Abstract Title Page

Title: Minimum Wage and Community College Attendance: How Economic Circumstances Affect Educational Choices

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Abstract Body

Background / Context:

Young people thinking about their future face difficult choices, especially when financial issues may be pressing. The financial aid literature suggests that $1000 of grants for education may increase the likelihood of attending higher education by 4% (e.g., Dynarski, 2003). Even if students know about the existence of need-based financial aid, the application process and likely outcomes may be opaque to potential beneficiaries (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2009; Dynarski & Scott-Clayton, 2006). Thus we may expect that the impact on college-going of more direct changes to personal finances will also have a large effect on educational choice.

In particular, what is the importance of the earning potential of someone on the margin between school and work? Consistently mixed results come from the labor economics literature about the effect of minimum wages on employment, and the further step of asking how college enrollment is affected is less certain. Much of the literature connecting minimum wages to schooling concerns the high school level. Ehrenberg and Marcus (1982) used the National Longitudinal Survey's 1966 Young Male sample and 1968 Young Female sample to estimate the impact of minimum wages on teenagers' school enrollment and employment. They find that enrollment remains steady in the aggregate despite changes in the minimum wage, but this covers up heterogeneous effects by family income, gender, and race. However, a major limitation of these findings is that they predate the Pell Grant, as well as many other social changes that may alter college-going behavior and the salience of the minimum wage.

Considering the enrollment question for high school students, Chaplin, Turner, and Pape (2003) use the Common Core of Data from 1989 to 1996 to model grade-to-grade continuation in high school. Their identification rests on state and year fixed effects, and they find that when the compulsory schooling age is less than 18, ninth graders are less likely to continue to tenth grade when there are higher minimum wages; this may be driven by students held back in ninth grade who prefer work to repeating the grade again.

Recently, two pairs of economists have driven the debate about minimum wages and employment. Card and Kreuger (1995) argue that minimum wages set in the United States tend to be low enough not to be binding and that empirical tests tend to show no effects on employment. In their analysis of the 1988 California minimum wage change, using CPS microdata to construct a difference in differences, they find significant increases in employment of teenagers despite the minimum wage increase, accompanied by decreases in their school enrollment rate, although the employment of current enrollees also increases.

In contrast, Neumark and Wascher (2008) argue strongly that higher minimum wages decrease employment and through that channel may encourage school enrollment. Their survey of the literature from the early 1990s onward suggests that 8% of studies find that higher minimum wages increase employment, while 66% of studies have negative (though not always significant) results. Their own work, based on teenagers in CPS surveys from 1980 through 1998, models the choice of a combination of enrollment and employment as a four-outcome conditional logit model, with fixed effects by year and state. They find that relatively higher minimum wages do

not affect the share of the population who study but do not work. However, the group of students who are enrolled and employed shrinks, with some switching to full time employment and a significant number becoming neither employed nor enrolled. They interpret this as showing that the least skilled teenagers leave school to look for work, but then fall idle.

In short, studies focused on schooling outcomes find heterogeneous results across groups. Studies focused on employment outcomes, with schooling as a secondary focus, disagree with each other on aggregate results. Why do we see such consistently conflicting results? I argue that changes to personal economic options have heterogeneous effects on schooling within society, and clearly some young people are especially sensitive to it. Such mixed results may be uninteresting for theorists, but it is vital for policy and planning to identify some of the groups whose enrollment behavior is most likely to change with the economy.

In particular, this research measures the behavioral responses for the segment of the population near minimum wage and identifies for which aspects of decisions about higher education money is most salient. Results may suggest which forms of financial aid (work-study, grants, loans) or policies (information, help with financial aid forms, encouraging or discouraging part time study) will best increase program completion.

Purpose / Objective / Research Question / Focus of Study:

How do changes in minimum wages affect community college enrollment and employment? In particular, among adults without associate's or bachelor's degrees who may earn near the minimum wage, do endowment effects of a higher minimum wage encourage school attendance? Among adults without associate's or bachelor's degrees who may earn near the minimum wage, does the higher opportunity cost for attending school created by the minimum wage reduce community college enrollment? As Neumark and Wascher (2008) ask, does a higher minimum wage reduce employment and through that channel encourage school enrollment?

