A Family Affair: The Effects of College on Parent and Student Finances[1]

Palaash Bhargava, Columbia University
Sandra E. Black, Columbia University, NBER, IZA, NHH
Jeffrey T. Denning, University of Notre Dame, NBER, IZA
Robert Fairlie, University of California Los Angeles, NBER
Oded Gurantz, University of Colorado – Boulder

February 12, 2025

Abstract

Paying for college is often a family affair, with both parents and students contributing. We study the effects of college on family finances using administrative data on the universe of federal aid applicants in California linked to credit records. We provide the first comprehensive analysis of how both students and their parents use debt with college attendance and how prices affect those decisions. We start by using an event-study framework to explore how parents' use of debt and credit outcomes change after their child first submits a federal aid application for college enrollment. While total debt does not change, higher-income parents shift balances from other debt to educational loans. We find that lower-income parents take out more education loans, experience less delinquency on non-educational debt, and see their credit scores rise. We then use discontinuities in eligibility for generous financial aid to test how an exogenous change in the price of college affects parental debt and financial health. We find that parents finance increases in the price of college through educational loans as well as home equity loans. Higher prices increase parental delinquency on debt. The findings highlight an important channel by which college and its rising cost may spill over into the broader financial health of families and economy.

[1] The authors gratefully acknowledge funding from the Spencer Foundation for this project. Black received support from the Research Council of Norway through its Centres of Excellence Scheme, FAIR project No 262675 and by the NORFACE DIAL grant 462-16-090. Bhargava received support from the Program on Economic Research at Columbia University. The authors would like to thank participants at seminars at APPAM, the University of Michigan Causal Inference in Education series, Michigan State University, Texas A&M University, the University of Texas LBJ School of Public Affairs, University of Houston Hobby School of Public Affairs, AEFP, Midwest Economic Association, and CUNY Office of Applied Research, Evaluation, and Data Analytics Seminar Series. Contact: jeffdenning@nd.edu.

1. Introduction

The price of a college degree has been growing dramatically over the last several decades. As a result, families are increasingly using debt to finance a college education. In 2023, educational debt totaled $1.6 trillion, up from $260 billion in 2004, more than a six-fold increase (New York Federal Reserve, 2024). While most research has focused on the effects of rising college costs on students, families often fund college jointly, with contributions from both parents and children. A survey by Sallie Mae (2023) suggests parents pay for an average of 48 percent of college costs. Aggregate data on parental borrowing for their child's education suggest that parents rely heavily on debt to finance these costs.[2] However, there is surprisingly little research on how a child's college attendance affects parental finances. Ignoring these effects neglects an important channel through which college affects household finance which can have both short-run and long-run effects.

We attempt to fill this void by studying the effect of college on parents' finances using newly-available administrative data from California. These data capture the universe of Free Application for Federal Student Aid (FAFSA) filers for California residents from 2006-07 through 2015-16, which is then linked at the individual-level to the universe of detailed credit and debt records from a large credit bureau. Importantly, these data enable us to link parents and children. We track credit outcomes for parents and students from 2004 to 2023 and use FAFSA filing as a proxy for college attendance to examine the effects both before and after a student's college-going at a level of detail that allows us to consider many different types of debt and financial health outcomes.[3] We are thus able to take a comprehensive approach to analyzing how much debt and what types of debt families use when their child attends college,

[2] For example, federal Parent PLUS loans, which are educational loans taken out by parents, had over $108 billion outstanding in 2022. Parent PLUS loan disbursements are roughly 50% as large as loan disbursements to undergraduate students.[2] (Ma and Pender 2023). Parents can also finance their child's college attendance with other educational loans (e.g. private student loans), assets, Home Equity Lines of Credit, credit card debt, or other forms of debt.

[3] Going forward, we use FAFSA filing and college-going interchangeably. In section 2, we discuss the use of FAFSA filing as proxy for college attendance; we estimate that approximately 73% of FAFSA filers attend college, suggesting our results are a lower bound on the true effects of college attendance.

how parental financial health outcomes change with college attendance, and how prices affect those decisions and outcomes.

The motivation for and consequences of parent borrowing are quite different from that of student borrowing. Student borrowing is most often thought of in terms of an investment in a productive asset—a college education—and students who make a human capital investment using debt have been shown to be able to service that debt with post-college increases in earnings (Black et al 2023). However, unlike students, parents are not investing in their own human capital and will thus not see an associated increase in their earnings.[4] As a result, educational debt for parents may have different long-term consequences than the educational debt that students accumulate.

To gain insight into this important question, we first conduct an event study analysis—similar to the child penalty literature (Kleven, Landais, and Søgaard 2019)—using timing differences across families to examine how parental credit and financial health changes around the time their child enrolls in college. This captures the consequences of (likely) anticipated college attendance, which is the result of a complex optimization problem solved by parents and children in which they simultaneously evaluate whether to go to college, where to go to college, and how to finance it—either through reduced consumption, savings, or debt. Given that college attendance is often an anticipated event, the trajectory of parents' finances is theoretically ambiguous, as parents may change their consumption and savings behavior (and hence debt usage) in anticipation of this expenditure. In terms of total borrowing, we could see no increase in debt if parents saved for their child's college, do not help their child finance college attendance, or if parents increase spending on college but reduce spending on other things such as housing or other goods. If not, we might expect to see debt increase with college enrollment.

[4] Parents may be motivated to make this investment by other factors such as a bequest motive, consumption value, or because they expect the increased earnings for their child to contribute to total family resources.

Beyond the effects on the overall debt level, families may reallocate their debt, as they gain access to a new type of debt—student loans—when their child enters college. Student loans are generally easier to obtain (federal student loans do not consider your credit score) and have lower interest rates than many other loans. However, they are not dischargeable in bankruptcy. In addition, college-going may have effects on parents' delinquency, bankruptcy, and credit scores, which provide insight into whether a child's college attendance has negative effects on overall financial health.

We examine these outcomes using variation in timing across families, comparing families whose child applied submitted a FASFA to families whose child has not yet but will in a later year. The event study reveals meaningful increases in the family's educational loan use when a child attends college. However, this increased educational borrowing is entirely offset by reductions in other debt such as auto loans and credit cards, with the exception of a relatively small increase in credit card balances in the year of college enrollment. Interestingly, we find that parents are *less* likely to declare Chapter 7 bankruptcy after their child applied to college and see *increases* in their credit scores. Thus, at a first pass families, on average, do not appear to go into a lot of debt when children go to college.

However, these average effects obscure interesting and important heterogeneity by family income. For higher-income parents (income above the median in our sample) we see no effect on total balances but do observe increases in educational loan use and decreases in credit card, auto loan, and mortgage balances. We see no changes in bankruptcy and minimal effects on credit scores, suggesting that higher income parents primarily change what types of debt they use when their child goes to college but do not increase borrowing overall. This suggests that, among higher-income parents, their child going to college may be a useful way to access debt they prefer without increasing total indebtedness.

For lower-income (below median) parents the story is quite different. We find an increase in educational loans but comparatively small changes in other debt. Although other forms of debt do not change, we see meaningful decreases in delinquency on Home Equity Lines of Credit (HELOCs), credit cards, auto loans, and mortgages. We see increases in delinquency on

educational loans but a net decline in the overall rate of delinquency for lower-income households. Lower-income parents also see a reduction in Chapter 7 bankruptcy and an increase in credit scores. Similar to the case of higher-income parents, this is consistent with lower-income parents benefitting from the expanded access to lower-cost credit when their child enters college.

The event study results present the trajectory of parental finances for a largely anticipated event and is the result of application, enrollment, consumption, savings, and financing decisions that families make. We next examine one specific element of this decision—college cost—and identify the causal effects of increasing college prices on family debt and financial health. College cost is a key economic and policy lever and is particularly important given recent trends. We estimate the causal effect of a change in the price of college on children's and parent's financial health via a discontinuity in the availability of grant funding.[5] We use sharp discontinuities in Cal Grant eligibility, a set of generous state grant aid programs in California, to identify the effect of increased access to grants—and a decrease in the cost of college attendance—on family finances.

We find that although grant aid has very little effect on student borrowing, it has a large effect on parental borrowing. Thus, the focus of the prior literature on only students has missed a large adjustment that families are making in response to the price of college.[6] Grant aid reduces both parental educational loans and HELOC balances. Grant aid also reduces the likelihood that parents are delinquent on their debt. Importantly, the effect for parents varies depending upon whether or not they have a mortgage; parents with mortgages reduce HELOC loans when their

[5] This exercise is similar to previous studies of the effects of financial aid on students but these new data allow for a focus on parents as well (Castleman and Long (2016); Bettinger et al (2019); Scott-Clayton and Zafar (2019); Denning, Marx, and Turner (2019);). Grobon and Wolff (2024) use a similar methodology to study how parents react to student scholarships using policy discontinuities and survey data from a sample of roughly 700 students in France

[6] Many studies have found that college benefits students in the long-run but the financial cost is a hurdle, as whether a student earns a degree is affected by the cost of college or their access to grants or loans (Castleman and Long (2016); Bettinger et al., (2019); Denning, Marx, & Turner, (2019); Sun & Yannelis, (2016); Webber, (2016); Marx and Turner (2018); Scott-Clayton and Zafar (2019); Goodman, Isen, & Yannelis (2021); Black et al (2023); Angrist, Autor, and Pallais (2022)).

child gets a Cal Grant whereas parents without mortgages respond by taking out fewer student loans.[7] We find no racial differences when using a proxy for race. Our findings suggest that price is an important driver of changes in parental debt levels, composition, and delinquency when children go to college, and the consequences of higher college prices are felt unequally by family financial situation.

The rise in the price of college over the past 30 years likely had important implications, not only for students, but for their parents. Focusing on students alone, as has been done to this point, misses the important effects of college on families' finances. Importantly, we show that price decreases have positive effects for parents including reduced delinquency on loans. This finding complements the finding that price decreases have positive human capital and earnings effects for students (Castleman and Long (2016), Marx and Turner (2018), Bettinger et al (2019); Scott-Clayton and Zafar (2019); Denning, Marx, and Turner (2019)).

Our findings have important implications for policy. We provide novel evidence on a hypothesized pathway where increases in the price of college affect broader financial markets. There is concern about debt burdens placed on parents by college enrollment (Zaloom 2019) but this has primarily come from qualitative research.[8] We provide empirical evidence of a direct link between the price of college and parents' financial portfolio and longer-run financial health.

The paper proceeds as follows. In Section 2, we describe the linked administrative data and measurement issues. Section 3 presents the event study results. Section 4 describes the regression discontinuity design and checks its validity. Section 5 presents the first-stage results and main results for student and parental financial outcomes. Finally, Section 6 concludes.

2. Background and Data

[7] This result is consistent with a pathway of housing wealth affecting college enrollment (Lovenheim 2011; Lovenheim and Reynolds 2013).

