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**Something Good Out of the Bad Times?
Intergenerational Inequalities in College
Enrollment during the Great Recession in the
United States**

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Abstract

During times when labor market opportunities are few, the opportunity cost and risks of education diminish, resulting in an increase in educational enrollment. Although this holds for the entire population, there is a more steady increase in immediate college enrollment after high school over time, regardless of the impact of the Great Recession. Simultaneously, the net costs of education have grown, increasing the importance of families' resources. This research examines whether the Great Recession has resulted in differences in socioeconomic inequalities in college enrollment in the United States. The results of the analysis of 2006-2013 high school graduation cohorts with data from the Panel Study on Income Dynamics show that female graduates from low-income families were more sensitive to changes in opportunity costs, evidenced by their increasing college enrollment, whereas male graduates whose parents held a college degree decreased their enrollment. Furthermore, the increase in enrollment, regardless of family background, was associated with the volume of the change in unemployment. Therefore, in addition to the tremendous negative impacts the Great Recession had on families and individuals, it had a positive influence on intergenerational inequalities in college enrollment, particularly benefiting disadvantaged families.

Keywords: higher education, social stratification, recession, social inequality

Introduction

Higher education acts as a stepping stone to a better life in many western societies. Having a college degree increases one's income prospects, provides higher social status and promotes better well-being, and obtaining even just some college is beneficial as it is associated with more positive economic outcomes than no college attainment (Hout 2012). As educational expansion has pushed graduation from high school to near universal levels (Murnane 2013), the transition from high school to either higher education or the labor market is crucial in defining individual social and economic outcomes.

Making the transition from high school to college requires a considerable amount of financial, social and cognitive resources on the parts of individuals and their families (Frenette 2007; Jæger and Holm 2007). Comprehensive literature has shown that the extent of families' resources strongly influences the possibility of this transition, resulting in educational inequalities in college enrollment but also that institutional factors, such as financial support and tuition, shape inequalities in access to and enrollment in higher education (Breen et al. 2009; Brunello and Checchi 2007; Long, 2004; Pfeffer 2008). Intergenerational transmission is particularly strong at the top and bottom – i.e., among families with less than a college degree and those with more advanced degrees (Torche 2011). Possibly for this reason, the most disadvantaged college students, that is, those who are the least likely to obtain a college degree based on their social background, benefit the most from higher educational attainment (Brand and Xie 2010; Hout 2012).

The educational choices of high school graduates are often restricted by family resources and also guided by personal goals and the information available. As personal preferences guide personal goals – despite or because of social background – resource restrictions affecting educational decisions differ dramatically between families, resulting in different enrollment outcomes. Rational action theory argues that individuals base their educational decisions on the costs and benefits of the actions, seeking to avoid downward mobility (Breen and Goldthorpe 1997). Hence, family background influences significantly, and to a large extent differently, how costs and benefits weigh in educational decision-making. As the Great Recession greatly affected families' financial resources, it is assumed that the importance of parental income to college enrollment was

strengthened during the recession, whereas the lowered opportunity costs are expected to have produced weaker educational inheritance.

In addition to the well-known influence of social origin on educational enrollment, previous research has provided strong evidence of the relationship between labor market conditions and educational participation, noting cyclical changes in unemployment and educational enrollment (see e.g., Dellas and Koubi 2003; Clark 2011). Additionally, the case of the Great Recession in 2008-2010 is very powerful in this area due to the substantial increase in unemployment and a crash in housing wealth. Previous institutional-level analyses have demonstrated that the increase in overall higher education enrollment was strongest in the states that were hit hardest during the Great Recession (Long 2014). However, there is scarce evidence on how the recession affected the educational transitions to college or educational decisions of high school graduates. Furthermore, as the Recession had geographically different impacts on the economy, it also affected families differently (see Grusky, Western and Wimer 2011), which raises a question about the relation between the varied impacts of the recession on unemployment and the changes in educational inequalities.

This paper examines how the Great Recession influenced inequalities in college enrollment in the United States. By examining the college enrollment of high school graduates, who are on the edge of deciding between entry into the labor market or pursuit of further education, it can shed light on the relations between mezzo-level changes and the process of educational decision-making of individuals and families. Data from the Panel Study on Income Dynamics enable examination of the relations between social origin, college enrollment and the recession among individuals who graduated from high school between 2006 and 2013. This paper provides empirical evidence of the way, if any, in which the Great Recession affected the relation between parental background and the transition to tertiary education in the United States.

Balancing in educational decisions

The roles of higher education in shaping inequalities in society and in promoting individuals' future wealth and status are well known, and therefore, extensive research has explored the aspirations and

mechanisms of educational decisions beyond the compulsory level (e.g., Bernardi and Ballarino 2016; Breen and Goldthorpe 1997; Hout 2012). In most modern societies, completing basic education, and in many cases also upper secondary education, is universal, placing families and youth in the position of educational decision-making, whether to pursue further education or to enter the labor market, the last years of high school.

