

# Credit Constraints and Enrollment Choices in Higher Education

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## Objective and Purpose

While there are many reasons that students could take time off during college (see Arcidiacono et al working paper, Light (1995), and Pugatch (2012) for example), previous work has not explored whether credit constraints play a role. If students cannot borrow enough in order to make college affordable then they would be credit constrained. Thus the student might decide to take time off, or stopout, in order to save up money to pay for school.

A student's financial aid package depends on the Expected Family Contribution (EFC) which is a function of both the student's and parents' finances. However, there is no guarantee that parents are willing and able to help pay for school. While college students are usually adults in the legal sense, the government makes it very hard for them to be considered independent of their parents when it comes to paying for college. If a parent earns more, financial aid is likely reduced even if none of that money will be going towards paying for college. Half of undergraduates in 2008 who were in the 2007-2008 National Postsecondary Student Aid Study had unmet need after total aid and the EFC was subtracted from the student budget.

## Theoretical Framework

An implication of the standard human capital models is that educational investments should precede entry into the labor market (Ben-Porath 1967, Becker 1964 and Mincer 1974). The National Center for Education Statistics (NCES) looked at the enrollment patterns in the Beginning Postsecondary Students Longitudinal Study (2004 to 2009) of first time students in the 2003-2004 school year and found that only 60.7 percent of students were continuously enrolled. Wallace and Ihnen (1975) use a Ben-Porath like model but do not assume that people can borrow to pay for educational expenses to explain why educational investment might not be smooth. The Wallace and Ihnen (1975) paper is theoretical and thus my paper adds to the literature by empirically testing whether a model with credit constraints can explain current enrollment patterns. In the absence of borrowing constraints it could be the case that enrolling is better than not enrolling. However, if people cannot borrow enough to pay then they cannot enroll since consumption cannot be negative.

## Method and Model

I will estimate a dynamic discrete choice model to test my hypothesis. The model starts once the student has enrolled in college and decisions are made every six months (once a semester). The model is dynamic because the choice made today affects your state (or characteristics) tomorrow. For example, if I enroll today then that affects how many semesters I have been enrolled towards a degree,

how many loans I have to repay and how much savings I have. If an individual decides to enroll in school he/she get a certain amount of utility (happiness or satisfaction). Individuals do not merely compare the utility in school to the utility out of school, but rather the expected present discounted utility over the lifetime from choosing to enroll in school or not this period. There is an expectation about the present discounted utility because there is uncertainty about the future. For example, an individual does not know whether and how much parents will give towards educational expenses in the future but rather know there are certain probabilities that different amounts will be given.

The model is solved using backwards induction. This means that I calculate how much utility a person would get in the last period for every possible combination of characteristics. Then you solve for the next to last period. For each possible combination of characteristics you find what the optimal decision would be given that you know what the expected utility is in the next period conditional on each choice. This continues until you get to the first period in the model. Once you know what the optimal decision is at every possible combination of characteristics at each point in time you can simulate what a person with a set of initial characteristics will do over time. The parameters of the model will be found using simulated methods of moments. The set of parameters is chosen to minimize the weighted distance between the moments observed in the data and their simulated counterparts that are generated by the model.

Individuals who are in college must pay for their education. Students are allowed to take out loans if they cannot cover their educational expenses. However, the federal government sets limits on the amount of federal loans (subsidized and unsubsidized) students can borrow. Also, students cannot have financial aid that totals more than the cost of attendance. Parental transfers may occur to help individuals pay for school or other expenses.

### Data

The data come from the National Longitudinal Survey of Youth 1997 (NLSY-97). NLSY-97 has monthly college enrollment data starting in 1997.<sup>1</sup> In order to determine who stopped out during college I examine their enrollment status in the spring semester (February) and the fall semester (October). If the student responded he/she was not enrolled that month then they are considered to have not been enrolled that semester. If the student later said he/she was “Enrolled in 2-year college” or “Enrolled in 4-year college” then he/she would be a stopout. Thus, students who take time off between undergraduate and graduate school are not considered stopouts in my paper. There is also

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1 – Aside from the nationally representative part of the NLSY-97 there is also an oversampling of minority students so the descriptive statistics use NLSY custom weights to account for this.

information on whether the student is enrolled part-time or full-time, whether the student is enrolled in a two-year school, four-year school or graduate school, and if the student transferred or not. NLSY-97 also has information about financial aid (what types of aid students got and how much they had to pay for school out of pocket) as well as if students were given money by their parents. There are also demographic variables, measures of academic outcomes (test scores, GPA, credits for example), and employment information. The Integrated Postsecondary Education Data System (IPEDS) is used to get tuition data and other school characteristics<sup>2</sup>.

The sample does not include people who ever served in the military because their enrollment decisions are likely different from the civilian population. The sample is restricted to individuals who ever attend some type of post-secondary school. The sample is 54 percent female, 25 percent are not white or Asian, and 34 percent of these students are first generation meaning neither parent attended college. More students start their postsecondary careers at four-year colleges (57 percent) than two-year colleges. Of those who started at a four-year college, 22.7 percent stopped out while 37.5 percent of those who started at two-year colleges stopped out.

Students with discontinuous enrollment patterns are more likely to be non-white and non-Asian and be the first in their family to attend college. These students also tend to work more during their first semester of college and are not very likely to attain a Bachelor's degree. Students who both transfer and stopout have parents with the lowest income in the year the student first enrolled while students who neither transfer nor stopout have parents with the highest yearly income during that period.

### Limitations of the study

The model is such that it abstracts from certain issues such as whether or not a person filed the Free Application for Federal Student Aid (FAFSA) or turned down any aid. Given my interest in financial aid policy I do not want to conclude that students cannot borrow against future earnings if they were offered loans but turned them down. While loan aversion is an important topic, I cannot observe financial aid offers in the data.

### Significance of the study for practice and research

Students who have interrupted enrollment patterns are less likely to earn degrees (Li 2010). Therefore, it is important to understand why a student would decide to take time off from school. Credit constraints have a more direct policy implication than some of the other possible explanations.

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2      – I have IRB approval to use restricted NLSY data which allows me to merge IPEDS data with NLSY data.

Policy makers could use financial aid to help alleviate credit constraints but it's much more difficult to design a policy that resolves uncertainty about ability or eliminates health shocks.

In an effort to decrease the time to a degree students are given financial incentives to remain continuously enrolled and finish quickly. According to Kantrowitz (2012), the “one-year extension of the 3.4 percent interest rate on subsidized Stafford loans to undergraduates was paid for, in part, by eliminating subsidized interest rates to new borrowers as of July 1, 2013 who take longer than 150 percent of the normal timeframe to graduate.” Also, some scholarships and grants require that students are continually enrolled. If students are stopping due to financial hardship then giving them an additional financial penalty for doing so will not alleviate the cause for their prolonged time to degree.