[8] Some research has explored how parents who borrow differ from parents who do not (Walsemann, Ailshire 2017; Kelchen 2021). A related set of research studies how parental wealth/income affects college decisions (Lovenheim 2011; Lovenheim & Reynolds 2013; Bastian & Michelmore 2018; Manoli and Turner 2018; Bulman et al. 2021).

Our data primarily come from two administrative sources: the universe of FASFA submissions by California residents from 2006 to 2015, matched to the universe of credit bureau data of individuals who ever lived in California from 2004 to 2023.[9] California provides an interesting laboratory to study these questions, with one of the largest public university systems in the country; approximately 1 in 8 students in higher education in the United States attend a California institution of higher education (Cook 2024).

FAFSA data

Our initial sample consists of the universe of FAFSA submissions by California residents provided by the California Student Aid Commission (CSAC), the state agency that administers the state aid program known as the Cal Grant. Students must submit the FAFSA—which contains information about parent and child income and assets—to gain access to federal financial aid such as the Pell Grant or federal student loans. In California, this form is also required to be eligible for the Cal Grant program, described in more detail below. Approximately 70 percent of college students submit the FAFSA, and they come from lower SES families than college students on average (Kofoed 2017). They are, however, the relevant population to study when considering the role of financial aid on family and student outcomes, as most students receiving financial aid submit a FAFSA. In addition, California's state aid program requires the student to submit a FAFSA.

We observe many student and family characteristics on the FAFSA, including: student age, gender, dependency status, and education level; parental education, marital status, and zip code of residence; family income and expected family contribution (EFC); and the list of schools where applicants want their financial information sent. Importantly, students who are dependents are required to submit their parents' social security numbers (SSNs) and date of birth to be eligible for federal grant aid but do not need to do so if they are independent. (These

[9] Data security processes are governed by the California Policy Lab, and all records used by the research team are de-identified after matching.

SSNs then enable us to match parents to credit records.) Dependent students are "traditional students" who are younger than 24 and not married with a few other requirements.[10]

Credit data

We match the FAFSA data to the University of California Consumer Credit Panel (UC-CCP) hosted by the California Policy Lab (CPL), which contains anonymized consumer credit information for the universe of individuals who ever lived in California, starting in 2004 and continuing to 2023. Each individual is observed in the credit data for the entire period of 2004 and onward, provided that they lived in California at any point during this time period and had a credit record (i.e. outmigrants are followed).

The credit dataset includes quarterly snapshots of an individual's credit outcomes, including data from March, June, September, and December; for simplicity, we focus on the September snapshots. We primarily use the tradeline portion of the credit data. A tradeline is an account-level data set; for each person we have information for every active credit account including balances, repayment status, type of credit and additional information. We use aggregated tradeline level data in five primary categories using the CPL's classifications: (i) educational loans; (ii) credit cards; (iii) auto loans; (iv) mortgages, and (v) HELOCs (home equity line of credit). For each of these categories we can aggregate tradeline information to create variables

[10] In general, a student is considered independent if they turn 24 before January 1 of the school year, if they are married, if they are a graduate student, if they are a veteran or member of the armed forces, or for other less common reasons. In our initial sample, 97% of dependents submit at least one parental SSN compared to only 3% of independents. Per FAFSA rules, a parent means a biological, adoptive, or legal parent, and students who do not live with their parents are still required to report their information unless they have been legally adopted. Students must report information for both parents if their parents are married or live together. Otherwise, the student must report information for the parent they lived with most over the past 12 months, and if they split time equally then whichever parent provided more financial support. In this case, if the reported parent has remarried then the student must also report the stepparent's information for financial purposes. Focusing just on dependent students, we observe students with married, single, divorced, and widowed parents report at least one SSN 98%, 93%, 98%, and 96% of the time. The biggest difference is how often the student reports two parent SSNs, which is 94% for students with married parents, compared to 1% or less for the other marital status categories. These statistics are based on students in the years 2013-14 and before. In the 2014-15 FAFSA the federal government changed the marital status category to include a new category "Unmarried and both legal parents living together", whereas before most of these families were likely listed as "Single".

for whether they had a credit line of this type, the balance for each credit line, and whether an individual was delinquent on the credit line in that year (defined here as 90 days delinquent). Credit bureau records also contain an individual's credit score, detailed information about their geographic residence, and information on bankruptcy filings.

For dealing with jointly held debt (i.e. both individuals within a household are listed on the mortgage or the credit card), we allocate half of the balance to each person listed on the debt. We then sum the balances for all parents listed on the FAFSA. This avoids double counting of balances.[11] The data appendix describes our variable construction in more detail.

Our Sample

Our sample consists of the universe of California residents who submitted a FAFSA for enrollment in the 2006-07 through 2015-16 academic years (henceforth, 2006 through 2015).[12] In our analysis, we focus on the first year a student submitted the FAFSA.[13]

Unfortunately, we only observe actual enrollment in college for some students in the sample. From CSAC, we can observe enrollment (i.e., a simple dummy variable for whether they were enrolled in the Fall of that year) in California community colleges for all years. For California four-year public colleges (i.e., the University of California (UC) and California State University (CSU) systems), we observe enrollment only for our last two cohorts (2014 and 2015).[14]

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[11] For two parents who jointly hold a mortgage, this method would return the total mortgage. For a person who holds the mortgage with someone other than the other parent reported on the FAFSA, this method would attribute half of a jointly held balance to the parent. The FAFSA historically asked for "father/stepfather's SSN" followed by "mother/stepmother's SSN", in that order, before switching to "parent 1 (father/mother/stepparent)" and "parent 2 (father/mother/stepparent)" in the 2014 aid cycle. In the rare case that the parent does not match to the credit data then we take values from the second parent listed. In the case of a student loan signed by both parents and students this would be allocated in the same way. However, the majority of student loans are federal and they do not have parents and students cosign the same loan.

[12] Resident is determined as any individual who answered California for "What is your state of legal residence?"

[13] We were able to access a separate data source that allows us to identify whether a student submitted a FAFSA in the four years prior to our sample period (2002 through 2005), which minimizes misclassification of the first year a student submitted a FAFSA.

[14] Universities were required to report enrollment only for those with family incomes less than $150,000. While some universities reported for those with incomes above that threshold, this is a select sample.

Because we do not observe college enrollment for our full sample, we proxy for college enrollment with student FAFSA submission. To examine how close a proxy this is, we use a subsample of our data (the 2014 and 2015 cohorts) where we observe actual enrollment in California public colleges and universities for families making less than $150,000 annually. In those two years, we see that 63% of FAFSA filers enroll in public colleges and universities in California by the year after FAFSA enrollment. Because we are still missing private school and out-of-state enrollment, we use estimates from Kurlander (2018) to estimate the fraction of FAFSA filers who attend private school in-state or go to any college out-of-state. Using data from the National Student Clearinghouse to study all high school graduates in California, Kurlander (2018) shows that 5% of college attenders go to in-state private schools and 11% go out-of-state, both of which are missing in our enrollment data. If we assume that the distribution of students across college sectors is similar for high school graduates (Kurlander et al. 2018's base sample) and FAFSA filers (our base sample), we can get an estimate for the total number of FAFSA filers who attend college. Under these assumptions, the fraction of FAFSA filers who enroll in any college is 1.16*63 percent, which equals 73 percent. This suggests that FAFSA filing is a reasonable proxy for college enrollment, with about three quarters of students enrolling after submitting a FAFSA. Given that some FAFSA filers do not go to college, our estimates likely represent an underestimate of the effects of college enrollment.[15]

Cal Grant

Many California residents who submit the FAFSA also apply for the Cal Grant, the state's primary state aid program that typically allows qualifying students to choose between four

[15] This estimate could be an over or underestimate depending on if FAFSA filers are more or less likely to go out of state or to a private college. FAFSA filers tend to be lower income, which would suggest this is an overestimate; however, families who send their children to more expensive colleges may be more likely to use federal loans, so they may be overrepresented, and our estimate would actually be an underestimate. Because universities were not required to report enrollment for individuals with incomes above $150,000, we are also underestimating enrollment for that segment of our sample.

years of full tuition and fees for in-state, four-year public colleges, or a roughly $9,000 annual subsidy for private colleges.[16]

Most Cal Grant awards are for students within one year of high school graduation who become eligible under what is referred to as the "Entitlement" program.[17] This is the largest program that applies to recent high school graduates, and this is the focus of our paper. To apply for the Cal Grant, FAFSA filers must additionally submit a one-page form that includes an applicant's high school attended and GPA[18]. Our data include individual-level data on any Cal Grant application, payment received including the amount of the subsidy, the term of enrollment, and the name of the college that received the payment.

The Cal Grant program has a variety of family income and GPA cutoffs (described later) which we use for identification.

3. Event Study

As noted above, families can help finance college expenses in a number of ways. Parents can save in anticipation of college attendance; however, saving while a child is younger is difficult as expenses are high and income is relatively low earlier in the life-cycle. Parents can also help children pay for college by borrowing. Parents often have several options, including student loans targeted at parents (e.g., Parent PLUS loans), private loans, credit cards, and home equity loans. Additionally, parents may also decide not to directly finance college expenditures with student loans but rather use them as additional sources of liquidity (often with better terms) with positive spillovers into broader measures of financial health.

[16] Tuition in 2014-15 at the California State University (CSU) and University of California (UC) systems was $5,472 and $11,220, respectively.

[17] Alternate programs that include much smaller group of students are: the "Competitive" program that targets older, "non-traditional" students, the "Transfer Entitlement" program for a set of students transferring from community colleges into four-year colleges, and "Cal Grant C" which is a smaller award for vocational education programs.

[18] High schools are asked to report the unweighted average of 10th and 11th grade GPA, rounded to the nearest 0.01.

While there are a number of theoretical possibilities, there is surprisingly little evidence on the effects of children's college-going behavior on parents' finances. To address this, we first describe how family finances change at the time of college enrollment.

To do the event study, we compare parents whose child enrolls in college (as proxied by submitting the FAFSA) relative to similar parents whose child has not yet enrolled in college (but will in a subsequent year). In contrast to event studies in a policy evaluation, we do not necessarily expect the trends prior to enrollment to be flat. For instance, parents could reduce mortgage payments leading up to a child's enrollment to build savings for enrollment. Hence, we view this as a description of a phenomenon that has received very little attention thus far.[19]

For this analysis, we use a 10% sample of all first-time FAFSA filers between 2006 and 2015 (see summary statistics in Table 1a and 1b). We estimate an event study specification where the event is first FAFSA submission. Here, t=0 represents September of the first year of receiving aid (the first year of college enrollment, if the student enrolls). We also control for parents' age linearly, time invariant family fixed effects, and calendar year fixed effects.[20] Because of the staggered timing of college enrollment and the fact that the effects of college enrollment on parent finances grow as a student progresses through college, traditional two-way fixed effect estimates of event studies are likely biased. (Goodman-Bacon 2021). To address these issues, we estimate our event study using the method outlined in Callaway Sant'anna (2021).[21] We use not-yet-treated parents as the comparison group.

