

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. However, it is unclear how recessions affect the economic returns to college—the bonuses that college graduates receive by completing college—and whether recessions affect all college graduates equally. After controlling for selection into college, I examine how recessions affect the socioeconomic returns to college for young workers and the heterogeneity of these effects.

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 2011). Education is the primary mechanism for upward mobility, but also reproduces advantage because the privileged have greater access to college and its benefits (Blau and Duncan 1967). How markets reward education is central to status attainment, so increasing returns to college could influence the social stratification system at large.

Macroeconomic changes (e.g., technological innovations, globalization) have generally favored the educated (Fischer and Hout 2006). Similarly, having a college education may buffer graduates from the worst effects of recessions. Thurow's job competition model predicts that a contracting labor market would most adversely affect those with less education, as open positions are filled by the highly educated first, leaving uneducated workers unemployed in large numbers. In previous recessions, consistent with the job competition model, the quality of workers increased across occupations (Devereux 2002). Also consistent with job competition, Beaudry and DiNardo (1991) found that wages were not as pro-cyclical as would be expected under a human capital or purely wage competition model.

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 2011; Hout, Levanon, and Burak 2011). Although these early analyses have not controlled for potential confounding factors (e.g., IQ), I hypothesize that net of selection into college the Great Recession increased the economic returns to college.

Oreopoulos, von Wachter, and Heisz (2012), in their study of Canadian college graduates, found evidence of heterogeneity, with graduates from highly ranked schools experiencing less severe and less persistent negative consequences of graduating during recessions. While they did not compare effects of recessions across educational groups and were not able to test whether the effects of elite college attendance were causal or due to selection, their results tentatively suggest that advantaged workers are relatively better off during recessions. What is unclear is how less-educated workers from both advantaged and disadvantaged background fare in depressed economies. Brand and Xie (2010) found larger treatment effects of college for those least likely to complete college compared to relatively

advantaged students, though they did not investigate the role of economic context. I hypothesize, consistent with job competition models, that the established pattern of negative selection (Brand and Xie 2010) is exacerbated by recessions, where the buffering effect of college is most consequential for those least likely to graduate from college.

Data and Methods

To estimate the effect of recessions on returns to college and investigate the heterogeneity of these effects, I use 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, then followed up annually thereafter. The latest year of data I will analyze come from 2011 (Wave 14). The NLSY-97 is well suited for my research questions because it measures precollege variables that affect selection into college, and its timing provides measures of various socioeconomic outcomes for young workers before and during the Great Recession.

To estimate returns to college, I use a counterfactual framework, where individuals have observed and “counterfactual” outcomes (Heckman 1978, 2005; Rosenbaum and Rubin 1983; Morgan and Winship 2007). A college graduate’s observed outcome is her occupational status, and the counterfactual is what her occupational status *would have been had she not attended college*. To estimate the counterfactual, I utilize propensity score matching to compare outcomes of otherwise similar treated and control cases, estimating the average treatment effect (ATE), average treatment effect on the treated (ATT), and the average treatment effect on the control (ATC). The ATE is the expected effect of college completion on a randomly drawn subject, while the ATT is the expected effect for a randomly drawn treated case, and the ATC is the expected effect for a randomly drawn control case.

I employ a large set of predictors to estimate the propensity to complete college by age 25 using logistic regression. These predictors include measures of demographic and socioeconomic backgrounds, cognitive and non-cognitive ability, high school experience, and educational expectations. Then, following Kahn (2010), I categorize the labor market conditions that respondents faced when socioeconomic outcomes were measured (when respondents were 26) into high, medium, and low unemployment rate groups based on unemployment rates from the Bureau of Labor Statistics. The timing of the NLSY-97 results in labor market outcomes being measured from 2006-2010. While the Great Recession officially began in 2007, the labor market began to contract severely in the Fall of 2008. Unemployment was at 6.1 percent in September of 2008, but rose steadily from there, peaking at 10 percent in October of 2009. Therefore, older members of the NLSY-97 cohort (born 1980-81) experienced a relatively healthy labor market when their socioeconomic outcomes were measured, while the youngest members (born 1983-84) generally experienced worse economic conditions.

Next, within each unemployment group, I match each treated case to the nearest control case provided the two propensity scores are within one-fourth of the standard deviation. This ensures that only similar treated and control cases are compared. Any unmatched cases which fall outside of the region of common support are dropped from the analysis. I then estimate the ATE, ATT, and ATC for several socioeconomic outcomes when respondents are aged 26: (1) occupational status; (2) wages; (3) hours worked; (4) employment status; and (5) odds of experiencing a job displacement.

To estimate whether recessions affect the treatment effect of college completion on each of the socioeconomic outcomes, I compare the ATE from the high unemployment group to the ATE from the low unemployment group. If the average treatment effect is significantly higher

for the high unemployment group, as I hypothesize, it would indicate that the returns to college increase during recessions. To test whether the effects of college are heterogeneous by propensity to undergo the treatment for the entire period, I compare the ATT (treatment effect on the treated) to the ATC (treatment effect on the control). Lastly, to test whether the pattern of heterogeneity itself changes during recessions, I compare the heterogeneity found in the low unemployment group ($ATC_{low} - ATT_{low}$) to the heterogeneity found in the high unemployment group ($ATC_{high} - ATT_{high}$). If the difference between the ATC and ATT is not constant across economic context, it would suggest that recessions affect the causal returns to education differently for different groups of students.

Implications

The returns to education play an integral role in determining socioeconomic destinations. This chapter analyzes how those returns respond to a large macroeconomic shock such as the Great Depression. Although popular media tend to focus on the plight of recent college graduates, their less-educated peers might suffer even greater negative effects due to the Great Recession, leaving recent college graduates relatively better off. Recessions, therefore, may increase economic inequality between educational groups. Furthermore, investigating whether causal returns to education are similar across all students during recessions is important to understanding the consequences of economic downturns.