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Estimating the relationship between calculated financial need and actual aid received using quarter of birth instruments

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ABSTRACT

When calculating financial need, the FAFSA does not consider the parental income of students who turn 24 years old. This paper uses the student's quarter of birth interacted with the treated cohort to instrument for financial need. Using the interaction mitigates many of the concerns regarding quarter of birth instruments. A dollar increase in financial need is associated with 15 cents in federal grants and 47 cents in loans. However, the relationship between financial need and institutional aid is, on average, small and statistically insignificant. The exception is that institutions with large endowments do allocate more aid to more-needy students.

1. Introduction

In 2011, the Federal government spent 47.9 billion dollars on need-based grant aid for undergraduate students (Trends 2012). States spent 9.8 billion dollars and institutions spent 32.8 billion more (Trends 2012). The purpose of need-based financial aid is to help students, who otherwise would not be able to afford to attend college, pay for college. The federal government, states, and institutions all operate under the general principle that, all else equal, more-needy students should receive more financial aid. The rules and regulations governing federal financial aid are legislated by Congress and the guidelines are publically available.[1]

However, institutions do not provide such clear guidance on how they allocate financial aid. For example, the University of California, San Diego's philosophies and practices for awarding financial aid are the following, "UCSD awards financial aid based on need... Students with similar circumstances are treated equally... Need is the only criteria used to award most undergraduate financial aid (University of California, San Diego Financial Aid Website)." These guidelines are very general and UCSD does not reveal the specific formulas or procedures that that it uses to determine institutional aid.

Klemmer, an education consultant, compares the institutional award process to a black box. She writes, "Colleges take advantage of a practice known as Professional Judgment... Professional Judgment allows the schools some flexibility to set their own terms for distributing their institutional funds. This is one of the reasons that financial aid packages for the same student can vary significantly from college to college (Klemmer, 2011)."

The federal government and most institutions use the Free Application for Federal Student Aid (FAFSA) to determine financial need. The FAFSA uses the student and his parent's financial information to calculate an

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[1] For example, the Pell Grant payment schedule can be found on the Department of Education website (The EFC Formula, 2007–2008).

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Expected Family Contribution (EFC). The difference between the institution's price of attendance and a student's EFC is the student's financial need.

Students, parents, policy makers, and researchers are naturally all very interested in the relationship between financial need and actual financial aid received. This relationship is difficult to estimate because we typically only observe the financial aid package at the college the student actually attends. All else equal, a student is more likely to attend a college that gives him more financial aid. In addition, some private colleges consider a student's ability to pay in the admissions process.

Following the general approach of Angrist and Krueger (1991), I use the student's quarter of birth to produce exogenous variation in the student's calculated financial need. Most states require a child to be five years old by a specific date in the fall to start kindergarten. Therefore, most students born in the fourth quarter (October–December) of the current calendar year enroll in school with students born in the first three quarter of the next calendar year.

The FAFSA considers a student "independent" (as opposed to dependent) if he turns 24 years old by the end of the calendar year. For a specific academic cohort, students born in the fourth quarter would be classified as independents while students born in the next calendar year would be classified as dependents. The FAFSA does not consider parental income and assets for independent students. Excluding parental income and assets increases the calculated financial need for the majority of students. Buckles and Hungerman (2013) showed that quarter of birth is correlated with demographic variables that may directly affect educational outcomes. To account for this possibility, I use difference-in-differences to estimate the association between the FAFSA age rule and calculated financial need. Then, I estimate the effect of financial need on actual financial aid received using the interaction between quarter of birth and the treated cohort to instrument for financial need.

In the difference-in-differences model, the treated cohort is the academic cohort where the students born in the fourth quarter are 24 years old while students born in the next calendar year are 23 years old. The control cohort is the academic cohort where the students born in the fourth quarter are 23 years old while students born in the next calendar year are 22 years old. If quarter of birth has a direct effect on financial aid, then the effect should be the same for the treated cohort as for the control cohort. However, only the fourth-quarter students of the treated cohort are affected by the FAFSA age rule governing independent status.

The difference-in-differences estimates show that the FAFSA independent status rule increases a student's calculated financial need by an average of 4079 dollars. On the other hand, little of the demonstrated financial need is translated into grant aid. The instrumental variables estimates show that a dollar increase in financial need is associated with 15 cents in federal grants. The relationship between financial need and institutional grants is, on average, small and statistically insignificant. The exception is institutions with large endowments do increase aid in response to the financial need caused by the FAFSA independent status rule. An increase in financial need also increases federal loan eligibility and the instrumental variables estimates say that a dollar increase in financial need is associated with 33 cents in subsidized loans and 14 cents in unsubsidized loans. Overall the results show a dollar increase in financial need is associated with a 63 cent increase in financial aid. However, loans account for 75 percent of the additional financial aid.

These local average treatment effects are estimated for students who were delayed by at least two years from the "normal track" of enrolling in college right after high school and finish college in four years. How financial aid is allocated to non-traditional students is an increasingly important topic because of the rapid increase in the proportion of older students enrolled in college. In 1970, 28 percent of all college students were 25 years or older (Digest of Education Statistics, 2012, Table 224). By 2010, 44 percent of college students were 25 years or older.

The results of the current paper show that institutions typically do not provide much financial aid to these non-traditional students. Other research shows that students who delay college entrance are academically weaker and they are less likely to graduate compared to traditional students (Bound, Lovenheim, & Turner 2012). It is an open question whether the lack of institutional aid causes non-traditional students to drop out or whether colleges do not want to invest in students who have high ex-ante probabilities for dropping out.

Some authors believe that changing the FAFSA formula to decrease the student's expected family contribution (EFC) will cause colleges to increase their institutional aid. Cohen, in a New York Times editorial writes, "Congress and the president should drastically cut the EFC... Doing so will force colleges to construct financial aid packages without the artificial price supports of inflated contribution numbers (March 21, 2014)." Unfortunately, the current paper finds that colleges do not give more aid to the fourth-quarter students who have lower EFCs. Most of the fourth-quarter student's additional financial need is met with loans instead of grants.

Finally, this paper identifies a quirky FAFSA rule that treats a student born in December differently from a student born in January even though both students graduated high school in the same year. Although any age cut-off is arbitrary at some level, the FAFSA could treat students who graduated from high school in the same year in a similar way. For example, the FAFSA could amend the independent status rule to say that a student is independent if he is 24 years old on December 31st or if he is 6 or more years out of high school.

This paper is organized as follows. Section 2 reviews the relevant literature on financial aid and the cost of attending college. Section 3 describes the estimation strategy used in this paper. In particular, the author will show that using the interaction between quarter of birth and the treated cohort as the instrument mitigates many of the concerns regarding quarter of birth instruments. Section 4 presents the data and Section 5 presents the results. Section 6 is analysis and Section 7 concludes.