Our "event" should be interpreted as the change in parental financial outcomes relative to their child's first FAFSA submission, which his as a good proxy for college enrollment. As noted above, we do not observe enrollment for some of our sample, but insofar as a FAFSA

[19] We focus on parents for this analysis because students typically have no credit prior to enrollment if they enroll at traditional ages, so the pre period in the event study is not informative.

[20] We use information from both FAFSA records and credit bureau data to obtain parents' age. For observations where the parents' age is missing, we use the median age in the sample corresponding to the calendar year in consideration.

[21] During our sample period there were large changes in several measures of debt—especially those related to housing such as mortgages and HELOC. These changes suggest heterogeneous effects across time.

submission suggests that students are seriously considering college enrollment, our results in the pre period represent how parents' finances change for students who are considering going to college. In the period after the initial FAFSA submission, some students will not enroll in college. This will attenuate our estimates on the "effect" of college relative to directly observing college enrollment.

We present the event study results graphically.[22] When we consider the effect on all balances, summing across all types, including educational loans, HELOCs, credit cards, auto loans, and total balances, we see that there is no significant change in total balances, although there is some suggestive evidence that balances increase a few years later (Figure 1). However, this figure hides significant heterogeneity across types of credit. Educational debt dramatically increases for parents beginning in the year their child first submits a FAFSA (see Figure 1). On average, 5 years after a student's first FAFSA submission, parents have roughly an additional $3,000 in educational loan balances. This large increase makes sense, as parents gain access to educational loans with their child's enrollment in college.

While education loans increase following college enrollment, we see accompanying decreases in credit card balances and auto loans (see Figure 1.) For credit cards, we see an initial increase in the year a child files a FAFSA, but then a steady decline up to eight years later. We also see decreases in auto loans. The total decrease in these two balances is approximately $1600, which substantially offsets the increase in educational loans. This suggests that parents primarily shift debt across types rather than increase indebtedness when their child goes to college. We also see no change in the use of HELOCs when a child goes to college.

Why is there a shift to educational loans from other forms of credit? Federal educational loans generally have lower interest rates than credit cards, do not use credit scores to determine eligibility, and are quite easy to obtain; a common form of educational loans, Parent PLUS loans, are offered as part of their child's FAFSA/financial aid process. However, educational loans are not dischargeable in bankruptcy.

[22] Table versions are available upon request.

When we examine financial health and delinquency behavior, we find that the likelihood of having any delinquency does not change (see Figure 2). Again, however, the source of delinquencies is quite informative. Not surprisingly, given that parents' access to educational loans increased with their child's college enrollment, we see an increase in the probability of being delinquent for educational loans after college enrollment. However, consistent with a shift in debt allocation, we see that delinquency rates decline for credit cards, auto loans, and HELOCs.

Interestingly, we also see a slight decline in Chapter 7 bankruptcy, although it is not statistically significant, with no change in Chapter 13 Bankruptcy (see Figure 3).[23] Finally, when we examine the credit score, which is a summary measure of financial health (see Figure 4), we see that, with initial enrollment, the parents' credit score declines, but then recovers and actually increases over time, exceeding a 4-point gain six years after FAFSA submission. This may reflect the added debt in the short-run, but the decline in bankruptcy in the longer-run and longer-term improvements from paying off debt.

Heterogeneity by Income

Up to this point, we considered the trajectory of the average family, pooling across all families. However, there may be significant differences in the time patterns of parental credit use for higher- and lower-income families. This could be driven by underlying differences in the college enrollment behavior and decisions of children of higher- versus lower-income parents. Higher-income families may send their children to different colleges than lower-income families, indeed they may have different rates of college attendance conditional on FAFSA submission. And, even for the same child behavior/decisions, higher- and lower-income families are likely to have different abilities to finance consumption, suggesting potential

[23] Chapter 7 is a faster process—discharge typically takes 3-5 months, relative to 3-5 years for Chapter 12—and involves the liquidation of assets, relative to the reorganization/restructuring of assets in Chapter 13. Chapter 7 remains on credit reports for 10 years, while Chapter 13 only remains for 7 years after initial filing. (See https://www.experian.com/blogs/ask-experian/bankruptcy-chapter-7-vs-chapter-13/ for more information.)

heterogeneity in responses by family income.[24] Because this analysis is descriptive, our results will incorporate all the different decisions and opportunities for the different groups.

Higher-Income Parents

When we split the sample by median family income by the year of filing the FAFSA (approximately $45,000 to $50,000) and re-run the analyses, we see substantial differences.[25] When examining balances, higher income parents seem to have larger effects than those seen in the pooled results—educational loans increase by more and other types of debt decrease by more. (Figure 5.) As we saw before, credit card balances spike in the first year a child is in college (perhaps to purchase items for their child's housing) and then decline, and these movements are larger than we saw in the earlier results. Auto loan balances decline—again, by more--and mortgages show some evidence of declines. However, on net, total indebtedness is unchanged.

For higher-income families we see that delinquencies increase on educational loans (Figure 6); this is likely because many parents did not have them prior to their child going to college.[26] However, higher income parents see no statistically significant changes in delinquency for other types of debt (though the point estimates are negative for credit card debt), which aggregates to small increases in overall delinquency for higher-income parents. Higher-income parents see no changes in bankruptcy (Figure 7). Finally, Figure 8 shows that credit scores initially decline for higher-income parents but, within two years credit scores have essentially returned to the same level prior to the FAFSA filing. (Point estimates are positive three years after initial FAFSA submission and beyond, but they are not statistically different from zero.)

Overall, higher-income parents do not increase indebtedness; however, they do reallocate their debt to increase their use of newly-available educational loans and decrease their use of other

[24] Ideally we would also explore heterogeneity by wealth, but this is not measured as well in FAFSA data.
[25] The median income in our sample ranges from just under $43,949 to $51,669 depending on the year.
[26] In the year prior to filing the FAFSA, 13.5% of higher-income parents had an education loan while 10.1% of lower-income parents had education debt.

types of (potentially more costly) debt. Higher-income parent's child's college attendance does not correlate with negative financial outcomes.

Lower-Income Parents

In contrast, lower-income parents see much smaller increases in educational loans than higher income parents (Figure 5). This could result from some combination of their children attending lower-cost colleges (community college versus 4-year college), their children receiving more grant aid, and lower probabilities of college enrollment conditional on filing the FAFSA.

These smaller increases in educational loans are accompanied by small declines in credit card balances and HELOCs that are only statistically significant in some years. Lower-income parents see small increases in auto loans and mortgages, although the increase in mortgage balances occurs in the years after a child is likely done with college. On net, low-income parents increase total indebtedness starting four years after FAFSA submission.

Lower-income parents see increases in delinquency on educational loans but declines in delinquencies on other types of loans such as HELOCs, credit cards, auto loans, and mortgages (Figure 6). On net, delinquency decreases for lower-income parents. In Figure 7, we see that lower-income parents reduce the likelihood of bankruptcy, and Figure 8 shows that their credit scores increased by over 5 points six years after FAFSA submission. The decline in Chapter 7 bankruptcy may be in part because student loans are generally not dischargeable in bankruptcy, reducing the benefit of bankruptcy for those with more educational loans.

These results suggest a child attending college is beneficial—from a financial health perspective-- for lower-income parents. This could be because lower-income parents gain access to a new type of credit, educational loans, that are relatively easy to obtain and that they previously did not have access to. The new credit enables them to make payments on existing debt, accumulate additional debt, avoid bankruptcy, and increase their credit score. This increased access is likely driven in part by the comparatively easy credit afforded by Parent PLUS loans, which do not have credit score requirements. It could also be that children take on

more responsibility for their financial support which results in parents improved financial health.

Our results show that parents of children attending college see improvements in financial health when their child goes to college; this is especially true for lower-income households. These results suggest that programs like Parent PLUS may have benefits for parents beyond those they have for children (Blanchard 2024). It also suggests that lower-income households may benefit more generally from loans with generous terms in building their credit.[27] Alternatively it may be that parents benefit from children taking on more financial responsibility.

4. Regression Discontinuity

The event study provides an overview of the trajectory of parental finances when children go to college, which is the result of a complex optimization problem solved by parents and children in which they simultaneously evaluate whether to go to college, where to go to college, and how to finance it, in addition to changes in consumption and support flowing from parents to children. While the event study presents the trajectory of parental finances for a largely anticipated event, it does not provide insight into the causal effects of increasing college prices, which is particularly important given recent trends. Because the price faced by individual students is endogenous to their characteristics, we use price changes induced by changes in grant aid for identification. We take advantage of the fact that Cal Grant awards depend on strict cutoffs by student high school GPA for families within specific income ranges, generating sharp discontinuities in whether students are Cal Grant eligible and can receive state aid.

[27] These results provide new insight into research that shows that changes in housing wealth increase college enrollment through increased access to liquidity (Lovenheim 2011; Lovenheim and Reynolds 2013). We do not find increased use of HELOCs when students go to college. This could be because, in our sample, families do not have enough equity in their house to take out HELOCs or because they have equity but do not need to use it. However, our results are not directly comparable to the papers cited above, as those authors use a shock to housing wealth for identification and our event study cannot be interpreted causally. We also contrast with Dinerstein et al (2024), where the authors show that when student loan borrowers experience a moratorium on payments, they do not decrease delinquency but instead increase indebtedness. Notably that sample focuses on student borrowers rather than parents.

In this analysis, we focus on "middle-income" families who become Cal Grant eligible with a 3.0 GPA or above.[28] The income cutoffs that determine who is "middle-income" vary by application year and family size.[29] For students who qualify for the Cal Grant at this threshold, the monetary value is large, as they are only eligible to take the Cal Grant to a four-year college (public or private) and cannot use the award to attend a community college. This cutoff thus represents the largest subsidy provided by the state to families. [30]

We use a regression discontinuity design to compare income-eligible families just above and below the GPA cutoff. In some specifications we examine student outcomes, whereas in others we examine parent outcomes. In both cases, the specification is:

$$Y_{it} = \beta_0 + \theta \cdot \mathbf{1}(R_i > 0) + f(R_i) + \sigma_t + \varepsilon_{it}$$

where Y_{it} is an outcome such as educational borrowing for person *i* in FAFSA filing cohort *t* (2006 through 2015), R_i is a student's GPA recentered so that $R_i = 0$ is 3.0, $\mathbf{1}(R_i > 0)$ is an indicator for being above the GPA cutoff, $f(R_i)$ is a function of GPA that is allowed to vary above and below the threshold, σ_t are a set of fixed effects to account for FAFSA filing cohort *t*, and ε_{it} is an idiosyncratic error term. Standard errors are calculated using heteroskedasticity-robust variance.