The mechanism of pursuing higher education after secondary education is often determined by institutional and individual factors. Rational action theory argues that individuals' actions are based on acknowledged decisions where the actors possess and use perfect knowledge and subjective rationality to maximize their expected utility (Goldthorpe 1998). This means that educational decisions are based on evaluation by families of the costs and benefits of the specific educational transition (Breen and Goldthorpe 1997). Pursuing higher education after college has well-known strong benefits, such as increased income and health; however, the costs in the forms of tuition, foregone income and lost time also greatly influence decision-making (Long 2004). The opportunity costs – i.e., the time spent in an educational institution that could have been used to earn income and build a career – are important, especially for families whose resources are scarce and whose ability to invest in education is sometimes limited. Rational action theory can also apply in times of uncertainty as it claims that individuals will obtain as much information as possible in certain situations to make the most rational decisions, acknowledging the specific limitations for some actors and that the information and decisions are guided by their personal goals and beliefs (Goldthorpe 1998).

In sociological research, the theory of risk aversion acknowledges the class-specific factors in educational decision-making, extending rational action arguments to resource restrictions and class inequalities: Families seek to minimize the risk of downward mobility, so that high-status families pursue top-quality colleges, whereas lower-class families choose lower-risk educational pathways to avoid failure (Breen and Goldthorpe 1997; Holm and Jæger 2008). The parental influence on children's education is considerable as young adults' educational preferences and perceptions of educational alternatives can be limited by their parents' opinions and preferences, at both ends of the social stratum (Boone and Van Houtte 2013). However, attending college can be an almost automatic process for higher-class children, whereas the situation is often the opposite for children

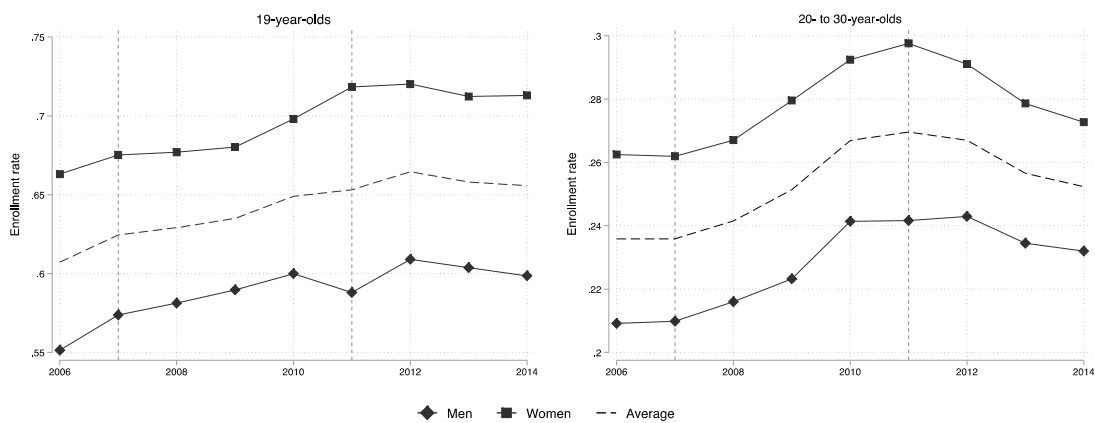
from disadvantaged backgrounds who must make active and acknowledged decisions, resulting in higher risk aversion (Breen, Van de Werfhorst and Jæger 2014; Hartlaub and Schneider 2012). In conclusion, not only do families' resources determine the level of risk aversion but other family background factors can also determine how much and in what direction the costs and benefits of schooling weigh in the educational decision-making regarding college entry after high school.

The complex impact of the great recession

The Great Recession had multiple unique characteristics compared to previous economic downturns, such as rapid growth in unemployment and a widespread decline in home equity. Families suffered loss of resources, such as employment, income and house value. The lost income and employment alone decreased the probability of attending college, and with the deprivation of housing wealth, which has been a valuable asset for lower- and middle-class families to finance higher education, losing these assets influenced the families' possibilities of higher education enrollment (Kalil and Wightman 2011; Lovenheim 2011; Wolff, Owens and Burak 2011). With limited access to loans and credit, the "traditional" ways of funding higher education were largely cut off, especially for families with less extensive resources, resulting in greater inequalities: Low-income parents spent less on education during the Recession, whereas families with high incomes increased their educational spending (Kornrich and Lunn 2017).