Setting:

This study makes use of nationwide data from the Current Population Survey (CPS) October Supplement, aggregated at the state level, from October 1989 to October 2009.

Population / Participants / Subjects:

The population of causal inference is high school graduates who do not have associate's degrees or higher, between the ages of 18 and 30, excluding those serving in the armed forces. We assume that their choice sets include minimum wage jobs, as we find from the American Community Survey that the bottom quartile of people 18 to 30 by income, without bachelor's degrees, make around the federal minimum wage or lower. From 1995 to 2009 in the CPS October Supplements, we find 227,705 people in this category, after excluding those who indicated current enrollment in high school or below or in graduate school. Two thirds work full or part time, while 28% attend college full or part time. A plurality (14%) of this sample of young people belongs to families with an income of $20,000 to $30,000 a year.

Intervention / Program / Practice:

This is a secondary analysis of CPS data, considering the effects of minimum wage policy on enrollment. A federal minimum wage covers most non-farm sectors of employment, and a number of states set higher wages. From 1995 to 2009, up to 27 states at a time had higher minimum wages than the federal government, although that number was as low as 6 in 1998 and 1999. A limitation is that I do not limit the analysis to covered sectors, nor can I account for employment in cities or counties with higher minimum wage laws.

Research Design:

I revisit this question using essentially a difference-in-difference strategy with state by year panel data, similar to Harding, Leibtag, and Lovenheim (2010). I identify the enrollment effects of changes in minimum wages based on state by year panel data. I focus on the group who is most likely to be on the margin between higher education and minimum wage jobs: high school graduates with no college experience. Identification within this population is driven by people living in states during years that their experienced changes in minimum wages tend to counter national trends.

First, I examine the effects of minimum wage levels on aggregate enrollment. The outcome variable is a state's total enrollment for higher education at schools granting only associate's degrees or below. I repeat this for outcomes of full-time enrollment and part-time enrollment.

where $Enroll_{st}$ is the community college enrollment in state s in year t. ΔMW is the change in the value of the minimum wage, adjusted by state average manufacturing wages, CPI, and minimum wage coverage of the adult population. Law_{st} indicates whether a state experienced a legal change (state or federal) that caused effective change in their minimum wage. (Since legally mandated changes to the minimum wage are widely publicized, yet slow loss of value through inflation is not, I expect the most salient changes to be those involved with a legal change.) Λ_s is a vector of state fixed effects, and Γ_t is a set of year fixed effects. Errors are clustered at both the state level and the year level.

The assumptions necessary for this strategy to identify causal effects are that the lawmaking process is ignorably related to the aggregate choices of the population of interest. I argue that on the whole state and federal legislators are not setting minimum wages with an eye to enrollment rates. Further, many of the changes in minimum wages come from the decay in the real value of the minimum wage, which is not an active choice by legislators.

The timing of economic events is also plausibly exogenous to individual and corporate decisions about schooling and enrollment. However, we must worry that community colleges may change prices or limit capacity in response to adverse events; this would tend to mute the enrollment effects we could see, in additional specifications we control for this by estimating the cost of attendance with or without successfully filing for financial aid. However, the salience of tuition rates may be limited depending on the level of information the typical marginal student has when considering enrollment.

Second, I examine which kinds of students switch, using a conditional logit with outcomes the same as Ehrenberg and Marcus(1982) (1982) and Neumark and Wascher(2008) (2008). I estimate the likelihoods of a young person being enrolled but not employed (outcome 1), enrolled and employed (2), or not enrolled but employed (3), relative to being neither enrolled nor employed (4). Given adequate power, could also add outcomes involving part-time enrollment and part-time employment.

where j = 1, 2, 3, and 4 indicate outcomes; i, individuals; s, states; and t, years. X_i is a vector of individual characteristics, and the other variables are as previously defined. Again, this model uses fixed effects by states and years and clusters errors at the same levels.