The parameter of interest is θ, which captures the effect of crossing the GPA threshold, and hence being eligible for the Cal Grant, on outcome Y_{it}. Our preferred specification uses ordinary least squares to estimate f(R_i) using a local linear specification and allowing the slope to vary on each side of the cutoff. In our main specification, we report a fixed bandwidth of 0.3 GPA points (i.e., 2.7 through 3.3) but we show that our results are not sensitive to this choice. We estimate

[28] The GPA used by the state is an unweighted average of 10th and 11th grade performance.
[29] Appendix Table 1 shows the full range of income limits that define "middle-income" families across years, which is the sample used in this analysis. For a family of two this includes families with income from $30,300 to $65,000 in 2006, which increased to a range from $36,600 to $78,300 in 2015. For students from larger families of six or more, the income range was $45,900 to $83,600 in 2006, increasing to $55,400 to $100,800 in 2015.
[30] Although not the primary focus of the paper, there are alternate Cal Grant cutoffs that pertain to "low-income" families; we discuss these other cutoffs later and in the appendix.

the model separately for each year before, during, and after filing the FAFSA. We also estimate effects non parametrically using a triangular kernel and find similar results (Calonico, Cattaneo, Titiunik 2014).

Sample Description

For the RD sample, we restrict our sample to middle-income, dependent students near the 3.0 GPA eligibility threshold. The analytical sample is restricted to the first FAFSA submission for each individual who is classified as a dependent, submitted their high school GPA for Cal Grant eligibility, and reported at least one parent's social security number on the FAFSA (see Table 1b for summary statistics). Because the relevant sample is restricted to recent high school graduates, the average age is just under 19 and almost 96% self-report as a freshman. Average family income is approximately $60,150, with 58% of applicants female, and 68% listing a bachelor's degree as their primary educational objective. Almost 56% of parents had a mortgage in the year prior to FAFSA application, and their average credit score was 692.

Validity of Research Design

Our key identifying assumption is that potential outcomes are smooth through the GPA cutoff. To test this, we would ideally show that there is no extra mass just above the cutoff that might suggest that families are manipulating their position to be on the positive side of the Cal Grant eligibility threshold.

In practice, given the way GPAs are calculated, the GPA distribution is not expected to be smooth. Instead, we expect there to be large jumps at values of 2.5, 2.75, 3.0, and other values that occur with higher frequency due to the averaging of typically discrete grade point values. We can see these jumps in Figure 9, Panel A, which is a histogram of the distribution of GPA for our sample (although a GPA of 3.0 still only represents less than 5% of the sample). However, we do not view the mass point as evidence of manipulation. In fact, a similar distribution was found in early work on the Cal Grant, before the 3.0 GPA became the eligibility threshold (See Bettinger et al., 2019). When we examine higher-income families above the income eligibility thresholds, where students have no incentive to manipulate their GPA, we find the same

pattern (see Figure 9, Panel B).[31] Nonetheless, for our analysis, we remove all students with a 3.0 GPA (i.e. a "donut hole" RD design) to avoid the leverage that this large number of students may have on the functional form of our estimates.[32] Later we show that the results are similar when these students are included (Appendix Table A4).

We also show that there are no discontinuities in the observable characteristics of Cal Grant applicants at the threshold. (See Table 2.) We find no statistically significant differences in student characteristics at the cutoff when examining family income or size, whether the applicant has other siblings in college, parental education, student age, parent age, gender, degree objective, citizenship status (relative to non-citizen legal residents), and parents' marital status (other covariates omitted for brevity).[33] The lack of discontinuities in these characteristics suggests that it is unlikely that there is selection on one side of the cutoff.

Finally, we also will show "placebo" estimates where we look at outcomes in years prior to FAFSA submission. We find no effects, suggesting there is no sorting on lagged outcomes of interest, such as balances or delinquencies.

5. Results

First Stage

Table 3 presents the results when we estimate our first stage, showing that crossing the 3.0 GPA threshold leads to large changes in the amount of state-based grant aid received by students.

Students crossing the 3.0 GPA threshold experience a 36-percentage point increase in the likelihood of receiving a state aid payment the following year. While this might seem low, there

[31] This situation is quite similar to that of Zimmerman (2014) and Ost, Pan, and Webber (2018), who also provide evidence of bunching for ineligible students. We estimate effects for this sample on parent educational loan balance in Figure C3.
[32] See Barreca, Lindo, & Waddell (2016) for further discussion of the "donut hole" RD design.
[33] When including 3.0 GPA students two of these thirteen values are statistically significant at the 1% level, as the large group of 3.0 GPA students exhibit slightly different values than students with GPAs just above and below this value. As noted above, in our main analysis we exclude individuals with a 3.0 GPA.

are several reasons that eligible students do not receive a Cal Grant payment. One is if they choose not to attend college or attend an out-of-state college. In addition, for this cutoff, students can only use the Cal Grant award at a four-year college, so any student choosing to attend a community college – which constitutes roughly 50% of our sample at the threshold – would not receive a Cal Grant payment.[34]

In terms of the amount of aid received, the treatment-control contrast is $2,152 in the first year after submitting the FAFSA and increases to $5,906 over a six-year timeframe (see Table 3, or Figure 10). Given that not all eligible students take up the grant, these estimates imply that conditional on receiving aid, students receive, on average, roughly $6,040 their first year, and around $16,500 over time. Thus, Cal Grant eligibility leads to a substantial subsidy to support students to attend four-year colleges in California.

Table 3 and Figure 11 examines in-state public college enrollment for the 2014 and 2015 cohorts to estimate whether the grant offer altered the sector of postsecondary attendance.[35] We find that the Cal Grant offer produces small changes in sector of enrollment, shifting enrollment away from community colleges by roughly 2.5 percentage points (from a base of 49%) to enrollment at CSUs (from a base of 29%). UC enrollment is unchanged, though only 3% of students near the 3.0 GPA cutoff in this income range attend a UC.

These results suggest that the generous state aid provided by the Cal Grant went primarily to students who were likely to attend college irrespective of the grant aid.[36] If anything, we see a small increase in the probability of attending a *more* expensive college which would attenuate the effects of additional grant aid on price paid. Imputing the cost of full-time enrollment for

[34] When we examine whether a student received at least one state aid payment in the six years after first submitting the FAFSA, the difference is 31 percentage points. The difference is somewhat smaller because some of the control group students also earn a state aid award via a number of other potential programs, including a specific Cal Grant award that targets "non-traditional" students for whom at least two years have passed since graduating from high school (Gurantz, 2022).

[35] As noted above, we only have administrative data on enrollment in CSU and UC campuses for the last two cohorts in our sample (2014 and 2015).

[36] In prior work on the Cal Grant, Bettinger et al. (2019) show that it induced larger changes in persistence towards graduation than on measures of initial enrollment.

students at public two- and four-year colleges, the predicted change in tuition is a statistically insignificant $70 in the first year.[37]

Results

Given that eligibility for the Cal Grant results in a large drop in the cost of attending college, we next examine how this change in the effective price of college affects both student's future credit health as well as that of their parents.

Student Results

Table 4 reports estimates of the causal impact of receiving grant aid on credit balances for students by types of credit, where students with no balance are included and listed as zero dollars. The columns estimate effects of grant aid in the year the student first submitted the FAFSA (time zero) and the subsequent ten years. For each estimate we show the baseline mean rate for students just below the GPA cutoff (i.e., students with GPA of 2.90 through 2.99). Given the nature of the FAFSA (2006 through 2015 cohorts) and credit data (2004 through the present), we note that the fully balanced part of our panel includes only estimates from two years prior to initial FAFSA submission through the first eight years from FAFSA submission.[38]

When we examine balances for each type of credit line as the outcome, we find no consistent evidence of effects on student balances. There are only a few statistically significant point estimates, and even the point estimates that are larger in magnitude, such as those on mortgage balances, fluctuate between positive and negative values while remaining statistically insignificant.

At a first pass, these results may be surprising; the Cal Grant has no effect on student loan take up or balances. However, Bettinger et al (2019) found similar results for the Cal Grant program

[37] This value is close to what we would expect, as the difference in full-time tuition between the CSU system and a community college ($5,472 minus $1,380) multiplied by 2.5 percentage points is roughly $100.

[38] Throughout, we estimate placebo estimates of the effect of the Cal Grant prior to attending college (to test for pre-treatment differences across the threshold); however, given that we never find any meaningful effects, we focus on the effects in years after FAFSA submission. (The pre-period results are available upon request.)

in earlier years using different data. Similar null findings have been shown for students receiving the maximum Pell Grant in Texas (Denning, Marx, and Turner 2019).[39] Taken at face value, these studies suggest that the price of college/grant aid has minimal effects on borrowing at the margin. However, we show that this conclusion is no longer true once one incorporates parents' behavior as well.

Parent Results

Table 5 presents the causal effect of reduced college cost induced by increased grant aid on parent debt. First, we see statistically significant reductions in student loan balances starting 2 years after first FAFSA submission and continuing to 8 years after first FAFSA submission. These reductions are meaningful, peaking at $935 from a base of nearly $9000, or a 10 percent reduction in balances. We see reductions in home equity loan balances (HELOC) that reach statistical significance 4 through 6 years after a student submits their first FAFSA. These reductions are large, peaking at $866 from a base of $6,741, a 12 percent reduction. The sum of HELOC and educational loans is approximately a $1,600 reduction in debt; however, when we look at total debt, we find no statistically significant effects, likely due to the large mortgage balances swamping other types of debt. While we do not see an effect on credit card balances, we do see a decrease in auto balances of $417 in the year of FAFSA submission. We find no effects on mortgage balances.

Figures 12 through 15 show the results graphically, focusing on Educational Loans and HELOCs. Figures 12 and 13 show the RD estimates for parent's educational loans and HELOCS four years after initial FAFSA application, by distance from the threshold. For both, we see balances increasing up to the cutoff but then a distinct drop after the threshold. Figures 14 and 15 present year-by-year RD estimates for educational loans and HELOCs, respectively. We see no effects in the years prior to FAFSA application but then a decline in both types of loans after, with the reduction peaking about five to six years after application. Appendix Figures A1

[39] In another case, the West Virginia PROMISE scholarship actually increased student loan balances (presumably by increasing enrollment) (Scott-Clayton and Zafar 2019). Marx and Turner (2018) show that the Pell Grant crowds out borrowing.

through A4 show similar figures for total balances, along with auto, mortgage, and credit card tradelines.