During the Great Recession, there was an increase in overall educational enrollment in higher education, which suggests that families reacted to the changed labor market opportunities by changing their educational behavior. However, a great amount of the enrollment growth was due to young adults who were returning to school because job opportunities were few and to those who enrolled part-time (Barr and Turner 2015; Long 2014). Although fewer opportunities in the labor market produce higher overall educational enrollment (see e.g., Betts and McFarland 1995; Clark 2011), it is expected that the decision of educational enrollment differs between young adults who return to school after labor market opportunities become scarce and young adults who choose between the risks of entering the labor market and higher education. Figure 1 (based on the American Community Survey Public Use Microdata Sample 2006-2014) shows a sharp increase in undergraduate enrollment among 20- to 30-year-olds during the Great Recession but a much

steadier increase among 19-year-olds over time. This difference can be explained by the high school graduates being more likely to benefit from their families' resources but also being more vulnerable to changes in them than the older adolescents, who may have acquired personal resources and thus were less reliant on family background.



Source: American Community Survey, sample weights applied, 20 to 35-year-olds

Figure 1. Undergraduate enrollment over high school graduation cohorts, 19- vs 20- to 30-year-olds

The volume of female students and college graduates is somewhat alarmingly overtaking the enrollment and graduation rates of men (Bae et al 2000; Goldin, Katz and Kuziemko 2006). With the increasing gender gap in college enrollment and the segmented labor market in the United States, it is assumed that female and male high school graduates had different educational reactions to the events in the labor market. In the US, both female and male graduates increased their college enrollment during the Great Recession (Figure 1, 19-year-olds), with a slightly stronger increase among women, and particularly among the cohorts who graduated when the Recession was at its worst. Previous findings have shown that the economic downturn increased the educational mobility of men but not of women, due to an already-high female enrollment rate (Erola 2009). Although that might apply in strong welfare states where enrollment rates in tertiary education have almost reached their saturation levels, in the US it appears that female graduates had a stronger positive reaction to the Recession than male graduates. With female college enrollment constantly increasing in the US, and especially during the recession, it can be expected that *the Great*

Recession reduced the intergenerational inequalities in college enrollment more among women than men.

While the Great Recession hit the US economy and American families, the funding of educational institutions also suffered tremendously (Barr and Turner 2013). With increased student enrollment, the pressure on higher education institutions to cut costs grew, often resulting in raising tuition, which is an influential factor in educational decisions, especially among disadvantaged families (Long 2004). The overall net price of higher education has been found to have increased, resulting in low-income families spending less on education during the Recession (Kornrich and Lunn 2017). However, federal and state financial student aid functioned as a stabilizer, with extensive positive changes in need-based grants, such as the Pell Grant, helping low-income students finance their higher education enrollment (Barr and Turner 2013; Bettinger and Williams 2014). This may have weakened the influence of family background on college enrollment for a few low-income families; however, as the financial constraints were detrimental, the positive effect of increased tuition is not expected to overcome the negative effects of the Recession. In contrast, an increase in tuition does not affect high-income families; however, the increased competition for college places may result in a greater influence of parental income when families pursue enrollment in high-quality universities to maintain their advantaged position (Lucas 2001; Pöyliö, Erola and Kilpi-Jakonen 2017). As a result, it is assumed that

The association between parental income and college enrollment strengthened during the Great Recession (H1).

To study the changes in the relations between social origin and college enrollment, the vital role of parental education must be considered. Bukodi and Goldthorpe (2013) showed that different social origin measures provide varied results and that each measure may have a distinct influence on educational attainment. Therefore, the influence of parental background is analyzed separately by parental income and education. Parental educational attainment is also less varying over time, making it less dependent on economic shifts; recession periods will not reduce the educational resources of the family. Counter-cyclical enrollment rates can lead to positive changes in educational mobility during economic downturns, as previous findings have also shown (Erola 2009). While job opportunities were scarce for high school graduates from uneducated families, the

opportunity costs of pursuing higher education were much lower, resulting in higher enrollment rates. Highly educated parents are able to provide more knowledge on educational paths and systems than uneducated ones, and college enrollment of children from highly educated backgrounds is more or less an automatic process, which can arguably be broken only by a large institutional force – such as an economic crisis (Pfeffer 2008; Raftery and Hout 1993). Therefore, it is expected that

The association between parental education and college enrollment weakened during the Great Recession (H2).

The Great Recession had very different economic influences among states; some states suffered from massive job losses, whereas in others employment rose (Connaughton and Madsen 2012). Previous research (Long 2014) demonstrates how in states where unemployment growth was the strongest during the Great Recession, the increase in college enrollment was the sharpest. Among cohorts who graduated during prosperous or stable times, families did not need to change their educational behavior, whereas it is expected to see greater changes in college enrollment when the labor market opportunities become scarcer. Therefore, it is assumed that, as the college enrollment trends are counter-cyclical to economic growth, intergenerational inequalities in college enrollment also change. In other words, changes in job opportunities produce variation in educational inequalities in college enrollment: High school graduates with restricted family resources are more prone to increase college enrollment in times of uncertainty due to lower opportunity costs, whereas families with high educational and financial resources seek to maintain their advantaged position by strengthening the parental influence on their children's transition into higher education (Lucas 2001; Pöyliö, Erola and Kilpi-Jakonen 2017). In conclusion, it is expected that

The greater the change in unemployment is, the stronger families' reactions are, resulting in greater changes in family background influence on college enrollment (H3).

