Examining the Externality of Unemployment Insurance on Children's Educational Achievement

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Abstract

I exploit differences in the generosity of unemployment insurance (UI) benefits across states in the U.S. and over time to investigate the link between UI and children's academic achievement. Estimates show that a one percent increase in maximum UI benefits reduces the probability that a child repeats a grade by about 0.04 percentage points, approximately 1.6 percent. The effect is concentrated in children ages 13 or less, and children of low-income families. This paper's findings provide insight into the role of UI in the human capital accumulation of children, and have implications for the design of an optimal UI policy.

JEL classification: I23, J24, J38, J65, J68
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I. Introduction

One of the well-documented empirical results derived from the analysis of unemployment insurance programs is that they lead to a moral hazard by providing disincentives for recipients to participate in the labor market. For example, past empirical research has established negative effects of unemployment insurance (UI) on job search, and on the duration of unemployment (e.g, Moffitt 1985, Meyer 1990, Katz and Meyer 1990, Hunt 1995, Krueger and Mueller 2010, Regmi 2015). The primary objective of UI is to provide temporary financial assistance to mitigate the hardships of the unemployed caused by job loss. It is well understood that job loss produces a range of negative effects such as health problems, loss in earnings, and a higher likelihood of future unemployment, which extend to impede children's educational outcomes in school (e.g, Stevens and Schaller 2011, and Rege, Telle and Votruba 2011), their college enrollment (Pan and Ost, 2014, and Hilger, 2016), and their earnings (Oreopoulos, Page and Stevens 2008). However, less understood is the role of UI in mitigating such negative effects. This paper provides the first investigation into the role of UI benefits as a mediator to lessen the adverse effect of parental job loss on children's educational performance. Specifically, I analyze the effect of generosity of UI benefits on the likelihood of children's grade repetition, exploiting the variation in the benefits across states and over time.

To study the link between UI and children's grade repetition, I use data from the Survey of Income and Program Participation (SIPP), which consists of a continuous series of nationally representative short-panels lasting approximately four years. The SIPP collects information about respondents' income and labor force status, among others. Each SIPP panel consists of two types of questions: core questions which are repeatedly asked in every wave, and topical questions which are not repeated across waves. Topical questions appear in topical modules (supplementary surveys) which are targeted at collecting information about a wide range of contemporary issues such as well-being and child care. In the 1996, 2001,

2004, and 2008 panels, a total of seven topical modules ask questions regarding children's education such as grade repetition and grade level. I exploit these topical waves to examine the link between UI and grade repetition.

My identification strategy rests on the variation of UI benefits across states and over time, which is considered to be plausibly exogenous (e.g., Gruber 1997). States set the parameters of UI benefits, including the maximum amount that an individual is eligible to receive. States also revise, usually upward, the amount periodically. I exploit UI laws, specifically the maximum weekly UI benefits that an individual is eligible to receive under a state's unemployment insurance system. My choice is similar to Hsu, Matsa and Melzer (2016), who examine the effect of UI benefits on mortgage delinquency. I examine if there is a systematic link between state economic factors and education policies that could affect children's educational achievements and the generosity of UI benefits. I could not find any significant correlation between the maximum weekly UI amount and the unemployment rate, the state domestic product growth rate, school expenditures, school enrollment, and pupil-teacher ratio. Additionally, I analyse the association between the maximum weekly UI benefits and the participation rate in other social insurance programs, such as the Temporary Assistance for Needy Families (TANF), the Supplemental Nutrition Assistance Program (previously known as the Food Stamp Program), social security disability benefits, Women, Infants, and Children (WIC), and Medicaid. I do not find a statistically significant association between the generosity of UI and the uptake of these social safety nets.

In my empirical specification, the treatment group includes children of parents who lost their jobs. I also use children of the employed parents as a comparison group. The sample includes children aged 5 to 17 years.[1] I begin my analysis excluding the panel 2008 which covers the period of the great recession.[2] The goal is to prevent my estimates from being diluted by other other confounding factors such as unprecedented extensions in the

[1]Children under five years of age are not in schools long enough to repeat a grade. 17 years is the oldest age observed in the sample.

[2]In a robustness check later, I extend my analysis including the panel 2008.

duration of UI benefits and expansionary monetary and fiscal policies.

To preview results, the estimates show that a one percent increase in maximum weekly UI benefits reduces the likelihood that a child repeats a grade by 0.04 percentage points. This represents approximately 1.6 percent with a mean grade repetition of 2.5 percent. The effect is more pronounced in younger children. My estimates also suggest that the effect of UI benefits is concentrated among low-income families, a group supposed to be more responsive to UI benefits. To further check that my results are not an artifact of the underlying differences in state-level education policies and economic structures, I estimate the effect of UI on children of the employed parents. If states with a higher level of UI are systematically different from the rest, we should expect the significant effect of UI on those children. But my estimates show that the effect of UI on those children is not statistically different from zero. Additionally, my results pass several robustness tests.

To the best of my knowledge, this paper is the first to examine the link between UI generosity and children's educational outcomes. Having demonstrated that the effects of UI extend beyond labor supply, this article adds to a small amount of literature that studies the positive benefits of unemployment insurance. Tefft (2011) studies the association between UI and reduction in mental stress. Kuka (2017) shows the positive effect of UI on health insurance and coverage. Hsu, Matsa and Melzer (2016) show that UI benefits decrease mortgage delinquency. Barr and Turner (2015) find that extended UI benefits during the Great Recession increased youth's propensity to enroll in college, especially a two-year college, by reducing the cost of attendance. Gruber (1997) studies the role of UI in smoothing consumption of job losers. Moreover, this paper contributes to the literature related to the design of optimal unemployment insurance (e.g., Baily 1978, and Chetty 2006). My paper's results imply that the optimal UI should be higher than that of current estimates in the existing literature which fail to account for the role of UI in child development. Another crucial implication of this study is that the amount of UI should be commensurate with the

number of children, as it has the potentiality to shield children from negative economic shocks, such as parental job loss.

This paper complements the literature studying the short-term effect of family income on child development. Duncan and Smith (1998) show the importance of family income in improving children's educational outcomes, especially in early age. Dahl and Lochner (2012) examine how family income affects children's math and reading ability in the United States and find a positive effect. Exploiting income transfer programs in Canada, Milligan and Stabile (2011) document that such programs improve children's test scores and mental health. Additionally, this study supplements to the literature investigating the long-term positive effect of social welfare programs on children. Aizer et al. (2016) conclude that cash-transfers to poor families has positive impact on children's educational and labor market outcomes. Similarly, Hoynes, Schanzenbach and Almond (2016) find the positive effect of having access to food stamps in childhood on health outcomes.

The rest of the paper is structured as follows. Section II outlines a theoretical mechanism to describe how UI affects children's educational outcomes. Section III explain UI, and Section IV describes data. In Section V, I design my empirical strategy, and present results. Section VI interprets results. Section VII offers concluding remarks.

II. Theoretical Mechanism

In this section, I outline a simple theoretical mechanism to provide insight into the existence of a causal link between UI benefits and children's academic success, thus motivating my subsequent empirical exercise. Four lines of theories could be used to examine the possibility that unemployment insurance (UI) becomes a mediating factor to minimize the negative effects of a layoff on children's education. First, UI could play a role in mitigating the negative consequences of a job loss such as mental stress and health condition, thus helping

shield children from these negative effects. The second pathway could be parental investment in children's education: UI benefits enable parents to spend money on children's education such as books and other extra curricular activities. Third, UI subsidizes home production, enabling parents to increase the quantity and quality of their time spent with children. Fourth, UI might lessen the need for residential mobility, which is found to negatively affect children's academic success.