Given this change in debt, we next examine parental repayment behavior for evidence of improved financial health. Table 6 shows the change in parent 90-day delinquency rates on the main six tradelines, along with an aggregate measure for having a delinquency on any account in that year. We find that parents of children who receive grant aid are less likely to be delinquent overall, with meaningful and statistically significant effects in the first and third years after first filing the FAFSA. The magnitude is 0.9 percentage points less likely to be more than 90 days delinquent on any debt from a base of 7.8 percent points, which represents a 12 percent reduction in delinquency. This reduction in delinquency seems to be largely driven by a reduction in being delinquent on credit cards, but point estimates are also negative for student loan and HELOC delinquency. However, we find little evidence at the extreme, with no changes in bankruptcy rates (both Chapter 7 and Chapter 13).[40]

Overall, we find significant causal effects of college cost on parental debt portfolios and financial health. The Cal Grant reduces parent's use of educational loans and HELOCs and reduces parent's delinquency on debt, particularly credit card debt.

Heterogeneity

Given that we see evidence of parents responding through home equity loans, and only parents who own a home are eligible for these loans, we examine heterogeneity by whether the parents had a mortgage in either of the two years prior to their child's first FAFSA submission. Among those without a mortgage (for whom a home equity loan is not readily available), we see that the reduction in education loans is larger, peaking at $1,600 reduction. (See Appendix Table A1.) However, unsurprisingly there is no change in HELOCs. For parents who did have a mortgage prior to FAFSA application, there is no statistically significant reduction in educational loans, but a large decrease in HELOC balances which peaks at $1,734. This suggests

[40] Results available upon request.

that the way that parents face a price shock depends critically on what credit options are available to them.[41]

Overall, our heterogeneity results suggest that the effects of a reduction in the price of college affects parents differently depending on their background.

Robustness Checks

We conduct a variety of sensitivity checks to demonstrate the robustness of our conclusions. Appendix Table A2 estimates impacts on parent's tradeline balances, similar to Table 5, but uses a triangular kernel and finds similar results. Appendix Tables A3 and A4 show the robustness of the grant aid results for parents, focusing on educational loans, with bandwidths ranging from 0.10 to 0.50 GPA, and varying whether 3.0 GPA students are included or not. When we include 3.0 GPA students we find some evidence of declines in education loan balances, though many of these estimates are statistically insignificant and larger when the bandwidths are short (0.15 GPA).

Overall, we find little evidence that receiving grant aid leads to substantial changes in credit outcomes for the student who received the state aid payment, but strong evidence that grant aid reduces the student loan burden of the parents. We do not find other impacts on parents' credit outcomes (e.g., lower balances or default rates on mortgage payments).

As noted earlier, there are a variety of discontinuities in the eligibility for Cal Grants, and we focus on the one that produces the largest changes in state aid receipt. We also investigated alternate Cal Grant thresholds and generally found null effects, in large part because these thresholds produced much smaller first-stage changes in grant aid. Briefly, one threshold is for low-income students as they surpass the 2.0 GPA threshold. At this benchmark, most students attend community college, where they receive approximately one-quarter of the subsidy at our

[41] We also examine heterogeneity by race, as there is substantial research showing that, both currently and historically, policies have differentially affected access to credit by race. We do not observe race directly, but have a measure of predicted race from the credit bureau that uses information from a person's name and address to make inference about race. We split race into two mutually exclusive groups, this first is White or Asian and the second is Hispanic or Black. We do not find consistent patterns of differences by race which may be affected by our noisy measure of race.

threshold above, and many exhibit low levels of persistence perhaps due to weak academic preparation. Another threshold involves low-income students who surpass the 3.0 GPA threshold. At this benchmark students both below and above the threshold are eligible for aid, though the exact benefits increase slightly as they cross the 3.0 threshold. We again find first-stage increases in state aid are roughly one-quarter of the size of our main threshold. We describe these thresholds in Appendix C for transparency and because they may be informative for future research.

5. Conclusion

While there has been substantial research on the effects of college going and college cost on student outcomes, there has been very little work on the role of parents, an important omission. Our analysis of the universe of FAFSA filers in California linked to restricted-access credit bureau data reveals that children's college attendance has a significant impact on parents' financial health. We find that parents use educational debt, shifting borrowing from credit card and auto debt, when their child attends college. This shift is driven by higher income parents. They also reduce bankruptcy and experience increases in credit scores with these changes being driven by lower-income parents.

We also provide novel findings on the role that the price of college plays in family financial outcomes. We show that parents reduce borrowing in response to grant aid, especially reducing their reliance on educational debt and HELOCs. The resulting crowd out of borrowing is somewhere between one-quarter and one-third (i.e., in the reduced form, a $5,900 increase in aid results in a $1,700 decline in educational loans and HELOCs). Importantly, there are large differences by home ownership status; parents with mortgages use HELOCs to finance college-going whereas parents without mortgages rely on educational loans. The finding of less than 100 percent crowd-out suggests that families are changing consumption and/or savings to cushion shocks to the price of college.

Overall, we see that parents are strongly affected by their child's college experience. Parental debt sources and financial health, as measured by credit scores and loan delinquency, change in important ways with college attendance and the price of college. For example, parents see benefits to their credit health when the price of college is low which might have spillovers to other long-term financial outcomes. Future research should further examine the role of college attendance on parents.

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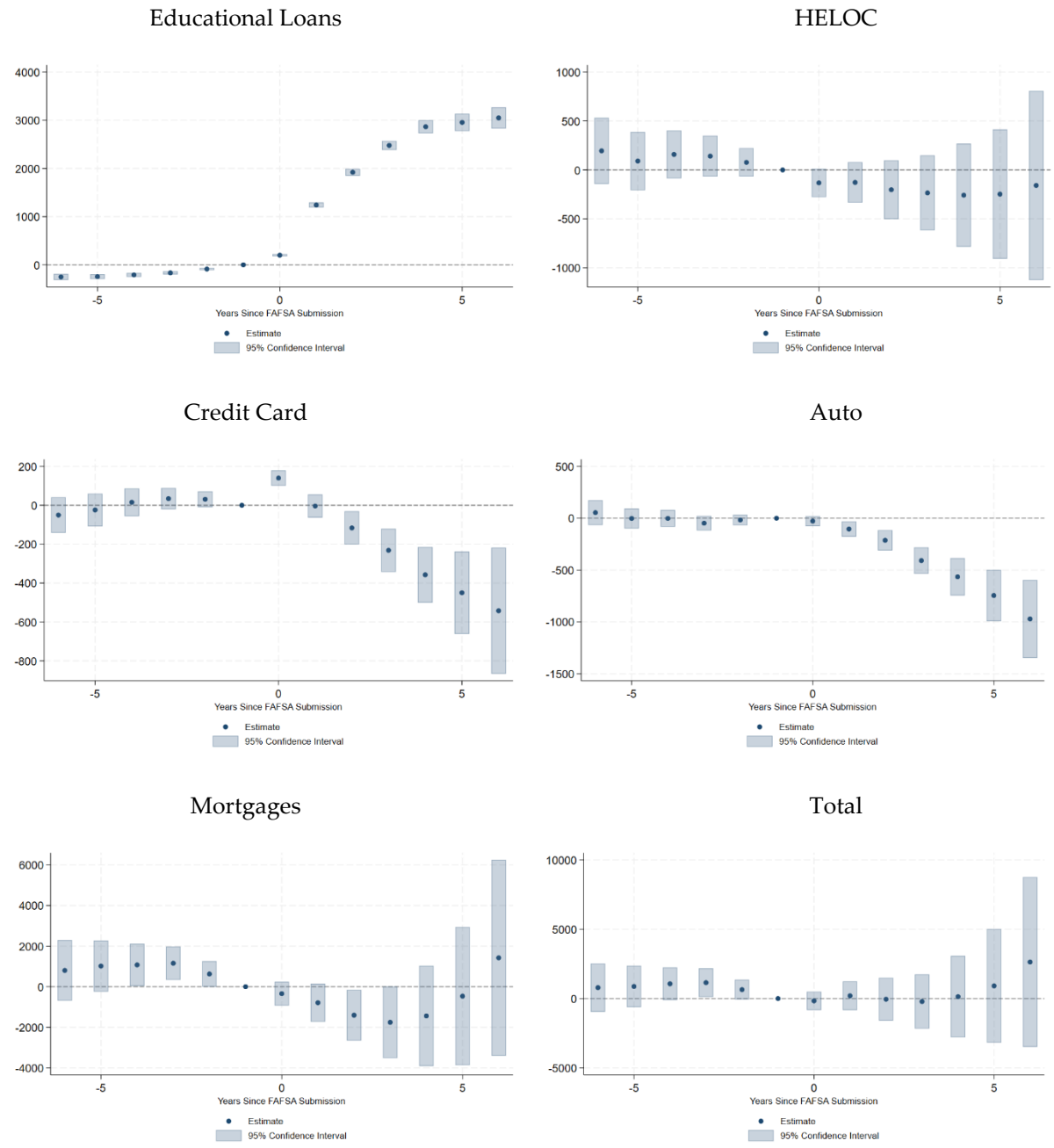
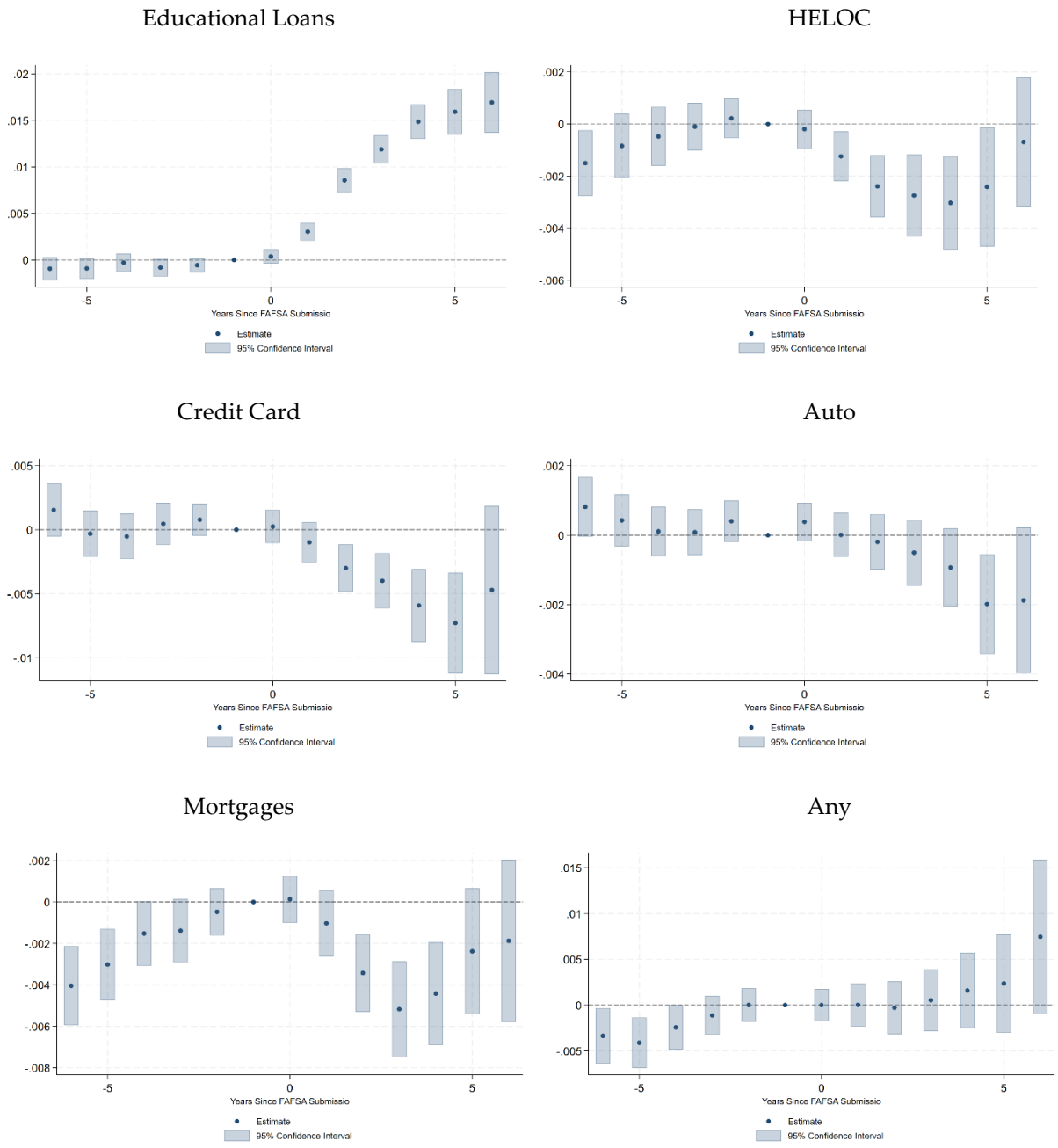
Figures and Tables