Data and methods

For micro-level analyses of intergenerational inequalities in college enrollment, this research benefits from data from the Panel Study of Income Dynamics (2016) for the 2006-2013 high school graduation cohorts (N=2018). PSID is a significant longitudinal survey that contains information on demographics and various types of resources for multiple generations. The dependent variable measures whether the respondent enrolled in college a maximum of one year after graduating from high school.

The main independent variables are different parental resources, i.e., the total household income (adjusted for inflation) and whether a parent has a college degree. Parental income is weighted to adjust for the over-sampling of low-income families, and a natural logarithm is taken of parental income. Parental resources are measured when the respondent was between 10 and 15 years old; income is measured as an average of at least two observation years and education as the highest year of education that the respondent's parents attained. To determine whether the relations between parental resources and college enrollment differ between resource levels, parental income is divided into low-, middle- and high-income groups, with the low- and high-income groups defined as the top and bottom 10% in the income distribution, whereas parental education is recoded into two groups: with and without a college degree (more than 13 years of schooling completed). Additionally, gender, race and the number of children in the household when the respondent was a teen are controlled in the models (see Appendix Table A1 for summary statistics of all the variables).

There are two different sets of regression models used to study how the Great Recession impacted the relations between social origin and college enrollment. The high school graduates are nested within the states (n=48) and graduation cohorts (n=8) in both regression sets. The first set examines the intergenerational inequalities in educational enrollment over time and whether the inequalities differ depending on whether a person graduated before, during or after the Recession. The set consists of state-fixed effects logistic regression models that include origin*graduation cohort interaction. These models have been weighted with PSID individual longitudinal weights, measured at the year (or one year before due to biannual observations) the respondent graduated high school. These models (reported as average marginal effects figures) demonstrate the over-time changes in

the relations between parental resources (education and income) and college enrollment after high school.

The second set of analyses studies how families reacted to state-level changes in the unemployment rate. The set consists of multilevel regression models, including an origin*recession impact interaction. The state where the high school graduate was living at the graduation year is set as the level-two variable. The models control for, in addition to gender and race, the year of high school graduation. These models examine the state-level variation in college enrollment and whether the magnitude of the Recession's impact on unemployment affected the importance of parental resources to college enrollment. The state-level recession impact is calculated as the annual change in the unemployment rate between the year of high school graduation and the previous year (annual unemployment rates calculated from the American Community Survey Public Use Microdata Sample 2006-2014). This way, the different impacts of the recession in different states can be considered and used to examine how the changes in unemployment rates resulted in different outcomes in the relation between social origin and college enrollment. The results of the models are presented as average marginal effects figures.

Results

To study how the Recession influenced the intergenerational inequalities in college enrollment, I ran three sets of logistic regression models. First, the over-time models (Figure 2) describe how the relations between parental resources (income and education separately) and college enrollment have changed over time and whether during the Great Recession there were noticeable changes in the associations. Second, the high school graduation cohorts are divided into three groups – pre-recession, recession and post-recession graduation cohorts – and the differences in the association between parental resources and college enrollment are analyzed among these groups (Figure 3 for parental income and Figure 4 for parental education). Third, the recession impact models (Figure 5) examine whether the change in the state's unemployment rate influenced college enrollment decisions differently depending on the parental resources.

Parental resources and college enrollment over time

Figure 2 shows how the intergenerational inequalities in higher education, i.e., the likelihood of enrolling in college after high school by parental resources, changed between the high school graduation cohorts. The results show that parental income and education did have somewhat different effects on college enrollment over time (see hypotheses H1 and H2): The association between parental education and college enrollment weakened during the Recession, whereas parental income had a much more stable influence over time. Among the 2008-2011 high school graduates, the probability of attending college decreased for those whose parents had a college degree and remained stable among those whose parents did not have a degree. In other words, the Great Recession had a positive influence on the educational inheritance, diminishing the difference in the probability of enrolling in college between families, resulting in an equalization of educational inheritance. This positive trend does not seem to apply to parental income. There was no clear change among the recession graduates in any income group -, the association between parental income and college enrollment was extremely stable over all the high school graduation cohorts over time.