First, a model of "family stress" from the literature in psychology is helpful to illustrate a theoretical linkage between job loss and children's educational outcome, and a possible mediating role of UI. The model elucidates how parental, especially father's, stress stemming from unemployment affects their behavior towards the child, impacting the child's educational success (Elder, Nguyen and Caspi 1985). Loss in earnings, and subsequent rise in financial stress are likely to alter the family structure and increase psychological stress of parents. These adversities make parents less caring and supportive to their children, producing punitive parental behavior and disposition (McLoyd 1989). Another indirect avenue is children's perception about their parents' emotional stress (Christoffersen 2000), which may affect children's self-esteem, aspiration, expectation, and emotion, undermining cognitive development. The literature in psychology suggests that social support mitigates negative psychological effects of job loss. Unemployment insurance might be supportive to reduce emotional or mental stress of a father, partially offsetting the negative effects of job loss on children.

Findings from recent research in the economics literature provide support to the theoretical insight of the psychology literature. Rege, Telle and Votruba (2011) explore a causal mechanism of parental job loss affecting children's academic achievements. Using Norwegian data, they find that parental job loss has a statistically significant and negative effect on grade point average (GPA) in the 10th grade. They argue that a major pathway of job loss to operate through to mediate children's educational outcome is the father's

mental stress. Another paper, Tefft (2011), provides evidence of a reduction in "depression" and "anxiety" because of a rise in unemployment insurance during the Great Recession. Linking these two lines of research offers an insight that a higher level of welfare benefits like unemployment insurance insulates parents from poor health, including mental stress stemming from a job loss, which in turn mitigates negative effects being spread to children's educational achievements.

Second, UI benefits help to ease income constraint, affecting parental investment in children. With the support from UI, parents can afford to offer learning opportunities outside of school. In a new study, Fletcher and Wolfe (2016) investigate the association of family income with children's non-cognitive skills in the United States, and find a positive effect. Likewise, Dahl and Lochner (2012) study the causal effect of family income on children's math and reading ability and find a positive effect.

Third, parental time with children is considered to be another component in education production function. UI subsidises home production, enabling parents to afford to spend more time with children. Time spent with children could be helpful to develop their cognitive skill. However, there is little evidence of the effect of parental time spending on children's education. Researchers who focus on both long-term and short-term effects of maternal or parental leave on educational attainment have mixed results.

Fourth, with support from UI, parents might not feel an immediate need to move to a new location to find a job. Likewise, generous UI benefits could help displaced parents to afford their current housing. Hence, they do not have to relocate to a poorer neighborhood detrimental to child's academic success. Studies find that residential mobility has serious implication for children's educational progress (Nan Marie Astone, 1994).

In summary, generous UI has a possibility to reduce negative effects of job loss, partially preventing such effects from being extended to disrupt children's educational achievements. In the empirical analysis below, I explore this possibility by investigating how the

probability of a child living in a more generous UI regime repeating a grade differs from the probability of one living in a less generous UI regime.

III. Unemployment Insurance Background

Unemployment insurance (UI) is one of the largest public insurance programs in the United States. It aims to provide temporary financial assistance to individuals facing involuntary unemployment. It was established under the Social Security Act of 1935 as a joint federal-state program, and is funded by the federal and state taxes on employers.

States manage the provisions of the regular UI benefits, determining the maximum and minimum amount of the benefits, the potential duration, and the eligibility criteria. To be eligible for UI, individuals must have been employed for a certain period and have made a certain amount of earnings before becoming unemployed. In the latest unemployment insurance supplement to the CPS conducted in 2005, around 33.5 percent of unemployed women and 34.8 percent of unemployed men applied for UI benefits, and 23.9 percent of the unemployed actually received benefits (see Vroman 2009 for detail). By reason for unemployment, 35.6 percent of job losers, 8.8 percent of job leavers, and 10.9 percent of re-entrants into the labor market received benefits.

The regular benefits are usually available for about 26 weeks across states. In 2012, the average weekly benefit (ratio of the total benefits paid to the total number of weeks compensated) was $300. The U.S. government has historically been supplementing the regular UI benefits with Extended Benefits and other temporary compensation packages during periods of high levels of unemployment.

IV. Data and Descriptive Analysis

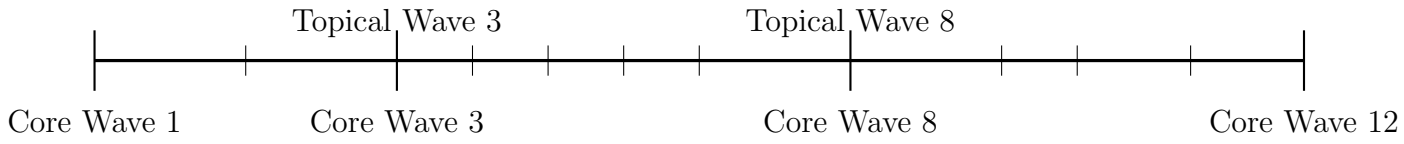
A. Survey of Income and Program Participation

The Survey of Income and Program Participation (SIPP) contains a continuous series of panels from 1984 (the first panel) to 2008 (the latest panel). The sample size of the SIPP panels includes around 14,000 to 52,000 households interviewed over a period ranging from two and a half years to four years. Each SIPP panel contains core modules (regular surveys) and topical modules (supplementary surveys). Core modules collect monthly information about income, labor market status, expenditures, and other demographic characteristics. Individuals are interviewed once every four months. In every interview (wave), each member of the household is asked demographic characteristics such as age, education, labor market status, and income for each of the four months prior to the interview month. Core questions are repeated in each wave (interview).

Topical modules include a variety of topics not included in core questions, such as child care, child support, program eligibility, health care, disability, and school enrollment. Of all the SIPP panels, the 1996, 2001, 2004, and 2008 panels have a total of 7 topical waves containing information related to child education, which includes grade repetition status, the current grade level and the highest grade attended.[3] These seven topical waves are wave 4 (from September 2009 to December 2009) and wave 10 (from September 2011 to December 2011) from the 2008 panel. Likewise, wave 3 (covering the period from October 2004 to January 2005) and wave 8 (covering the period from June 2006 to September 2006) from the 2004 panel have such information. The other three waves are wave 7 (from February 2003 to May 2003) from the 2001 panel, and waves 6 and 12 from the 1996 panel (which cover periods from December 1997 to March 1998, and December 1999 to March 2000, respectively). To illustrate the general structure of a SIPP panel, I present the 2004 panel in Figure 1.

[3]Specifically, households were asked whether or not a child has repeated a grade, and if so, which grade was repeated.

Figure 1: Illustration of the 2004 panel



As shown in Figure 1, households were interviewed in 12 core waves, with questions mostly related to labor force, program participation, and income. The same questions were repeated during each interview wave. As part of the survey's objective to provide information on a variety of topics not covered in the core waves, questions related to grade repetition were assigned to the third and eighth interviewing waves, which were labeled "topical modules."