Figure 1: Parent Debt Event Study



Notes: These figures plot event study estimates described in the text. We implement the estimator described in Callaway and Sant'anna (2021). Event time is the year that a student first files a FAFSA. Our sample consists of the parents of dependent students who submitted a FAFSA and listed a California school between 2006-07 and 2015-16.

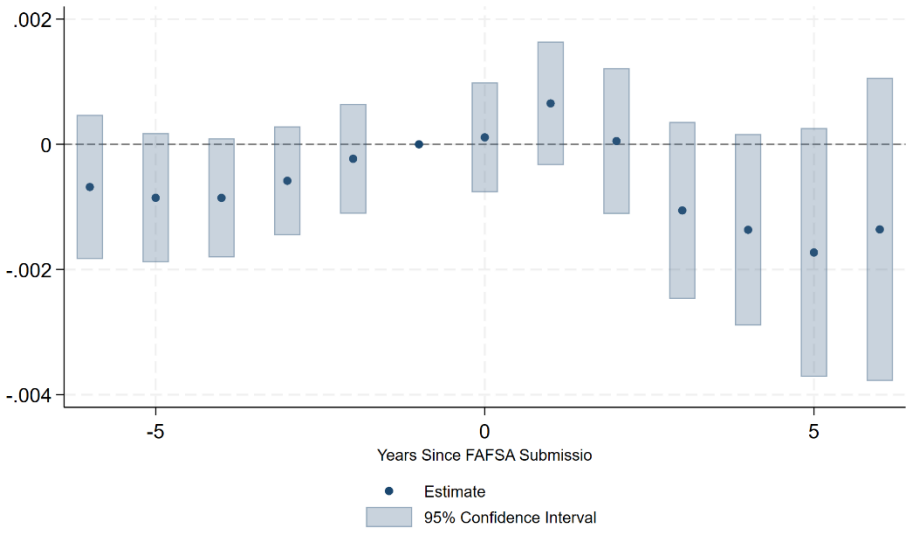
Figure 2: Parent Delinquency Event Study



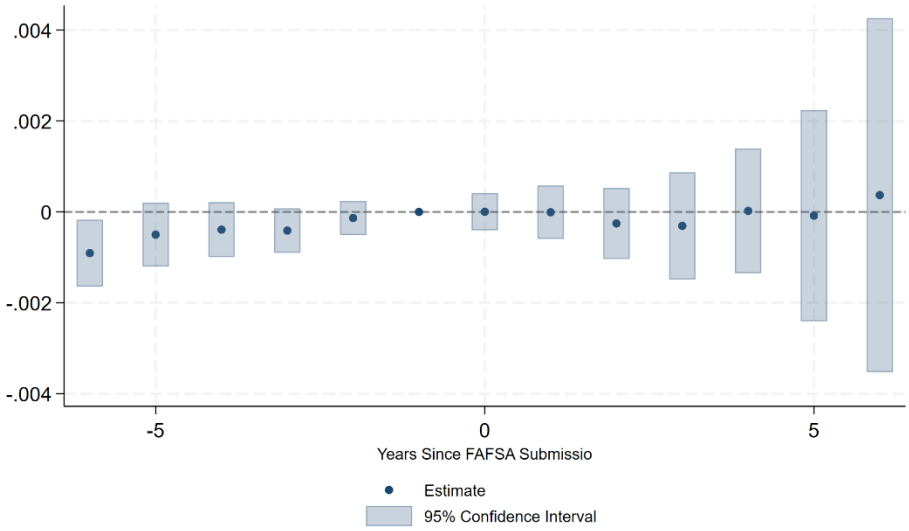
Notes: These figures plot event study estimates described in the text. We implement the estimator described in Callaway and Sant'anna (2021). Event time is the year that a student first files a FAFSA. Our sample consists of the parents of dependent students who submitted a FAFSA and listed a California school between 2006-07 and 2015-16.

Figure 3: Bankruptcy

Chapter 7



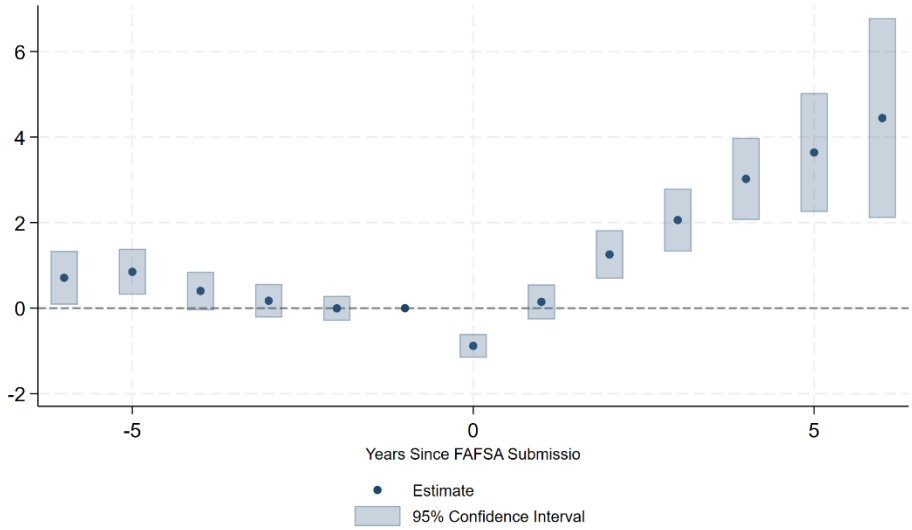
Chapter 13



Notes: These figures plot event study estimates described in the text. We implement the estimator described in Callaway and Sant'anna (2021). Event time is the year that a student first files a FAFSA. Our sample consists of the parents of dependent students who submitted a FAFSA and listed a California school between 2006-07 and 2015-16.