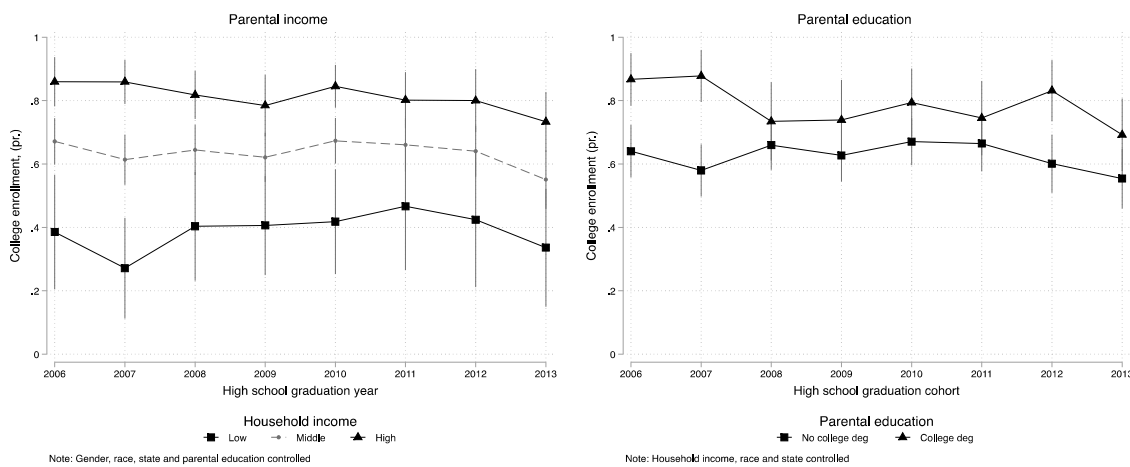
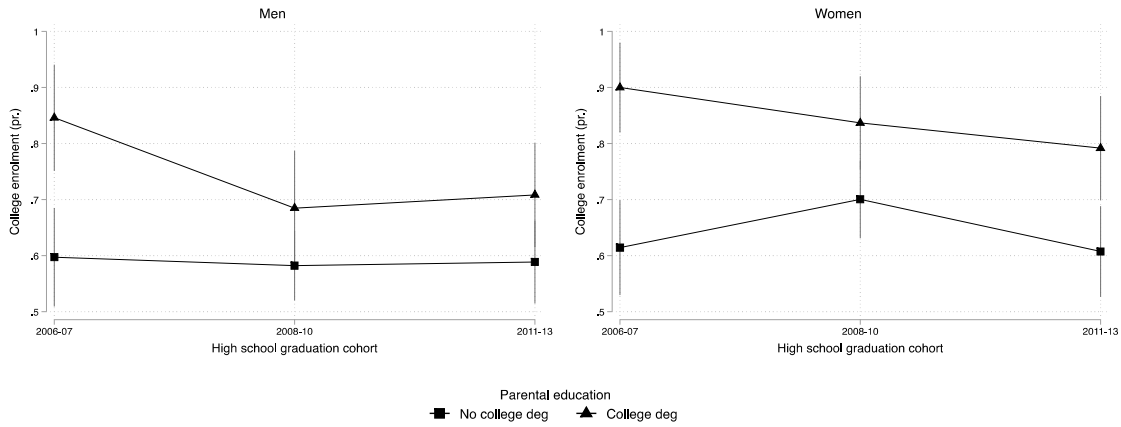


Figure 2. Influence of parental resources on college enrollment over time

To examine the changes brought by the Great Recession in the influence of parental resources on college enrollment behavior, the high school graduates are pooled into cohorts of before, during and

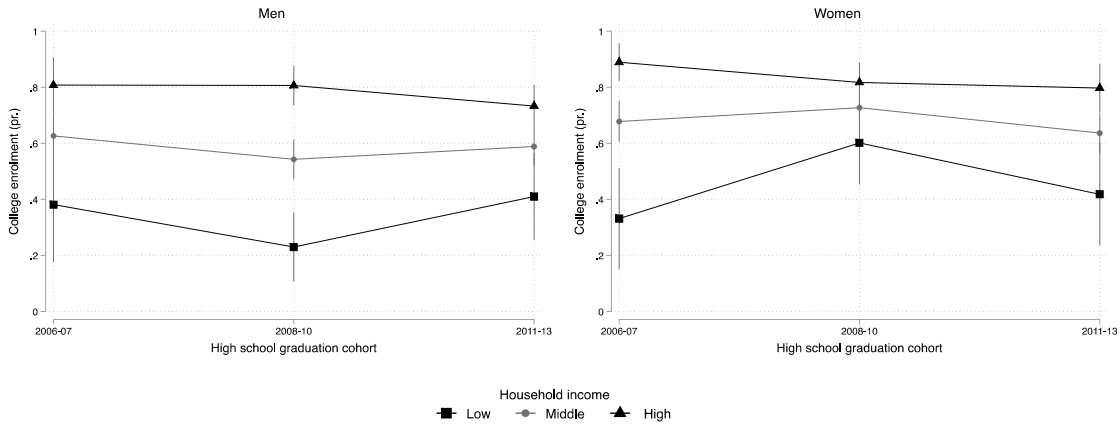
after the Great Recession for men and women separately. Although the changes within or between the income groups over time were minor, these results (Figure 3, full results in Appendix Table A2) tell a somewhat different story. The association between parental income and college enrollment among men remained very stable in all the income groups over the cohorts. Only a small change occurred, but only after the Recession, as the probability of enrolling in college increased among men from low-income families; however, these changes were not statistically significant. Women, in contrast, changed their enrollment behavior during the Recession, if parental income level was low. This significant change produced a decrease in income inequalities among women who graduated high school during the Great Recession. To conclude, the over-time parental income hypothesis (H1) that the association between parental income and college enrollment strengthened during the Recession is rejected for men as the association is rather stable but supported for women since the association did weaken among the recession graduation cohort.