Grade repetition. Using the information on topical modules that indicated whether or not a child had repeated grades, I first categorize children into two groups: those who had ever repeated grades and those who had not. If the child had repeated grades, I then collected information about the grade that the child had repeated from the question "What grade or grades did [CHILDNAME] repeat?" and information about the current grade that the child is attending from the interview question "What grade or year in school is [CHILDNAME] now attending?". Based on the current grade, the repeated grade, and the interview month and year in each topical module, I am able to pinpoint the academic year in which the child repeated a grade. Then, I link the children to their parents. Note that the main objective of this study is to examine the possible mediating role of UI on mitigating parent's job loss on children's grade repetition by comparing children whose parents lost their jobs to those whose parents were employed. For this purpose, I restrict the sample to children who either experienced parental layoff before their interview in topical modules (the treatment group) and whose parents were both employed until the interview date (the comparison group). I use information about parents' monthly employment status to classify them as those who

lost their jobs[4] or were employed [5].

For those children with unemployed parents (the treatment group), a dummy variable "grade repetition" is created that takes the value of zero if the child had never repeated a grade, and one if the child's grade repetition occurred during the period after parental job loss and before his/her interview date in a topical wave. Thus, for those children who stated that they had repeated a grade, I include only those who repeated a grade during that period. The reason for this restriction is that I could not ascertain whether the parents were employed or unemployed at the time the grade was repeated and could not relate the repetition to the parents' (un)employment status. For example, perhaps a 17-year child (in grade 11), in a topical wave, replies yes to the question whether s/he ever repeated a grade. If s/he states that the grade repetition occurred in grade 1 (almost 10 years before), it was not possible to link the grade repetition to the labor market status of the parents, reported in the survey. Hence, it is not appropriate to include those in the treatment group.

Similarly, for those children of employed parents (the comparison group), grade repetition takes the value of zero if the child had not repeated a grade, and one if s/he did so any time during the period parents were observed in the survey before their interview in topical waves. This restriction is applied for the same reasons described above.

Data are in a cross-sectional format. The number of observations is 30,614. Panel A of Table 1 reports descriptive statistics for the sample of my treatment group, i.e., those children who faced parental job loss, and Panel B contains the sample of children who never experienced parental job loss.

[4]Using the SIPP's monthly employment status variable RMESR, I categorize individuals as unemployed if they report their employment status as "With a job at least 1 but not all weeks, some weeks on layoff or looking for work" or "No job all month, on layoff or looking for work all weeks" or "No job all month, at least one but not all weeks on layoff."

[5]Using the SIPP's monthly employment status variable RMESR, I categorize individuals as employed if they report their employment status as "With a job entire month, worked all weeks"

B. Other Data Sources

I also complement the SIPP data with variables related to school resources and state economic conditions. I collect information about school characteristics such as teacher-pupil ratio from different versions of the Digest of Education Statistics published by National Center for Education Statistics.[6]

Furthermore, I gather information regarding the maximum benefits of UI by state, using "Significant Provisions of State UI Laws: Benefit and Tax" published by the Bureau of Labor Statistics.[7] I assemble the unemployment rate data from the Bureau of Labor Statistics[8]. Likewise, data about the gross domestic product (GDP) growth rates by state are collected from the Bureau of Economic Analysis (BEA)[9]. Likewise, I use data on the state population and the uptake of social safety nets, such as the Temporary Assistance for Needy Families (TANF), the Supplemental Nutrition Assistance Program (SNAP), social security disability benefits, Women, Infants, and Children (WIC), and Medicaid from the University of Kentucky Center for Poverty Research. The uptake is defined as the number of beneficiaries in a state divided by the state's population.

V. Empirical Strategy

To investigate the relation between unemployment insurance (UI) and children's educational outcome, I exploit the variation in the UI generosity across states. My assumption is that the generosity of benefits is plausibly exogenous, as in many empirical studies in the literature such as Gruber (1997) and Hsu, Matsa and Melzer (2016). Gruber (1997) uses the replacement rate, calculated on the basis of individual earnings. I use the maximum weekly

[6]The data are available at https://nces.ed.gov/programs/digest/.

[7]The data are available at http://www.workforcesecurity.doleta.gov/unemploy/statelaws.asp#sigprouilaws.

[8]The data link is http://www.bls.gov/data/#unemployment

[9]The data link is http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=2#reqid=70&step=4&isuri=1&7005=75&7006=xx&7001=1900&7036=-1&7002=1&7090=70&7007=-1&7093=percentchange

UI benefits that workers are eligible to receive, basing my analysis only on state parameters. Using state-set maximum benefits level helps to eliminate the possibility that a benefits level calculated based on individual characteristics could be correlated with other unobserved factors, which might lead to biased estimates. Furthermore, my choice of the maximum benefits over using actual benefits that individuals receive or the average benefits receipt by state is aimed at preventing my results being diluted by unobserved factors. For instance, those who are more likely to receive benefits might be less educated or low earning groups whose children might have a different home environment or resources than the average child, causing their children to have lower educational achievements. My choice of the maximum weekly UI benefits that workers are eligible to receive is common in the literature (see Hsu, Matsa and Melzer, 2016; Krueger and Mueller, 2010).

Endogeneity of UI is inherently untestable. Nonetheless, I examine if observed state economic and educational factors that have the possibility to influence school education are associated with maximum weekly UI benefits. I regress maximum weekly UI benefits on the growth rate of GDP, state unemployment rates, state-level school expenditures, state-level enrollments, and pupil-teacher ratio. School expenditures and enrollments are adjusted for the state's population. Controlling for state fixed and year fixed effects, I do not find a statistically significant correlation between maximum UI benefits and these characteristics. Table 2 contains the results. Results suggest that those states which are experiencing a larger economic growth or expanding their school resources do not appear to have more generous UI benefits. Another possible confounder is the interaction between unemployment insurance and other social safety nets. States where the dependence of people on social safety nets is relatively high might have more generous unemployment insurance program. To investigate such a possibility, I analyse the association between the maximum weekly UI benefits and the uptake of other social safety nets, such as the Temporary Assistance for Needy Families (TANF), Supplemental Nutrition Assistance Program (previously known as the Food Stamp Program), social security disability benefits, Women, Infants, and Children (WIC), and

Medicaid. Table 3 reports results, and there is not systematic association between maximum weekly UI benefits and the participation rate in these social programs. It is still possible that other unobserved state factors which affect educational outcomes might be correlated with maximum UI benefits. I attempt to control for this possibility by using state fixed and year fixed effects. Furthermore, in a sensitivity check later, I include state-by-year fixed effects to control for time-variant state-specific unobserved factors that might have driven main estimates.

I use grade repetition as a measure of children's educational achievement due to paucity of other consistent measures of children's educational performance across states. This measure has been considered as a short-term problem in academic performance and used to estimate the effect of layoff as it reflects the short-term problem in academic performance (e.g., Stevens and Schaller, 2011 and Kalil and Ziol-Guest, 2008).