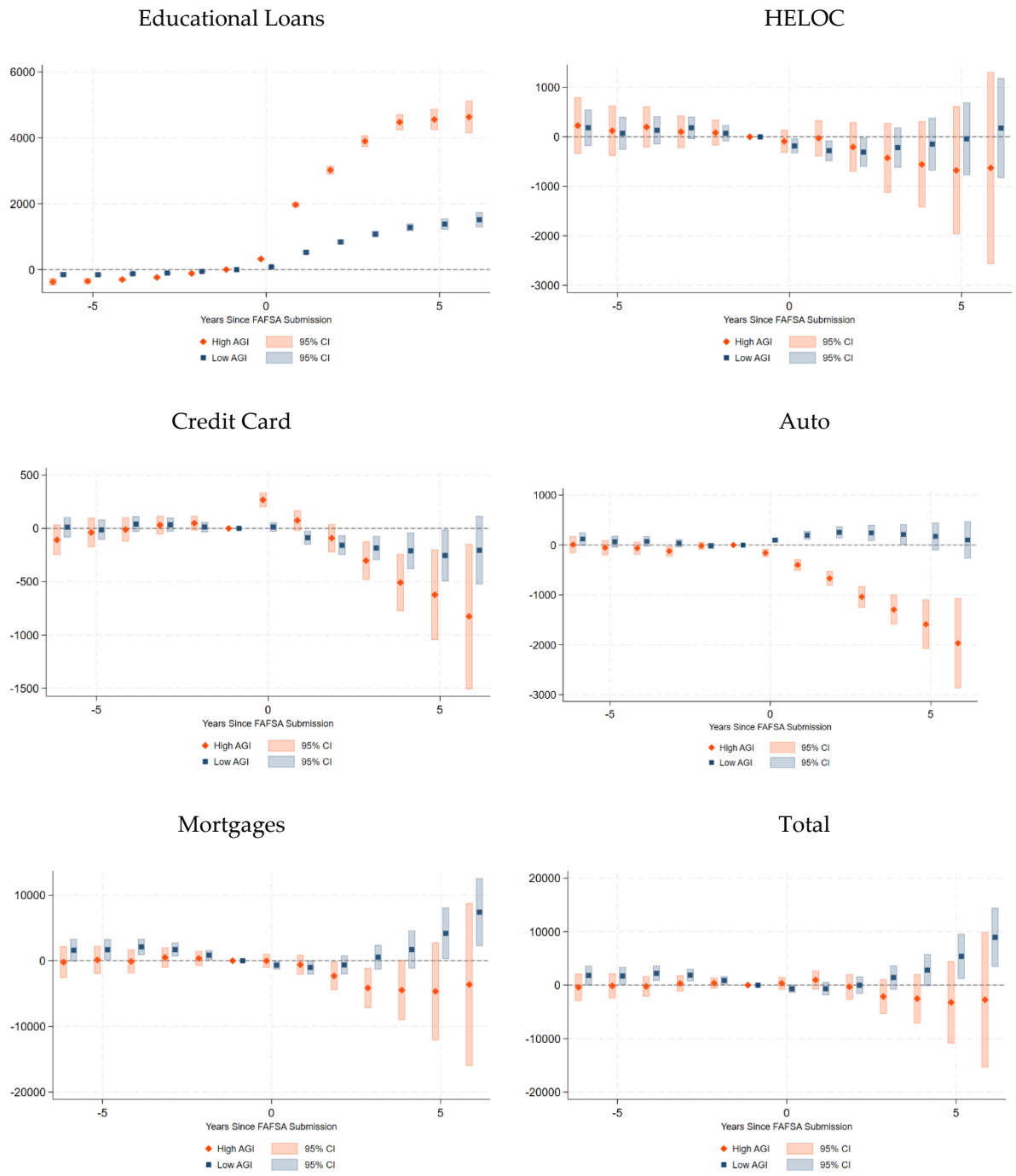
Figure 4

Average Credit Score



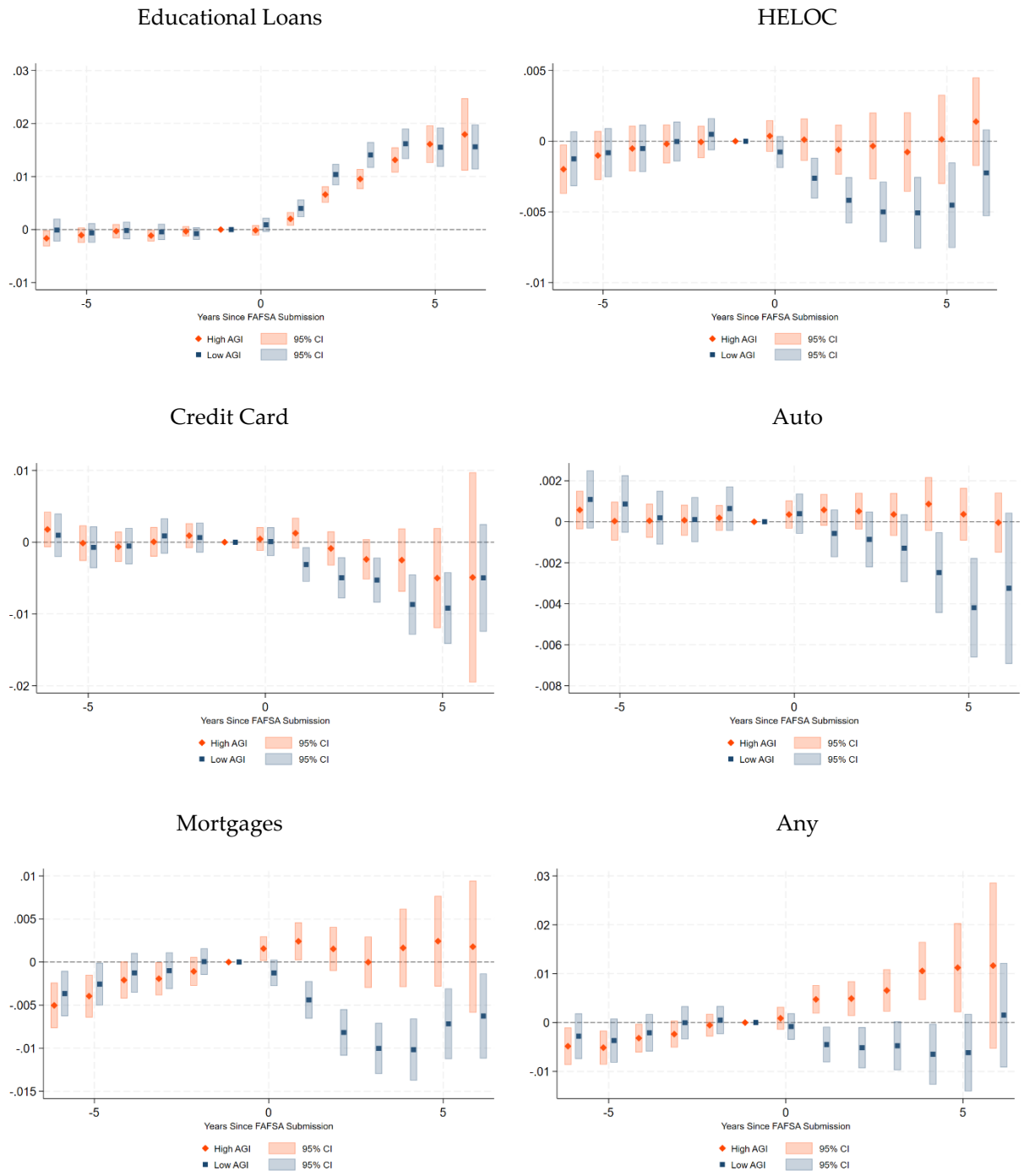
Notes: These figures plot event study estimates described in the text. We implement the estimator described in Callaway and Sant'anna (2021). Event time is the year that a student first files a FAFSA. Our sample consists of the parents of dependent students who submitted a FAFSA and listed a California school between 2006-07 and 2015-16.

Figure 5: Parent Debt Event Study, Income Heterogeneity



Notes: These figures plot event study estimates described in the text. We implement the estimator described in Callaway and Sant'anna (2021). Event time is the year that a student first files a FAFSA. Our sample consists of the parents of dependent students who submitted a FAFSA and listed a California school between 2006-07 and 2015-16.

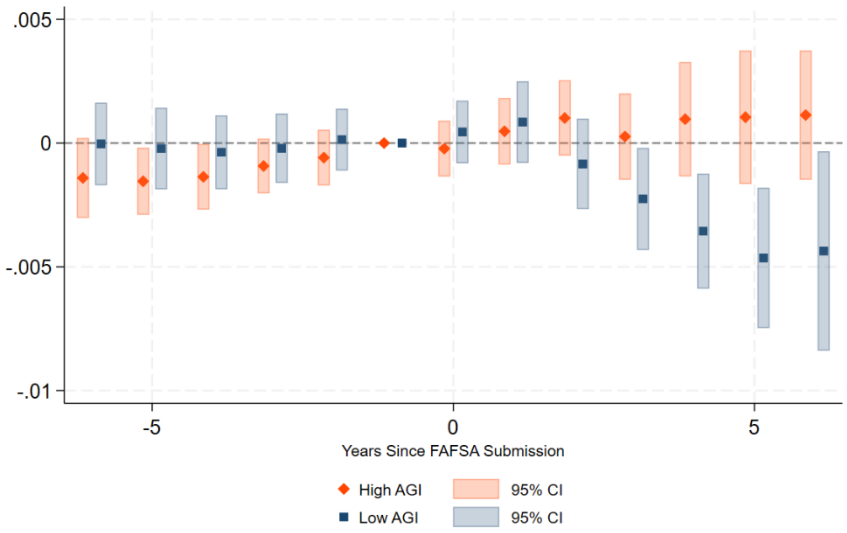
Figure 6: Parent Delinquency Event Study, Income Heterogeneity



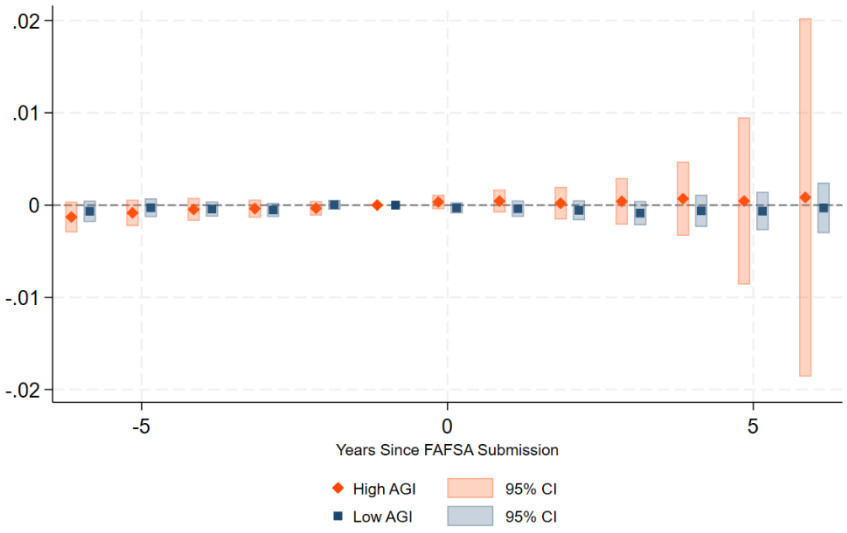
Notes: These figures plot event study estimates described in the text. We implement the estimator described in Callaway and Sant'anna (2021). Event time is the year that a student first files a FAFSA. Our sample consists of the parents of dependent students who submitted a FAFSA and listed a California school between 2006-07 and 2015-16.

Figure 7: Bankruptcy, Income Heterogeneity

Chapter 7



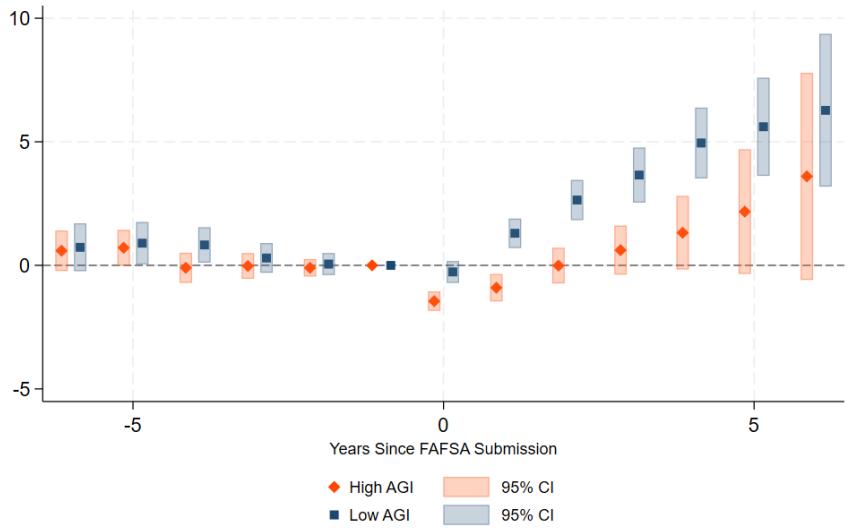
Chapter 13



Notes: These figures plot event study estimates described in the text. We implement the estimator described in Callaway and Sant'anna (2021). Event time is the year that a student first files a FAFSA. Our sample consists of the parents of dependent students who submitted a FAFSA and listed a California school between 2006-07 and 2015-16.