The over-time results (Figure 2) showed some changes in the association between parental education and college enrollment. Further analyses with the pre-recession, recession and post-recession cohorts by gender (Figure 4, full results in Appendix Table A2) present a more detailed picture of the changes in enrollment behavior. Among men, the changes in college enrollment occurred only among those whose parents had a college degree: During the Recession, the probability of enrolling decreased clearly and remained at that level even afterward. The changes in college enrollment among women, however, appeared mainly among those whose parents did not possess a college degree. The probability of attending college increased among the cohorts graduating during the Recession and whose parents did not hold a college degree but returned to pre-recession levels afterward. Among the graduates with highly educated parents, the probability weakened between each cohort, displaying no impact from the Recession. Although these changes are visible in the marginal effects figures, the results of the associations between parental education and graduation cohorts (Appendix Table A2) were not statistically significant. In conclusion, the hypothesis of the diminishing influence of parental education on college enrollment during the Great Recession (H2) is rejected.



Note: HH income, race and state controlled

Figure 3. College enrollment by parental income over high school graduation cohorts (average marginal effects)



Note: Race, state and parental education controlled. Income continuous.

Figure 3. College enrollment by parental education over high school graduation cohorts (average marginal effects)

Recession impact results

The over-time trends can illustrate some period-effects in the overall trends of the influence of family background on college enrollment; however, it cannot straightforwardly be concluded that

families reacted to the changes that the Great Recession brought or that it was the lack of job opportunities, lowered opportunity costs or instability in the labor market that influenced their educational decisions. Therefore, this paper now turns to examining how families reacted to the changes in unemployment and whether the responses varied by family background. Figure 5 presents the average marginal effects of the multilevel linear probability models (full results in Appendix Table A3). Because college enrollment is measured maximally one year after graduation, the change during the Great Recession is not usable for all the cohorts; however, the unemployment change is measured annually for each high school graduation cohort. Therefore, the results do not indicate only the educational response to the Recession but also whether families changed their college enrollment behavior according to the changes in the labor market opportunities at the time they made these educational decisions. However, large negative changes in unemployment occurred mainly during the Great Recession, and positive changes before and after it, from which we can derive period-specific interpretations.

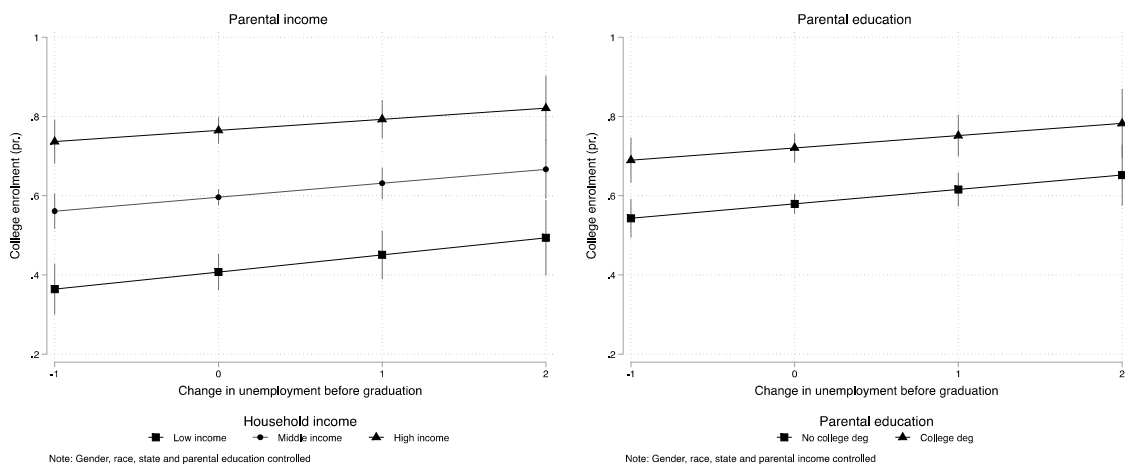


Figure 4. College enrollment response according to the changes in unemployment by parental income and education

For parental resources, both income and education, the results are very similar: The stronger the increase in unemployment was, the higher the probability of enrolling in college after high school was. Unsurprisingly, the difference in college enrollment between families with high and low amounts of resources is clear – students from advantaged families had a significantly higher probability of enrolling in college after high school. However, it is surprising that this difference did

not vary at all by the volume of the change in unemployment. In conclusion, college enrollment decisions were affected by the changes in job opportunities around the time of high school graduation; however, this reaction did not seem to depend on the parental financial or educational resources. Further analyses (not reported here) show that these results apply to both women and men. In conclusion, the recession impact hypothesis that families with different amount of resources react differently to changes in the labor market (H3) is rejected according to these results.