A. Empirical Specification

I use child data in a repeated cross-sectional study design. I use the version of the model below to analyze the effect of UI on grade repetition in school.

$$\begin{aligned} y_i = \alpha + \beta_1 ln(MaxBenefits) * Layoff_i + \beta_2 ln(MaxBenefits) + \beta_3 Layoff_i \\ + \gamma_1' X_i + f(FamBack_i) + \kappa_1' Z_s + \phi_s + \delta_t + \epsilon_i, \end{aligned} \tag{1}$$

where y_i is an indicator variable that takes the value of one if a child repeated grade, zero otherwise. The variable "ln(Max Benefits)" is the log of maximum weekly unemployment benefits across states (that is, the maximum amount that an unemployed is eligible to receive in a week under the state's unemployment insurance policy). The benefits are measured in dollars. I use the benefits level available during the first year of parental job loss for unemployed parents' children and for those of employed parents, I use the benefits available

in the first year of the survey.[10] The variable of interest "ln(Max Benefits)*Layoff$_i$" is the interaction of log of maximum unemployment benefits across states and an indicator variable of parental layoff. It measures the effect of maximum unemployment insurance on grade repetition among children who faced parental layoff relative to those whose parents were employed. The variable "Layoff$_i$" is an indicator whether a child has experienced a parental layoff. It captures the effect of having a parent who lost job along with other differences between the unemployed and employed families. For example, children from those families who are more likely to lose jobs or be unemployed might be more likely to retain grade due to family environment or support. An advantage of this empirical strategy is that it helps to eliminate potential state-level confounder, that is, other omitted variables related to state policies that can influence students' educational outcomes, assuming that any changes in these policies affect employed and unemployed families equally.

A vector of X_i consists of children's characteristics such as age, age-squared, sex, and race, which are measured at the topical module's interview dates. To control for home environment and parents' characteristics, which influence children's education, I use the father's and mother's education and age during the period of the interview in topical modules. I use three separate categories for father's and mother's education: high school or less, associate degree or some college, and a four-year bachelor's degree or above. $f(FamBack_i)$ represents these variables. Next I control for state-specific economic and school characteristics that could affect students' performance in school, as measured by the vector of z_s. The vector incudes student-teacher ratio, state unemployment rate and the state GDP growth rate. As it takes some time for these variables to operate to affect child's education, I use these variables reported in the first year of each panel. Overall, I attempt to control for three most important inputs of educational production function- individual characteristics, family resources, and state education policies.

[10]In a sensitivity check, I also use the benefits available in the first year of the survey for both groups. Results are consistent.

Moreover, ϕ_s represents state fixed effects that are intended to capture state-specific time-invariant factors which influence educational outcomes in school. δ_t is the vector of interview-year fixed effects. I use the survey weight to generate the entire population distribution. I cluster standard errors at the state level.

VI. Results

A. preliminary Analysis

Before I present main results, I examine further the identification assumption that the maximum weekly benefits are not correlated with factors that affect educational success. As analyzed above, the generosity of UI is not associated with state-level economic factors, educational policy, and participation in other social insurance programs. I extend the previous analysis by examining the possibility of an association between UI and other omitted variables that affect grade repetition. To do so, I determine whether maximum UI benefits have any effect on the children of the employed, a group that should not be responsive to the generosity of UI benefits. If states that have better educational policies or make more effect to improve school quality have generous UI, then we should expect UI benefits to affect these children. For comparison, I also estimate the effect on the children of parents who lost their jobs. Table 4 reports the results. One percent increase in maximum weekly UI benefits reduces the probability that a child of the unemployed parents repeat a grade by 0.043 percentage points (p =0.029). For the children of employed parents, the corresponding effect is 0.0026 (p=0.789). As the employed are not allowed to take up UI benefits, their children's education should be not be affected by UI's generosity. It is important to note that because of the inherently untestable nature of the identification assumption, a caveat exists that there are other confounding factors that affect educational performance, which merits further examination. In the next subsection, I go on to estimate the empirical specification

presented in equation 1 that compares differences in grade repetition among children whose parents lost jobs to those of employed, in two groups of states - one with a more generous UI system and another with a less generous one. The specification controls for unobserved state heterogeneity affected children of unemployed and employed parents equally.

B. Main Results

In this subsection, I present my main results estimated using specification in equation 1. I use the linear probability model. In a later section, I estimate using the probit model and results are similar. Estimates are calculated using survey weights. Standard are clustered at the state level. Table 5 contains results. The variable "ln(Max Benefits)*Layoff$_i$" which is the interaction of layoff dummy and log of maximum weekly UI benefits[11] is the variable of interest. It measures the effect of maximum unemployment insurance on grade repetition by children who faced parental layoff relative to those whose parents were employed. As I am not observing who are actually collecting UI benefits, these estimates are interpreted as intent-to-treat (ITT) effects. Estimates show that one percent increase in maximum weekly UI benefits (the state cap on weekly benefits an eligible unemployed could receive under the state unemployment insurance provision) leads to a 0.04 percentage points ($p = 0.01$) decline in the probability that a child facing parental layoff repeats a grade relative to that of the employed parent. This represents around 1.6 percent with a mean grade repetition of 2.5 percent.

The effect of the maximum weekly benefits "ln(Max Benefits)" is not statistically significant in itself, even though the magnitude is negative, implying that a higher UI lowers the probability of grade repetition. The benefits measure the effect on the children of both employed and unemployed parents, when the value of layoff for all is set to zero, that is, everybody is employed. As the employed are not eligible to collect UI benefits, their chil-

[11] In a sensitivity check later, I measure maximum weekly UI benefits in levels instead of logs

dren's educational outcomes should not be responsive to UI. Furthermore, the probability that children facing parental layoff repeats a grade is higher than that of children of employed parents. This is consistent with the existing literature documenting negative effects of parental layoff on children's academic achievement. Job loss is associated with a number of negative effects such as income and health, which spread to impact children. Overall, my results demonstrate that a higher level of unemployment insurance is helpful to reduce the negative effects of parental job loss.

C. Heterogeneity Age

Job loss can affect children's educational performance differently depending on age. Which age group is affected more depends on channels through which layoff affects education. For example, if it is parent's mental stress or breakdown on parent-child relation that affects a child's educational outcomes, then younger children could be disproportionately affected. If it is income constraint through which unemployment inhibits child's education, then children in all ages might equally be affected. Likewise, UI could directly affect older children by reducing returns to schooling. With a higher level of UI, students might not feel the need to have more schooling to reduce the likelihood of their future unemployment, and reduce their effort in study.

To investigate a potential heterogenous effect by age, I divide children into two groups: ages 5 to 13 (those who are supposed to be typically in elementary and middle schools), and ages above 13. As shown in Table 6, I find statistically significant effect of UI on children ages 5 to 13.[12] For this age group, the magnitude of the effect becomes larger relative to the baseline estimation above. One percent increase in maximum weekly UI benefits results in 0.054 percentage points decline in the likelihood of grade repetition ($p < 0.01$). For those above 13 years of age, the corresponding effect is a decline of 0.014 percentage points, but it

[12]Further, I estimate the effect on children ages 5 to 10. Results are qualitatively similar.

is not statistically different from zero. Estimates suggest that the effect of UI is concentrated among younger children.

D. Heterogeneity by Family Income

In this subsection, I attempt to study the effect of unemployment insurance (UI) by family income. If the unemployed parent has other sources of income, such as that of a spouse, the layoff could have less detrimental effects on his/her well-being and subsequently less adverse effect on the children. I investigate the heterogenous effect on children's educational performance according to the extent of income constraint at the time of layoff. It is possible that those who experience greater decreases in the family income after job separation could have the larger effects of social insurance program, such as UI. Therefore, I use the reported family income in the first month of job loss. For employed parents, I use the mean of both parents' family incomes averaged during the survey. Both the father and mother have reported their family incomes separately, and sometimes these numbers differ. To address this noise in reporting, I use the mean of the incomes reported by both parents. I divide the unemployed and employed into terciles, separately: high, medium, and low income. I combine each corresponding tercile from the unemployed and employed parents, create three subsamples, and run three separate regressions for the groups, using the same specification as in equation 1.