I will also attempt to rerun the second model taking advantage of the somewhat longitudinal design of the CPS: only the observations where an individual is in the survey for the second time could be used for estimation, and the previous year's enrollment/employment status can be a dummy variable. Given enough power, it would be ideal to run the logit separately by the previous year's enrollment/employment (to estimate how minimum wage changes affect transitional probabilities between different states), by race, by age, and by family income level.

Data Collection and Analysis:

The main dataset is the Current Population Survey October Supplement, compiled with data dictionaries from NBER (Roth, 2010). It is nationally representative, although not specifically sampled for the young adult population.

Minimum wage data is compiled by the Department of Labor in an annual statement of federal and state minimum wages, as of January or February of each year (U.S. Department of Labor Wage and Hour Division, 2011).

For cost of attendance at two-year colleges in each state, IPEDS provides list tuition. Average actual cost of attendance do not necessarily apply to individuals considering enrollment. Instead, potential aid is estimated based on data on the level of the Pell Grant, from the Department of Education, and data on the level of state financial aid, from NASSGAP surveys.

Findings / Results:

Findings are heterogeneous and preliminary at this stage.

Conclusions:

This analysis compares individual-level and aggregated data to examine why findings about the effects of minimum wages on school enrollment produce mixed results. I highlight the role of heterogeneous results by group as a reason results in the aggregate may be mixed. Which groups are most likely to attend has implications for policy and practice. However, the sample may not adequately capture trends that have developed during the Great Recession, including both the expansion of and increased governmental scrutiny of online, for-profit higher educational offerings.

Appendices

Appendix A. References

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Appendix B. Tables and Figures

Not included in page count.

Table 1. Descriptive Statistics 18 to 30 Year Olds in October CPS Supplement, 1995–2009

	Mean	Std. Dev.	Min	Max
Number of Observations	227705			
Age	23.50	3.76	18	30
Male	0.50	0.50	0	1
Year	2002.00	4.31	1995	2009
Family Income Range				
Below $10,000	0.11	0.31	0	1
$10,000 to $20,000	0.13	0.34	0	1
$20,000 to $30,000	0.14	0.35	0	1
$30,000 to $40,000	0.12	0.33	0	1
$40,000 to $50,000	0.08	0.27	0	1
$50,000 to $60,000	0.07	0.26	0	1
$60,000 to $75,000	0.07	0.25	0	1
Over $75,000	0.14	0.34	0	1
Work Status:				
Full Time	0.44	0.50	0	1
Part Time	0.23	0.42	0	1
Unemployed	0.07	0.25	0	1
Not in Labor Force	0.27	0.44	0	1
Hispanic	0.18	0.38	0	1