Discussion

This paper has studied how the Great Recession that occurred around the years 2008-2010 affected intergenerational inequalities in college enrollment among high school graduates. Every economic downturn is connected to various negative effects on individuals and societies – and the Great Recession is no exception. Due to its distinctive comprehensive effect on the lives of individuals and on national institutions, has been deservedly studied largely in sociological, economic, health and policy research – results demonstrating large negative changes in publicly funded institutions, the labor market and individuals' health and wealth. This research, however, together with some other counter-intuitive findings (e.g., Burgard, Ailshire and Kalousova 2013 about pro-cyclical mortality), provides empirical evidence of a positive influence of the Recession – reduced educational inequalities in college enrollment, brought by increased enrollment rates among female high school graduates with low parental income.

The results here illustrate that families did react to the Recession and changed their college enrollment behavior, to some extent depending on the families' resources. Not only were the constraints in educational financing found to have merely a weak negative influence on college enrollment (Nielsen, Sørensen and Taber 2010), but the results here suggest these may have contributed to positive college enrollment outcomes. It seems that groups who felt themselves threatened – disadvantaged families with lowered financial resources and a threat of unemployment – reacted to these changes positively.

The Recession was most beneficial for disadvantaged young women, as their educational mobility increased. The constantly increasing gender gap in college enrollment and completion (DiPrete and

Buchmann 2013) places more emphasis on the result that college enrollment of men did not increase to the same extent as that of women and that the probability of enrolling in college among women from low-income backgrounds increased even further. This implies that women were more responsive in a positive way to the changes in the labor market and possibly also in educational institutions – disadvantaged women used the increased opportunities for their benefit despite the financial pressures the Recession brought. This is good news for women as they reaped the benefits of a bad situation and benefited from the changed opportunities in the higher education but also worrying for the men who were left behind in the college enrollment rates and decrease their college enrollment more than women in uncertain times.

Although the over-time results demonstrate that families had different educational responses to the Recession, the uniform recession impact results indicate that the changes in job opportunities were not the driving force behind the differences as families with varying amounts of resources reacted to the change in unemployment in the same way. The overall increased enrollment during the economic downturn, including the school returners and part-time students, may have been an outcome of this reaction but does not explain the differences in the association between parental resources and college enrollment during the Recession. Therefore, further research on the influence of other institutional changes on educational inequalities, such as the increase in tuition fees, during the Recession could shed light on the decision-making process regarding college enrollment between different families and in turn provide information on the factors that could increase educational equality.

This study identifies increased equality in college enrollment among recent high school graduates but does not examine whether the positive college enrollment results also indicate increased educational attainment in the forms of increased years of college, or a full degree, or whether students dropped out of college after some months. However, previous literature argues strongly that some college is better than no college, especially for graduates who lack parental resources who break the cycle of disadvantage (Attewell 2007). Therefore, the increase in college enrollment has a positive effect for disadvantaged students on the job market, being in a better situation than their competing cohorts who did not pursue higher education after high school. For this reason, women with low parental incomes, whose college enrollment increased during the Recession, will benefit

from the increased educational attainment, no matter how short or long, in the future. Long-term effects of the recession on intergenerational inequalities, such as income mobility, would be revealing as to whether the positive influence of the recession on the college enrollment has contributed to larger positive effects on income and occupational outcomes.

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Appendices

Table A1. Summary statistics of the variables

Categorical variables

Attended college after HS					State	
No	37.12%				AL	0.94%
Yes	62.88%				AK	0.05%
High school graduation year					AZ	1.93%
2006	12.74 %				AR	1.73%
2007	12.93%				CA	11.30%
2008	12.88%				CO	1.93%
2009	13.08%				CT	0.59%
2010	13.13%				DC	0.79%
2011	11.94%				FL	2.97%
2012	11.20%				GA	3.37%
2013	12.09%				ID	0.15%
Gender					IL	3.77%
Men	50.84%				IN	2.63%
Women	49.16%				IA	1.44%
Race					KS	0.64%
White	44.80%				KY	1.44%
Non-white	55.20%				LA	1.39%
Parent's college degree					MD	4.21%
No	66.95%				MA	1.68%
Yes	33.05%				MI	5.75%
					MN	0.74%
					MS	4.51%
					MO	3.47%
					MT	0.10%
					NE	0.55%
					NV	0.35%