Table 7 contains results. The estimated effect is strongest for the children of low-income families. As reported in the first column, a one percent increase in the maximum weekly benefits lead to 0.11 percentage points decline ($p < 0.05$) in the probability of grade retention. For the children of medium-income families, the corresponding effect is 0.0278 ($p < 0.10$). For high-income families, the effect is 0.0039 and it is not statistically significant.

The possible reason for not having effects on the children of high-income families could be the lower replacement rate (a claimant's weekly benefits divided by the claimant's

average weekly wage). For example, in 2006, the average maximum weekly benefits was around $386. Generally, individuals with a previously high income in the labor market are eligible for the maximum possible benefits. Still, the maximum amount is usually too low to compensate for their lost labor market earnings, and subsequently does not completely shield them from the negative effects of job loss. Additionally, high-earning individuals tend to have higher savings, and might not feel severe financial constraints during their unemployment with regard to providing their children with essential educational resources. As a result, receipt of UI benefits might not alter their levels of support to their children. On the other hand, the replacement rate tends to be high for low-income families, as they tend to have lower earnings in the labor market. As UI benefits could replace substantial amounts of their income, these families find UI beneficial for easing problems arising from job loss thus allowing them to continue to providing educational resources to children.

E. Sensitivity Checks and Extended Sample

In this subsection, I set to analyze a battery of sensitivity checks. First, I use a probit model to estimate equation 1. The average marginal effects are reported in Table 8. Second, I measure maximum UI weekly benefits in levels instead of logs (Table 9). Thus far, I have used maximum weekly benefits in logs. Third, I use the availability of UI benefits in the first year of each panel for both unemployed and employed parents (Table 10). Recall that in earlier specifications, for the children of unemployed parents, I use the benefits level available in the first year of job loss, while for the children of employed parents, I use the benefit available in the first year of each panel. In another examination of whether or not time-variant state-specific unobserved factors have driven main estimates of this study, I estimate the main model including state-by-year fixed effects (Table 11). If unobserved state factors were driving my results, the inclusion of state-by-year interaction dummies should considerably change results. All these alternative models are estimated for the full sample

(children ages 5 to 17) and for children ages 5-13, separately. Results are not sensitive to these specifications. Furthermore, due to concerns of confounders related to the great recession, I excluded the panel 2008 from my earlier analysis. I re-estimate my main model using the 2008 sample. Results are very close (Table 12).

F. Interpretation

This is the first study to provide evidence that generous unemployment insurance system improves improves children's educational outcomes, possibly becoming a mediator to lessen the detrimental effects of parental job loss. The main finding of this analysis is that one percent increase in maximum weekly UI benefits leads to 0.04 percentage points decline in the likelihood that a child repeats a grade. This represents around 1.6 percent with a mean grade repetition rate of 2.5 percent.

As I do not observe whether the unemployed actually collected benefits or not, my estimates represent intent-to-treat (ITT) effects. In a 2005 current population survey (CPS) supplement, the latest survey that documents the uptake of unemployment insurance, Vroman (2009) shows that around 35.6 percent of job losers actually received UI benefits. Given this 35.6 percent up-take rate of UI benefits, this ITT effect translates to a treatment-on-the treated (TOT) effect of 4.49 percent (the ITT effect of 1.6 percent divided by the participation rate of 35.6 percent) decline in the probability that children of unemployed parents repeat a grade relative to those of employed parents. Note that the maximum UI benefits in this study are measured weekly, which could be the reason behind larger magnitudes. Being the first study to investigate the effect of social insurance program on grade repetition, estimated magnitudes of this study are not directly comparable to the literature. At least, recent research that evaluates social programs tend to find large effects both in the short run and long run. Aizer et al. (2016), who investigate the Mothers' Pension program, a cash-transfer program between 1911 and 1935 in the United States, find 50 percent decline

in being underweight and 0.34 years increase in educational attainment for boys exposed to this program. Hoynes, Schanzenbach and Almond (2016) provide evidence that having access to food stamps in childhood led to 30 percentage points increase in reporting good health. Likewise, Dahl and Lochner (2012) shows that $1,000 increase in annual income from the Earned Income Tax Credit increases math and verbal reading of children by around six percent of a standard deviation.

VII. Conclusion

Unemployment insurance (UI) is among the largest social safety nets in developed countries. The research on UI mainly focuses on the labor supply behavior of the unemployed. In this paper, I go beyond its moral hazard effects on labor supply to present the first evidence of its effect on children's educational outcomes. In light of the emerging literature that shows parental job loss negatively affects child education, I examine whether social safety nets such as UI are helpful in mitigating negative effects of job loss, thus preventing such effects from being extended to affect children's academic achievement.

Using data from the Survey of Income and Program Participation (SIPP), I estimate the effect of UI on grade repetition on children ages 5 to 17. My identification strategy exploits the variation in maximum weekly UI benefits across states and over time. States set the maximum amount of benefits that individuals could receive, which is considered to be plausibly exogenous in the literature. I find that one percent increase in maximum UI benefits reduces the likelihood that a child repeats grade by approximately 0.04 percentage points, around 1.6 percent. The effects seem to be concentrated in children of low-income families, the more financially strained group that should be more responsive to social insurance programs.

The results of this study have implications for research on the design of optimum UI.

Generous UI benefits do more than affect the labor supply behavior of the unemployed, as they generate positive welfare gains for their children. A crucial implication of this research is that UI could be an important tool that helps shield children from detrimental effects of parental job loss. In light of this evidence, the dollar amount of UI should increase commensurate with the number of young children, such that it is higher for the unemployed with more children, as it helps improve children's educational outcomes.

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Table 1: **Summary Statistics: SIPP Data**

	Mean	**Std. Dev.**	**Min**	**Max**
Panel A				
Children with Parental Job Loss (N= 16,808)				
Grade Repetition	0.03	0.18	0	1
Grade Repetition	0.03	0.18	0	1
Female	0.51	0.50	0	1
Age	10.80	3.58	5	17
Age square	129.55	79.86	25	289
White	0.72	0.45	0	1
Other race	0.09	0.29	0	1
Black	0.18	0.39	0	1
Mother's age	37.60	7.12	19	70
Mother with advance college	0.18	0.38	0	1
Mother with some college	0.37	0.48	0	1
Mother with high school or less	0.43	0.50	0	1
Father with advance college	0.15	0.36	0	1
Father with some college	0.26	0.44	0	1
Father with high school or less	0.32	0.47	0	1
Father's age	40.77	7.86	15	80
Panel B				
Children of Employed Parents (N= 13,806)				
Grade Repetition	0.02	0.12	0	1
Female	0.50	0.50	0	1
Age	11.65	3.56	5	17
Age square	148.38	81.83	25	289
White	0.84	0.36	0	1
Other race	0.07	0.25	0	1
Black	0.09	0.28	0	1
Mother's age	40.88	6.07	20	65
Mother with advance college	0.40	0.49	0	1
Mother with some college	0.37	0.48	0	1
Mother with high school or less	0.24	0.43	0	1
Father with advance college	0.36	0.48	0	1
Father with some college	0.35	0.48	0	1
Father with high school or less	0.29	0.45	0	1
Father's age	43.05	6.95	21	75

Notes: Summary statistics are calculated using the 1996, 2001, and 2004 panels of the Survey of Income and Program Participation. Panel A contains children who faced parental job loss. Panel B contains children whose parents were both employed.

