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Extended Abstract: PAA 2014

The Great Recession has been the most severe economic downturn since World War II, and the subsequent "jobless" recovery has been the meekest in the United States' history. Early evidence suggests that the effects of the recession have been distributed unevenly across the population. For example, while total employment for college graduates has returned to pre-recession levels, employment for those with less education has lagged far behind, particularly for those with only high school diplomas or less (Hout 2012; Carnevale et al. 2011; Elsby et al. 2010). It remains unclear, however, how much of this difference is due to the positive causal effects of college, which have been well-established in the stratification literature, and how much can be attributed to differences between college graduates and high school graduates that predate their college experiences, such as differences in cognitive ability or socioeconomic background. Thus, while the recession appeared to affect college graduates less severely than high school graduates, because prior studies have not controlled for selection bias, it is unclear whether college is acting as a protective factor, or is merely an artifact of selection on pre-existing characteristics. I use propensity score matching on panel data to control for selection into college, and then assess how the causal effects of college on multiple socioeconomic outcomes responded to variation in economic context due to the onset of the Great Recession.

Recessions have particularly strong effects on those entering the labor market. For example, graduating college during a recession can cause initial wage deficits of up to 20 percent, which decrease over time but remain significant for at least a decade (Kahn 2010; Oreopoulos et al. 2012). Still, a college degree may buffer graduates from the worst effects of the recession, as they may be positioned higher in a "labor queue" in a job competition model of the labor market (Thurow 1975). Thus, during a weak labor market, the worst consequences may fall on those with less education, increasing the distance between high school and college graduates.

Consistent with this job competition model, where workers compete for pre-defined jobs, recessions have worked to increase the average educational level in a wide range of occupations. Thus, during recessions, college graduates may take jobs they would otherwise be overqualified for, but they seem to escape unemployment as they fill jobs that would have gone to less educated workers during normal economic conditions (Devereux 2002). Recessions may also have heterogeneous effects across the population. Oreopoulos et al. (2012) found some evidence that the most able students were penalized least during recessions, suggesting a pattern of negative selection during poor economic contexts, where those least likely to complete college (a population that tends to be socially disadvantaged) receive the greatest benefit from doing so.

Consistent with a job competition model of the labor market and with the early findings from the Great Recession which were unable to control for selection into college, I hypothesize that the causal effect of college for young adults will increase during economic downturns as the most severe consequences become concentrated among the less educated. Furthermore, I expect economic context to affect the relationship between college and socioeconomic outcomes more strongly for those who are less likely to attend more than those who are likely to attend.

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 12-16 in 1997, then followed up annually thereafter. The latest year of data I will analyze come from 2011 (Round 15). The NLSY-97 is well suited for my research questions because it measures precollege variables that affect selection into college, most notably cognitive ability, 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 both 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 on the treated (ATT) and the average treatment effect on the control (ATC). The ATT is defined as the expected effect of college for a randomly drawn treated case (college graduate), and the ATC is the expected effect of college for a randomly drawn control case (high school graduate).

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 official 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 (2006-07), while the youngest members (born 1983-84) generally experienced worse economic conditions (2009-10).

Next, within each unemployment group, I match each treated case to the nearest three control cases provided the two propensity scores are within one-fourth of the standard deviation, as suggested by Rosenbaum and Rubin (1983). This ensures that only outcomes from similar treated and control cases are compared to one another. Any unmatched cases which fall outside of the region of common support are dropped from the analysis. I then estimate the ATT and ATC for several socioeconomic outcomes when respondents are aged 26 separately for the high-unemployment cohort and the low-unemployment cohort, including: (1) occupational status; (2) wages; (3) employment status; (4) working full-time; and (5) earnings. Finally, I compare treatment effects during the pre-recession period to the recessionary period to see if the causal effects of college respond to changes in economic context.

Conclusion

Previous studies of the link between college and individual socioeconomic outcomes have found strong causal results, but they have largely ignored variation in the larger economic context in which this relationship occurs. This analysis will investigate whether that causal relationship was influenced by the shock of the Great Recession. While the consequences of the recession were widespread, those with less education seemed to experience the most severe penalties leaving recent college graduates relatively better off. Recessions, therefore, may increase economic inequality between these two groups even net of pre-existing characteristics. Furthermore, investigating whether causal returns to education are heterogeneous across all students during recessions is important to understanding the effects of recessions.