Continuous variables

	Mean	SD	Min	Max		
No of children in household at teen	2.46	1.19	1.00	9.00	NH	0.05%
HH income (log)	10.81	0.86	7.06	14.84	NJ	2.63%
Annual change in unemployment rate (state-level, from ACS)	0.09	1.48	-2.46	5.43	NM	0.10%
					NY	3.42%
					NC	5.30%
					ND	0.15%
					OH	3.82%
					OK	0.84%
					OR	1.24%
					PA	3.42%
					RI	0.05%
					SC	4.81%
					SD	0.50%
					TN	1.68%
					TX	6.00%
					UT	0.59%
					VT	0.05%
					VA	3.17%
					WA	1.59%
					WV	0.35%
					WI	1.78%
					WY	0.05%

Categorical variables

Attended college after HS	
No	37.12%
Yes	62.88%
High school graduation year	
2006	12.74 %
2007	12.93%
2008	12.88%
2009	13.08%
2010	13.13%
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Non-white	55.20%
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CA	11.30%
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DC	0.79%
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GA	3.37%
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IL	3.77%
IN	2.63%
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KS	0.64%
KY	1.44%
LA	1.39%
MD	4.21%
MA	1.68%
MI	5.75%
MN	0.74%
MS	4.51%
MO	3.47%
MT	0.10%
NE	0.55%
NV	0.35%
NH	0.05%
NJ	2.63%
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Continuous variables	Mean	SD	Min	Max
No of children in household at teen	2.46	1.19	1.00	9.00
HH income (log)	10.81	0.86	7.06	14.84
Annual change in unemployment rate (state-level, from ACS)	0.09	1.48	-2.46	5.43

Table A2. Influence of parental resources before, during and after the Great Recession by gender (coefficients of logistic regression models, standard errors in parentheses)

	Figure 3, men	Figure 3, women	Figure 4, men	Figure 4, women
Graduation cohort (ref 2006-07)				
2008-10	-3.891 (3.938)	8.531* (3.576)	-0.076 (0.272)	0.443 (0.276)
2011-13	2.420 (3.791)	4.987 (3.995)	-0.043 (0.289)	-0.033 (0.287)
HH income (log)	0.878** (0.312)	1.278*** (0.300)	0.891*** (0.150)	0.768*** (0.167)
2006-07 # HH income (log)	0.330 (0.364)	-0.780* (0.334)		
2011-13 # HH income (log)	-0.246 (0.350)	-0.490 (0.371)		
College degree	0.790*** (0.232)	1.183*** (0.267)	1.562** (0.486)	1.953*** (0.546)
2008-10 # College degree			-1.021 (0.576)	-1.064 (0.632)
2011-13 # College degree			-0.920 (0.576)	-0.923 (0.656)
Non-white	-0.305 (0.259)	0.403 (0.248)	-0.331 (0.252)	0.412 (0.246)
No. of children in teen HH	-0.051 (0.084)	0.007 (0.082)	-0.049 (0.084)	-0.001 (0.080)
Constant	-8.892* (3.553)	-12.212*** (3.366)	-9.056*** (1.851)	-6.957*** (1.994)
Observations	1014	957	1014	957

Models also control for the state

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A3. Educational response to the change in unemployment by parental resources (income and education)

	Figure 5, Parental income	Figure 5, Parental education
Change in unemployment rate	0.101 (0.084)	0.036 (0.020)
HH income (log)	0.145 ^{***} (0.014)	0.144 ^{***} (0.014)
Change in unemployment rate # HH income (log)	-0.006 (0.008)	
College degree	0.140 ^{***} (0.024)	0.141 ^{***} (0.024)
College degree # Change in unemployment rate		-0.005 (0.014)
Female	0.115 ^{***} (0.020)	0.115 ^{***} (0.020)
Non-white	-0.003 (0.023)	-0.003 (0.023)
No. of children in teenage HH	-0.025 ^{**} (0.009)	-0.025 ^{**} (0.009)
Year grad HS=2007	-0.102 [*] (0.047)	-0.102 [*] (0.047)
Year grad HS=2008	-0.059 (0.046)	-0.059 (0.046)
Year grad HS=2009	-0.252 ^{**} (0.096)	-0.254 ^{**} (0.096)
Year grad HS=2010	-0.062 (0.057)	-0.062 (0.057)
Year grad HS=2011	-0.072 (0.043)	-0.071 (0.043)
Year grad HS=2012	-0.080 (0.042)	-0.080 (0.042)
Year grad HS=2013	-0.160 ^{***} (0.041)	-0.159 ^{***} (0.041)
Constant	-0.884 ^{***} (0.164)	-0.876 ^{***} (0.164)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