Table 2: **Correlation between Maximum Weekly Unemployment Insurance Benefits and State Economic Conditions (1996-20006)**

	ln(Max. Benefits)	ln(Max. Benefits)	ln(Max. Benefits)	ln(Max. Benefits)	ln(Max. Benefits)
Unemp. Rate	0.0112				
	(0.010)				
GSP growth rate		-0.0010			
		(0.002)			
Pupil-teacher ratio			-0.0024		
			(0.010)		
Enrollment				0.2652	
				(1.273)	
Expenditure					0.1268
					(0.089)
Constant	5.3580***	5.8007***	5.9272***	5.8954***	5.5685***
	(0.023)	(0.011)	(0.113)	(0.207)	(0.106)
Observations	561	561	561	561	561
R-squared	0.946	0.946	0.946	0.946	0.947
State Fixed Effects	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y

Notes: Log of maximum weekly unemployment insurance benefits are regressed on state economic and school characteristics such as the unemployment rate, gross state product, pupil-teacher ratio, school enrollment, and school expenditures. Each column presents results from a separate regression. School enrollment and expenditures are adjusted for state population. * denotes significance at the ten percent level, ** denotes at the five percent level, and *** denotes at the one percent level.

Table 3: **Correlation between Maximum Weekly Unemployment Insurance Benefits and Uptake of Social Insurance Programs (1996-2006)**

	ln(Max. benefits)	ln(Max. benefits)	ln(Max. benefits)	ln(Max. benefits)	ln(Max. benefits)
TANF	1.8917				
	(1.755)				
SNAP (Food Stamp)		-0.7200			
		(0.850)			
Disability program			-1.8369		
			(8.424)		
Medicaid				0.0681	
				(0.382)	
WIC					0.5846
					(2.299)
Constant	5.9379***	5.9832***	5.9738***	5.9292***	5.9242***
	(0.009)	(0.050)	(0.165)	(0.054)	(0.054)
Observations	561	561	561	561	561
R-squared	0.947	0.946	0.946	0.946	0.946
State Fixed Effects	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y

Notes: Log of maximum weekly unemployment insurance benefits are regressed on the uptake of different social safety nets, such as Temporary Assistance for Needy Families (TANF), Supplemental Nutrition Assistance Program (SNAP), Social Security Income (Disability), Medicaid, and Women, Infants, and Children (WIC). Each column presents results from a separate regression. The uptake is defined as the number of participants in a program in a state divided by the state's population. * denotes significance at the ten percent level, ** denotes at the five percent level, and *** denotes at the one percent level.

Table 4: **Effects of Maximum UI Benefits on the Likelihood of Grade Repetition: Preliminary Analysis**

	Parents on Layoff	Employed Parents
Ln(Max. UI)	-0.0431**	-0.0026
	(0.0192)	(0.0096)
Female	-0.0137**	0.0022
	(0.0068)	(0.0059)
Age	0.0061	-0.0041
	(0.0046)	(0.0042)
Age squared	-0.0003	0.0001
	(0.0002)	(0.0002)
Other race	-0.0004	-0.0152***
	(0.0079)	(0.0042)
Black	0.0075	0.0056
	(0.0066)	(0.0106)
Mother with advance degree	-0.0197**	-0.0068
	(0.0080)	(0.0091)
Mother with some college	-0.0201**	0.0002
	(0.0081)	(0.0060)
Mother's age	-0.0005	-0.0001
	(0.0003)	(0.0006)
Father with advance degree	-0.0149**	-0.0107
	(0.0059)	(0.0081)
Father with some college	-0.0038	-0.0159**
	(0.0048)	(0.0060)
Father's age	-0.0000	-0.0002
	(0.0001)	(0.0003)
Pupil-teacher ratio	0.0013	0.0023**
	(0.0013)	(0.0010)
GDP growth rate	0.0018	0.0014
	(0.0038)	(0.0025)
Unemp. rate	-0.0399	-0.0016
	(0.0381)	(0.0025)
Constant	0.3989***	0.0534
	(0.1429)	(0.0746)
Observations	16,808	13,806
R-squared	0.016	0.010
State and Year Fixed Effects	N	N

Notes: Column 1 reports the results for the children of parents who lost their jobs, and column 2 for the children of employed parents. The dependent variable is whether a child aged 5-17 repeated a grade or not. Estimates are calculated using the linear probability regression. Standard errors are clustered at the state level. * denotes significance at the ten percent level, ** denotes at the five percent level, and *** denotes at the one percent level.

Table 5: **Effects of Maximum UI Benefits on the Likelihood of Grade Repetition: Main Sample**

	(1)	(2)	(3)
Ln(Max. UI)*Layoff	-0.0444***	-0.0440***	-0.0403***
	(0.0149)	(0.0150)	(0.0150)
Ln(Max. UI)	-0.0087	-0.0013	-0.0085
	(0.0147)	(0.0088)	(0.0351)
Layoff	0.2788***	0.2664***	0.2440***
	(0.0890)	(0.0878)	(0.0878)
Female		-0.0078*	-0.0074*
		(0.0044)	(0.0043)
Age		0.0022	0.0022
		(0.0027)	(0.0027)
Age squared		-0.0001	-0.0001
		(0.0001)	(0.0001)
Other race		-0.0048	-0.0031
		(0.0049)	(0.0045)
Black		0.0072	0.0066
		(0.0057)	(0.0055)
Mother with advance degree		-0.0161**	-0.0154**
		(0.0065)	(0.0066)
Mother with some college		-0.0139**	-0.0140**
		(0.0053)	(0.0053)
Mother's age		-0.0005	-0.0005
		(0.0003)	(0.0003)
Father with advance degree		-0.0116**	-0.0117**
		(0.0047)	(0.0045)
Father with some college		-0.0090***	-0.0089**
		(0.0033)	(0.0034)
Father's age		0.0000	-0.0000
		(0.0001)	(0.0001)
Pupil-teacher ratio		0.0018	-0.0042
		(0.0012)	(0.0049)
GDP growth rate		0.0016	-0.0010
		(0.0031)	(0.0022)
Unemp. rate		-0.0032	-0.0131***
		(0.0037)	(0.0042)
Constant	0.0665	0.0494	0.2304
	(0.0893)	(0.0620)	(0.2097)
Observations	30,614	30,614	30,614
R-squared	0.007	0.015	0.028
State and Year Fixed Effects	N	N	Y

Notes: The dependent variable is whether an individual aged 5 to 17 year repeated a grade or not. Estimates are calculated using the linear probability regression. Standard errors are clustered at the state level. * denotes significance at the ten percent level, ** denotes at the five percent level, and *** denotes at the one percent level.