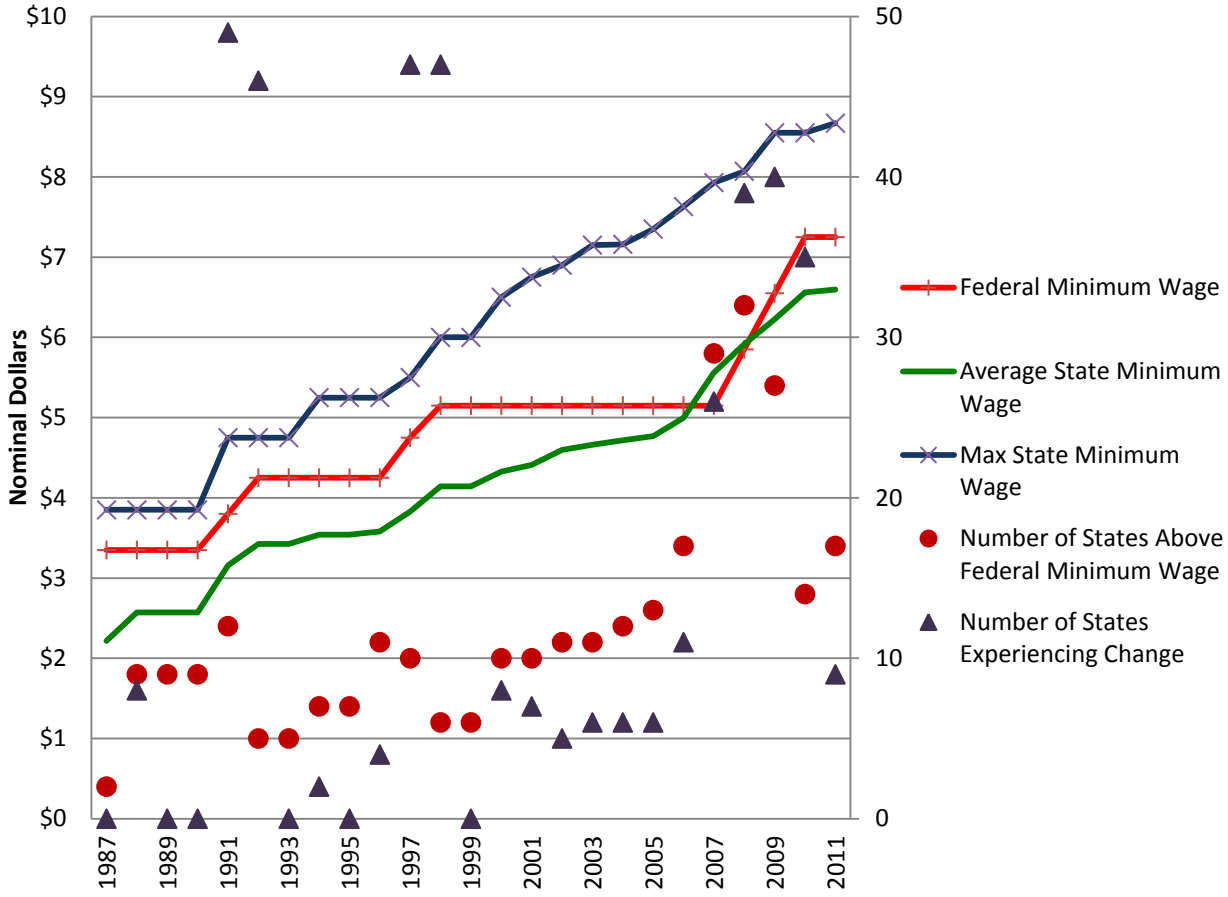
Notes: CPS Data. Includes individuals between ages 18 and 30 who do not have an Associate's degree or higher and who are not currently serving in the Armed Forces. If other questions reveal they are enrolled in elementary school, high school, or graduate school, they are removed from the sample.

Table 2. Demographic Characteristics of 18 to 30 Year Olds in Sample

	Frequency	Percent
RACE		
White	183,872	80.75
Black	27,697	12.16
Native American	3,940	1.73
Asian/Pacific Islander	8,894	3.91
Other	3,302	1.45
HIGHEST LEVEL OF SCHOOL		
Less Than 1st Grade	600	0.26
1st, 2nd, 3rd Or 4th	1,167	0.51
5th Or 6th Grade	3,705	1.63
7th Or 8th Grade	3,688	1.62
9th Grade	5,713	2.51
10th Grade	7,441	3.27
11th Grade	10,447	4.59
12th Grade No Diploma	4,264	1.87
High School Grad-Diploma	101,085	44.39
Some College But No BA	89,595	39.35
CURRENT GRADE IN COLLEGE		
Not Attending	164,379	72.19
1st year of college (freshman)	21,018	9.23
2nd year of college (sophomore)	18,733	8.23
3rd year of college (junior)	13,154	5.78
4th year of college (senior)	10,421	4.58
COLLEGE INTENSITY		
Full-time	52,297	22.97
Part-time	11,029	4.84
COLLEGE TYPE		
2-year college (community or junior college)	18,149	7.97
4-year college or university	45,177	19.84

Notes: CPS Data. Screened as in Table 1.

Figure 1. Changes in the Federal and State Minimum Wages, 1987–2011



Notes: Based on Data from the U.S. Department of Labor.