relied on Census data, however, have not systematically controlled for selection bias that can occur in any analysis of the effects of education. I use doubly robust estimation to control for observable factors that affect selection into college and estimate the effects of completing college for men and women across different economic contexts.

Education is the primary determinant of socioeconomic status, and has become increasingly important due to large-scale demographic and structural economic changes (Fischer and Hout 2006; Mare 1991). For instance, college graduates have steadier employment, more desirable jobs, higher earnings, and greater wealth than their less educated counterparts net of cognitive ability and other confounders (Hout 2012). Preliminary evidence from the Great Recession suggests that higher education has sheltered college graduates from the worst consequences of the recession. For instance, high school graduates experienced roughly twice as much of an increase in unemployment as college graduates from 2007-09 (Elsby, Hobijn, and Sahin 2010). Furthermore, among workers aged 30-54, college graduates earned about 20 percent more than high school graduates (Hout 2012; Hout, Levanon, and Burak 2011).

Furthermore, returns to education have increased most dramatically for women (Buchman, DiPrete, and McDaniel 2008). This is in part due to lessening occupational segregation among highly educated men and women (Buchman et al. 2008; Reskin and Roose 1990). While highly skilled women have found increased prospects in the labor market since the 1970s, gender segregation remains strong among less-skilled occupations, with well-paying blue-collar occupations being much more male-dominated than even the most selective white-collar occupations (Reskin and Roose 1990). However, during recessions, this male advantage in high-paying blue-collar occupations seems causes larger declines in employment, as these occupations seem to be the most responsive to changes in economic context (Hoynes et al. 2012).

While differential effects of recessions across education levels and gender are well-established, it is unclear whether these effects are due to differences in pre-college traits, such as cognitive ability or socioeconomic background, or to college itself. Furthermore, it is unclear whether the effects of education and gender during recessions are homogenous across the population, or if education acts as a better buffer against the negative effects of recessions for those who are already likely to complete college. Whether the protective effect of college is heterogeneous is important for understanding the potential outcomes of increased enrollment in college, which occurs during recessions (Betts et al. 1995).

DATA AND METHODS

To estimate the effects of college on young men and women across economic contexts, I use data from the National Longitudinal Survey of Youth 1997 (NLSY-97), a nationally representative panel study that first interviewed 8,984 respondents aged 12-17 in 1997, and has

followed up annually since then. The NLSY-97 is well suited for this study because it provides good measures of precollege variables that affect selection into college, such as cognitive ability, and the timing of its cohort provides measures of employment for young men and women both before and during the Great Recession. The sample was constrained to include male and female high school graduates in the non-institutionalized population who were not enrolled in school at age 26, when employment was measured. The oldest members of the cohort were 26—and thus had their employment status measured—during 2006, before the onset of the Great Recession in December of 2007; the youngest NLSY-97 respondents were 26 in 2010.

I rely on doubly robust estimation to calculate the effects of college completion and economic context on the number of weeks employed separately for men and women. Doubly robust estimation is advantageous because it requires only that either the model for treatment assignment or the regression model of the outcome is correctly specified (Bang and Robins 2005). The method used in this study first predicts the propensity of each respondent to complete college by age 25 using logistic regression on a set of pre-college variables, including race,

nativity, region of residence, sibship size, parental education, parental income, peers' college plans, enrollment in college preparatory curriculum, teacher interest in respondents' success, and, perhaps most importantly, cognitive ability. Cognitive ability was measured using 12 subject ASVAB (Armed Services Vocational Aptitude Battery) scores, which were residualized by age and race, and then combined into a single standardized score. The ASVAB is an ability test used by the military that tests respondents on subjects such as verbal comprehension and math skills, and was administered to respondents by the NLSY.

After predicting the propensity of each respondent to complete college, the sample is weighted by the inverse probability of treatment, which creates a synthetic sample weighted to give the average treatment effect (ATE) or the treatment effect on the treated (TT). The weights for the ATE are:

$$w_{ate} = \frac{d}{e} + \frac{1-d}{1-e},$$

where d is the treatment status (1=college graduate; 0=non-college graduate) and e is the estimated propensity to undergo the treatment. The weights for the TT are:

$$w_{tt} = d + \frac{(1-d) * (e)}{1-e}$$

Once the appropriate weights are applied, I regress the number of weeks worked on the set of covariates used to predict college completion in addition to a dummy variable for college completion (the treatment), the national unemployment rate, and an interaction between the unemployment rate and college completion. The interaction term illustrates whether the treatment effect of college on the average or the treated responded to changes in the economic context.

By running separate analyses by gender, I am able to compare the effects of college across both economic context and gender. Furthermore, by weighting the sample to approximate both the sample average (ATE) and the average college graduate (TT), I am able to explore the heterogeneity in the effects of college.

RESULTS

Preliminary results suggest differing patterns by gender and by the propensity to complete college. For men, the interaction between college completion and economic context was not significantly different from zero for the treated (TT), but the interaction term for the ATE was significant and positive. This suggests that for the average young man, college became more predictive of employment as the economy worsened even after controlling for observable precollege characteristics such as cognitive ability. However, for those who were likely to complete college anyway, the recession did not increase the employment benefit they received from having a college degree. For young women, on the other hand, neither interaction term was significantly different from zero, suggesting that the recession had similar effects on employment for both high school- and college-educated young women.

These findings are consistent with studies in labor economics which suggest that men's employment is more pro-cyclical than women's. This may occur because the recession reduced gender differences among the less-educated. Whereas less-educated men benefit from a strong economy, less-educated women did not. As a result, then, the recession had the strongest negative effect on less-educated men, even after controlling for cognitive ability and other observable pre-college characteristics. This may be due to remaining occupational segregation in blue-collar occupations (Hoynes et al. 2012).

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