Table 6: **Effects of Maximum UI Benefits on the Likelihood of Grade Repetition: Heterogeneity by Age**

	Children Ages 5-13	Children Ages >13
Ln(Max. UI)*Layoff	-0.0543***	-0.0135
	(0.0167)	(0.0200)
Ln(Max. UI)	0.0051	-0.0396
	(0.0484)	(0.0802)
Layoff	0.3286***	0.0816
	(0.0978)	(0.1195)
Female	-0.0052	-0.0129***
	(0.0057)	(0.0035)
Age	0.0164**	0.0402
	(0.0076)	(0.0797)
Age squared	-0.0009**	-0.0013
	(0.0004)	(0.0026)
Other race	-0.0038	-0.0011
	(0.0058)	(0.0104)
Black	0.0068	0.0062
	(0.0086)	(0.0104)
Mother with advance degree	-0.0102	-0.0253***
	(0.0086)	(0.0085)
Mother with some college	-0.0083	-0.0269***
	(0.0062)	(0.0075)
Mother's age	-0.0005	-0.0004
	(0.0004)	(0.0006)
Father with advance degree	-0.0148**	-0.0097
	(0.0069)	(0.0066)
Father with some college	-0.0097**	-0.0098
	(0.0047)	(0.0081)
Father's age	0.0001	-0.0002*
	(0.0002)	(0.0001)
Pupil-teacher ratio	-0.0011	-0.0126**
	(0.0058)	(0.0052)
GDP growth rate	0.0000	-0.0035
	(0.0026)	(0.0021)
Unemp. rate	-0.0130**	-0.0124***
	(0.0063)	(0.0035)
Constant	0.0048	0.2548
	(0.3166)	(0.5786)
Observations	21,560	9,054
R-squared	0.032	0.037
State and Year Fixed Effects	Y	Y

Notes: The dependent variable is whether an individual aged 5 to 17 year repeated a grade or not. Column 1 presents results for children aged 5-13 and column 2 for children aged above 13 years. Estimates are calculated using the linear probability regression. Standard errors are clustered at the state level. * denotes significance at the ten percent level, ** denotes at the five percent level, and *** denotes at the one percent level.

Table 7: **Effects of Maximum UI Benefits on the Likelihood of Grade Repetition: by Family Income**

	Low-Income Family	Medium-Income Family	High-Income Family
Ln(Max. UI)*Layoff	-0.1098**	-0.0660*	-0.0038
	(0.0536)	(0.0379)	(0.0296)
Ln(Max. UI)	0.3030*	-0.1748	-0.0211
	(0.1768)	(0.2254)	(0.0990)
Layoff	0.6648**	0.4139*	0.0220
	(0.3169)	(0.2235)	(0.1798)
Female	-0.0202**	-0.0026	-0.0021
	(0.0100)	(0.0094)	(0.0088)
Age	0.0309*	0.0450***	-0.0154
	(0.0178)	(0.0117)	(0.0149)
Age squared	-0.0016*	-0.0025***	0.0008
	(0.0010)	(0.0006)	(0.0008)
Other race	0.0114	-0.0068	-0.0062
	(0.0196)	(0.0150)	(0.0095)
Black	0.0124	-0.0213*	0.0108
	(0.0242)	(0.0113)	(0.0150)
Mother with advance degree	0.0205	0.0012	-0.0228
	(0.0171)	(0.0136)	(0.0154)
Mother with some college	0.0075	0.0038	-0.0197
	(0.0122)	(0.0154)	(0.0157)
Mother's age	-0.0012	-0.0002	0.0003
	(0.0009)	(0.0007)	(0.0005)
Father with advance degree	-0.0574***	-0.0060	-0.0054
	(0.0212)	(0.0113)	(0.0096)
Father with some college	-0.0192	0.0061	-0.0097
	(0.0159)	(0.0160)	(0.0094)
Father's age	0.0004	-0.0001	-0.0002
	(0.0004)	(0.0004)	(0.0004)
Pupil-teacher ratio	-0.0027	-0.0110	0.0091
	(0.0108)	(0.0100)	(0.0063)
GDP growth rate	0.0022	-0.0029	0.0007
	(0.0085)	(0.0064)	(0.0029)
Unemp. rate	-0.0035	-0.0243	-0.0029
	(0.0179)	(0.0312)	(0.0081)
Constant	-1.8327	1.1510	0.0441
	(1.1512)	(1.4790)	(0.6254)
Observations	7,582	7,192	6,786
R-squared	0.101	0.047	0.046
State and Year Fixed Effects	Y	Y	Y

Notes: The sample is divided into terciles by family income. Column 1 reports results for the first tercile (low-income group). Column 2 reports results for the second tercile, and column 3 reports estimates for the third tercile (high-income group). The estimates are calculated using the linear probability model. The dependent variable is whether an individual aged 5 to 13 year repeated a grade or not. Standard errors are clustered at the state level. * denotes significance at the ten percent level, ** denotes at the five percent level, and *** denotes at the one percent level.

Table 8: **Effects of Maximum UI Benefits on the Likelihood of Grade Repetition: Probit model**

	Ages 5-13	Ages 5-17
Ln(Max. UI)*Layoff	-0.0526***	-0.0348**
	(0.0199)	(0.0138)
Ln(Max. UI)	0.0082	-0.0112
	(0.0496)	(0.0381)
Layoff	0.3529***	0.3564***
	(0.0117)	(0.0729)
Female	-0.0037	-0.0066*
	(0.0058)	(0.0039)
Age	0.0168**	0.0032
	(0.0074)	(0.0026)
Age squared	-0.0010**	-0.0002*
	(0.0004)	(0.0001)
Other race	-0.0043	-0.0032
	(0.0068)	(0.0048)
Black	0.0053	0.0050
	(0.0070)	(0.0045)
Mother with advance degree	-0.0086	-0.0130**
	(0.0091)	(0.0059)
Mother with some college	-0.0063	-0.0115***
	(0.0048)	(0.0035)
Mother's age	-0.0004	-0.0004*
	(0.0003)	(0.0002)
Father with advance degree	-0.0169**	-0.0137***
	(0.0072)	(0.0049)
Father with some college	-0.0092*	-0.0081**
	(0.0048)	(0.0035)
Father's age	0.0001	-0.0000
	(0.0002)	(0.0001)
Pupil-teacher ratio	-0.0021	0.0000
	(0.0081)	(0.0078)
GDP growth rate	-0.0014	-0.0003
	(0.0026)	(0.0033)
Unemp. rate	-0.0157*	0.0522***
	(0.0091)	(0.0094)
Observations	21292	30614
State and Year Fixed Effects	Y	Y

Notes: Column 1 reports the results estimated for children ages 5-13, and column 2 for children ages 5-17. The dependent variable is whether a child repeated a grade or not. Estimates are calculated using a probit model. Standard errors are clustered at the state level. * denotes significance at the ten percent level, ** denotes at the five percent level, and *** denotes at the one percent level.

Table 9: **Effects of Maximum UI Benefits on the Likelihood of Grade Repetition: Measuring Benefits in Level**

	Ages 5-13	Ages 5-17
Max. UI*Layoff	-0.0001***	-0.0001**
	(0.0000)	(0.0000)
Max. UI	-0.0001	-0.0001
	(0.0001)	(0.0001)
Layoff	0.0538***	0.0388***
	(0.0154)	(0.0137)
Female	-0.0051	-0.0074*
	(0.0057)	(0.0043)
Age	0.0164**	0.0022
	(0.0076)	(0.0027)
Age squared	-0.0009**	-0.0001
	(0.0004)	(0.0001)
Other race	-0.0037	-0.0030
	(0.0058)	(0.0045)
Black	0.0070	0.0067
	(0.0086)	(0.0055)
Mother with advance degree	-0.0104	-0.0155**
	(0.0086)	(0.0066)
Mother with some college	-0.0083	-0.0141**
	(0.0062)	(0.0053)
Mother's age	-0.0005	-0.0005
	(0.0004)	(0.0003)
Father with advance degree	-0.0147**	-0.0116**
	(0.0069)	(0.0045)
Father with some college	-0.0096**	-0.0088**
	(0.0047)	(0.0034)
Father's age	0.0001	-0.0000
	(0.0002)	(0.0001)
Pupil-teacher ratio	-0.0021	-0.0051
	(0.0061)	(0.0051)
GDP growth rate	-0.0003	-0.0012
	(0.0026)	(0.0021)
Unemp. rate	-0.0134**	-0.0131***
	(0.0061)	(0.0039)
Constant	0.0797	0.2260*
	(0.1502)	(0.1153)
Observations	21,560	30,614
R-squared	0.032	0.028
State and Year Fixed Effects	Yes	Yes

Notes: Column 1 reports the results estimated for children ages 5-13, and column 2 for children ages 5-17. The dependent variable is whether a child has repeated a grade or not. The maximum weekly unemployment insurance payment is measured in level. Estimates are calculated using the linear probability regression. Standard errors are clustered at the state level. * denotes significance at the ten percent level, ** denotes at the five percent level, and *** denotes at the one percent level.

Table 10: **Effects of Maximum UI Benefits on the Likelihood of Grade Repetition**

	Ages 5-13	Ages 5-17
Ln(Max. UI)*Layoff	-0.0540***	-0.0401**
	(0.0168)	(0.0151)
Ln(Max. UI)	0.0292	0.0191
	(0.0321)	(0.0257)
Layoff	0.3262***	0.2421***
	(0.0984)	(0.0883)
Female	-0.0052	-0.0074*
	(0.0057)	(0.0043)
Age	0.0164**	0.0022
	(0.0076)	(0.0027)
Age squared	-0.0009**	-0.0001
	(0.0004)	(0.0001)
Other race	-0.0040	-0.0033
	(0.0057)	(0.0044)
Black	0.0068	0.0065
	(0.0086)	(0.0055)
Mother with advance degree	-0.0102	-0.0154**
	(0.0086)	(0.0066)
Mother with some college	-0.0084	-0.0141**
	(0.0062)	(0.0054)
Mother's age	-0.0005	-0.0005
	(0.0004)	(0.0003)
Father with advance degree	-0.0148**	-0.0117**
	(0.0069)	(0.0045)
Father with some college	-0.0099**	-0.0090**
	(0.0048)	(0.0035)
Father's age	0.0001	-0.0000
	(0.0002)	(0.0001)
Pupil-teacher ratio	-0.0010	-0.0041
	(0.0058)	(0.0048)
GDP growth rate	0.0004	-0.0006
	(0.0025)	(0.0021)
Unemp. rate	-0.0114**	-0.0113***
	(0.0047)	(0.0033)
Constant	-0.1487	0.0548
	(0.2303)	(0.1915)
Observations	21,560	30,614
R-squared	0.032	0.028
State and Year Fixed Effects	Yes	Yes

Notes: Column 1 reports the results estimated for children ages 5-13, and column 2 for children ages 5-17. The dependent variable is whether a child repeated a grade or not. Estimates are calculated using the linear probability regression. Standard errors are clustered at the state level. * denotes significance at the ten percent level, ** denotes at the five percent level, and *** denotes at the one percent level.

Table 11: **Effects of Maximum UI Benefits on the Likelihood of Grade Repetition: State-by-Year Fixed Effects**

	Ages 5-13	Ages 5-17
Ln(Max. UI)*Layoff	-0.0543***	-0.0403**
	(0.0168)	(0.0151)
Ln(Max. UI)	0.0050	-0.0087
	(0.0491)	(0.0354)
Layoff	0.3286***	0.2440***
	(0.0986)	(0.0882)
Female	-0.0052	-0.0074*
	(0.0057)	(0.0043)
Age	0.0164**	0.0022
	(0.0077)	(0.0027)
Age squared	-0.0009**	-0.0001
	(0.0004)	(0.0001)
Other race	-0.0038	-0.0031
	(0.0058)	(0.0045)
Black	0.0068	0.0066
	(0.0086)	(0.0056)
Mother with advance degree	-0.0102	-0.0154**
	(0.0087)	(0.0066)
Mother with some college	-0.0083	-0.0140**
	(0.0062)	(0.0054)
Mother's age	-0.0005	-0.0005
	(0.0004)	(0.0003)
Father with advance degree	-0.0148**	-0.0117**
	(0.0070)	(0.0045)
Father with some college	-0.0097**	-0.0089**
	(0.0048)	(0.0035)
Father's age	0.0001	-0.0000
	(0.0002)	(0.0001)
Pupil-teacher ratio	0.1486***	0.0421***
	(0.0079)	(0.0048)
GDP growth rate	0.0259***	0.0054***
	(0.0017)	(0.0012)
Unemp. rate	0.0652***	0.0218***
	(0.0024)	(0.0016)
Constant	-2.2084***	-0.5375**
	(0.3669)	(0.2596)
Observations	21,560	30,614
R-squared	0.032	0.028
State and Year Fixed Effects	Y	Y
State-by-Year Fixed Effects	Y	Y

Notes: Column 1 reports the results estimated for children ages 5-13, and column 2 for children ages 5-17. The dependent variable is whether a child repeated a grade or not. Estimates are calculated using a linear probability model, and controlling for state-by-year fixed effects along with state fixed and year fixed effects. Standard errors are clustered at the state level. * denotes significance at the ten percent level, ** denotes at the five percent level, and *** denotes at the one percent level.

Table 12: **Effects of Maximum UI Benefits on the Likelihood of Grade Repetition: Extended Sample**

	(1)	(2)	(3)
Ln(Max. UI)*Layoff	-0.0444***	-0.0440***	-0.0403***
	(0.0149)	(0.0150)	(0.0150)
Ln(Max. UI)	-0.0087	-0.0013	-0.0084
	(0.0147)	(0.0088)	(0.0350)
Layoff	0.2788***	0.2663***	0.2439***
	(0.0890)	(0.0877)	(0.0877)
Female		-0.0078*	-0.0074*
		(0.0044)	(0.0043)
Age		0.0022	0.0022
		(0.0027)	(0.0027)
Age squared		-0.0001	-0.0001
		(0.0001)	(0.0001)
Other race		-0.0048	-0.0031
		(0.0049)	(0.0045)
Black		0.0072	0.0066
		(0.0057)	(0.0055)
Mother with advance degree		-0.0161**	-0.0154**
		(0.0065)	(0.0066)
Mother with some college		-0.0139**	-0.0140**
		(0.0053)	(0.0053)
Mother's age		-0.0005	-0.0005
		(0.0003)	(0.0003)
Father with advance degree		-0.0116**	-0.0117**
		(0.0047)	(0.0045)
Father with some college		-0.0090***	-0.0089**
		(0.0033)	(0.0034)
Father's age		0.0000	-0.0000
		(0.0001)	(0.0001)
Pupil-teacher ratio		0.0018	0.0026
		(0.0012)	(0.0034)
GDP growth rate		0.0016	0.0005
		(0.0031)	(0.0020)
Unemp. rate		-0.0032	-0.0092**
		(0.0037)	(0.0040)
Constant	0.0665	0.0494	0.0566
	(0.0893)	(0.0620)	(0.2037)
Observations	43,788	43,788	43,788
R-squared	0.007	0.015	0.028
State and Year Fixed Effects	N	N	Y

Notes: The dependent variable is whether an individual aged 5 to 17 year repeated a grade or not. Estimates are calculated using the linear probability regression. Standard errors are clustered at the state level. * denotes significance at the ten percent level, ** denotes at the five percent level, and *** denotes at the one percent level.