Figure 8

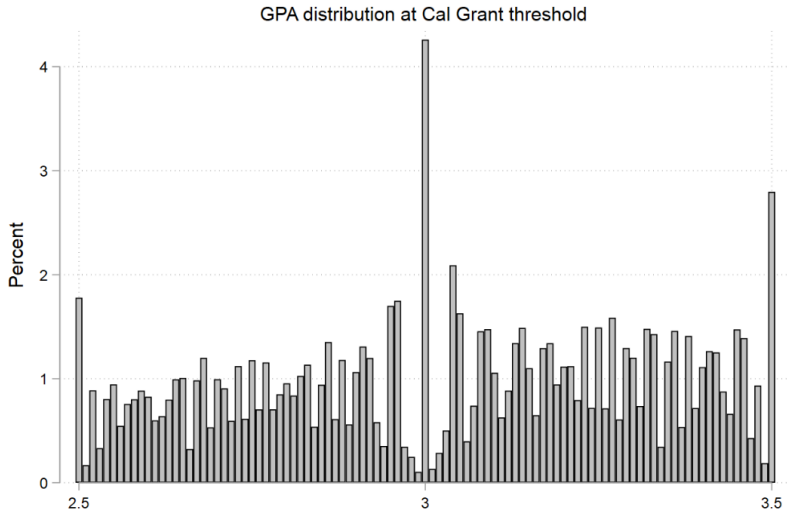
Average Credit Score



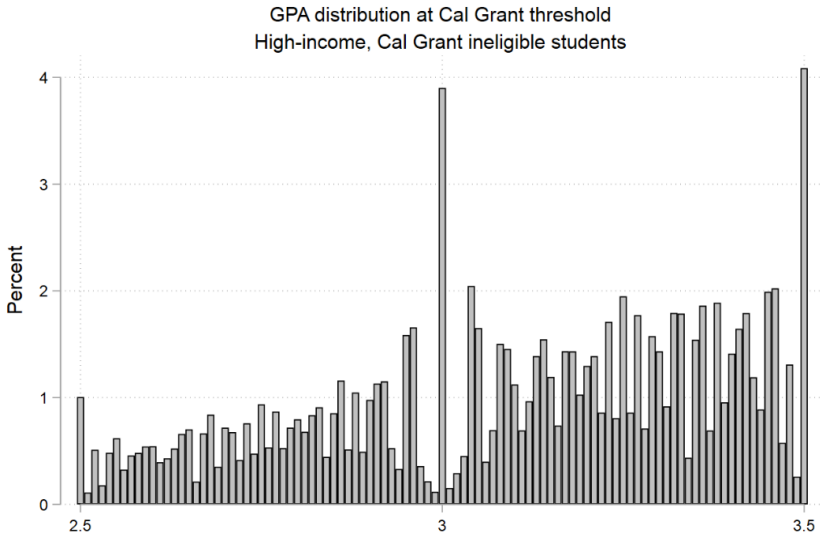
Notes: These figures plot event study estimates described in the text. We implement the estimator described in Callaway and Sant'anna (2021). Event time is the year that a student first files a FAFSA. Our sample consists of the parents of dependent students who submitted a FAFSA and listed a California school between 2006-07 and 2015-16.

Figure 9. Distribution of Cal Grant applicants

(A) Analytic sample of "middle-income" FAFSA submissions who become eligible for the Cal Grant by surpassing the 3.0 GPA threshold

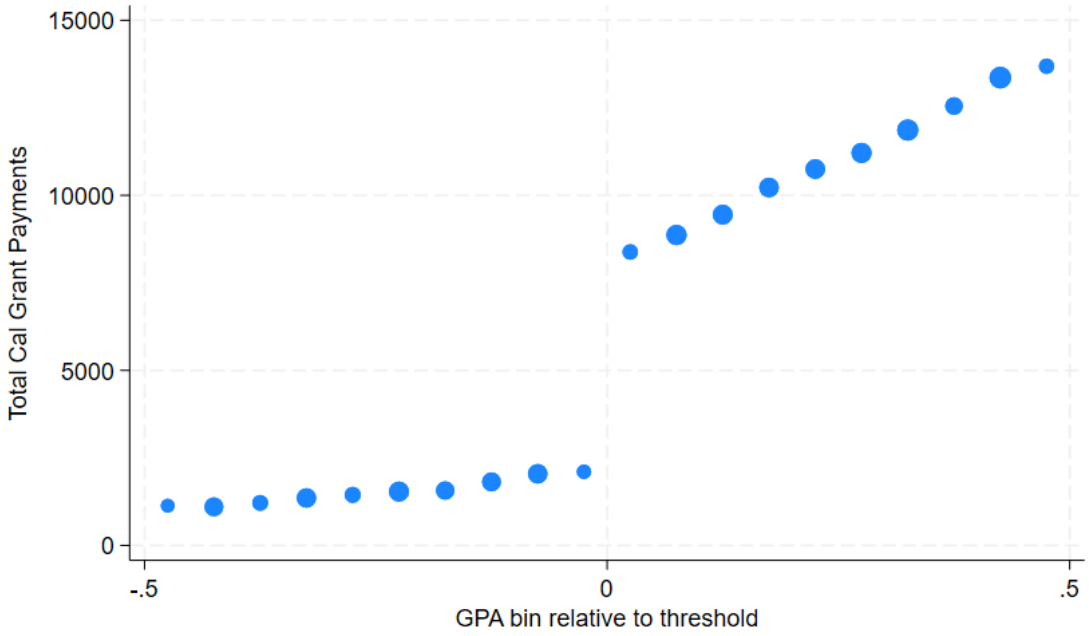


(B) Placebo Sample of "high-income" FAFSA submissions who are ineligible for the Cal Grant, regardless of GPA



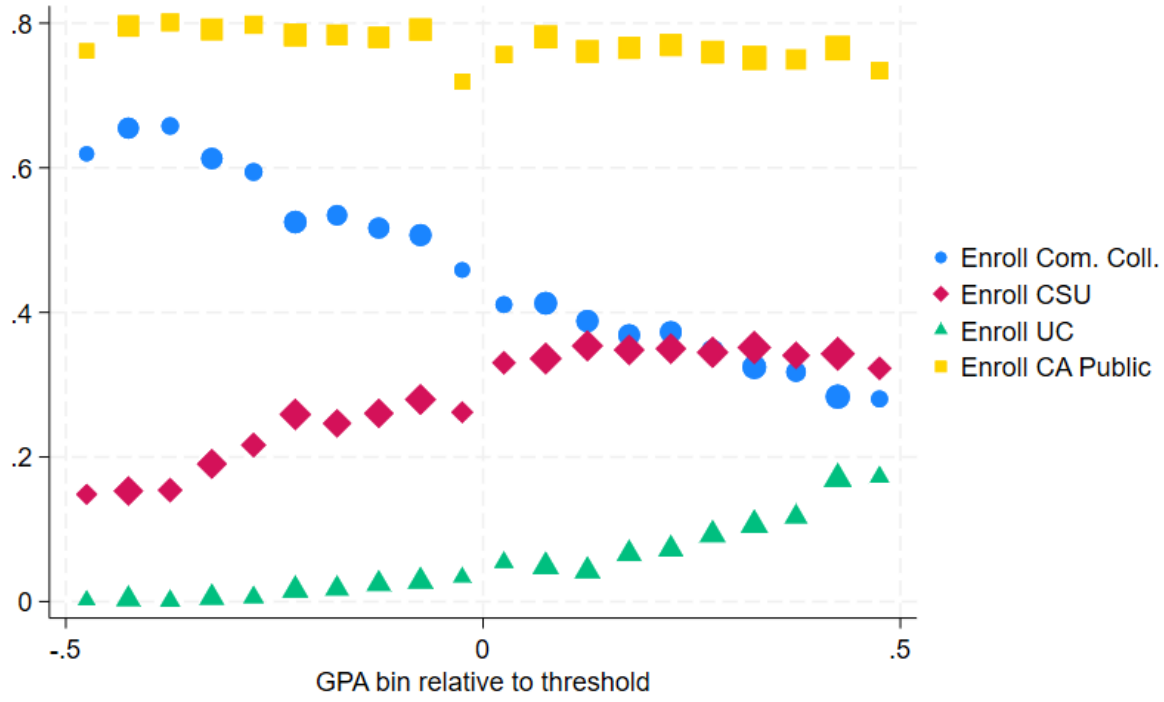
Notes: These figure plots the fraction of observations in GPA bins of size 0.01, from 2.50 through 3.50. Panel A uses the regression discontinuity sample of students from "middle-income" families, as described in the text. Panel B focuses on students who are not eligible for the Cal Grant due to high income

Figure 10: Payments



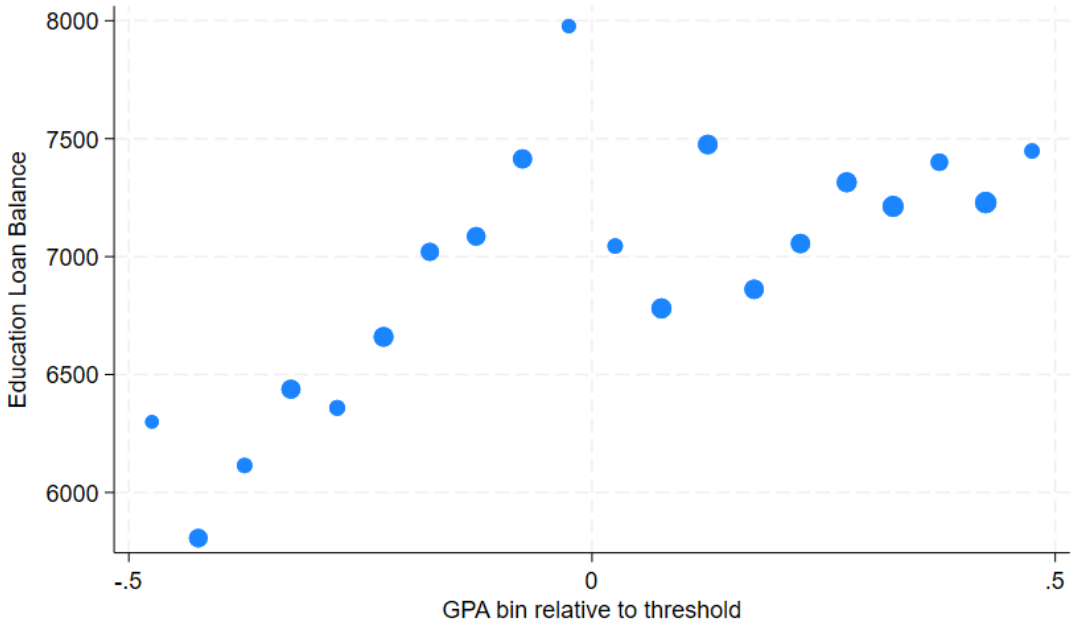
Notes: This figure plots the average amount of Cal Grant aid received over the first six years after the student's initial FAFSA application. Results use the regression discontinuity sample of students from "middle-income" families, as described in the text, in GPA bins of size 0.05 but removing students with a 3.0 GPA.

Figure 11: Enrollment



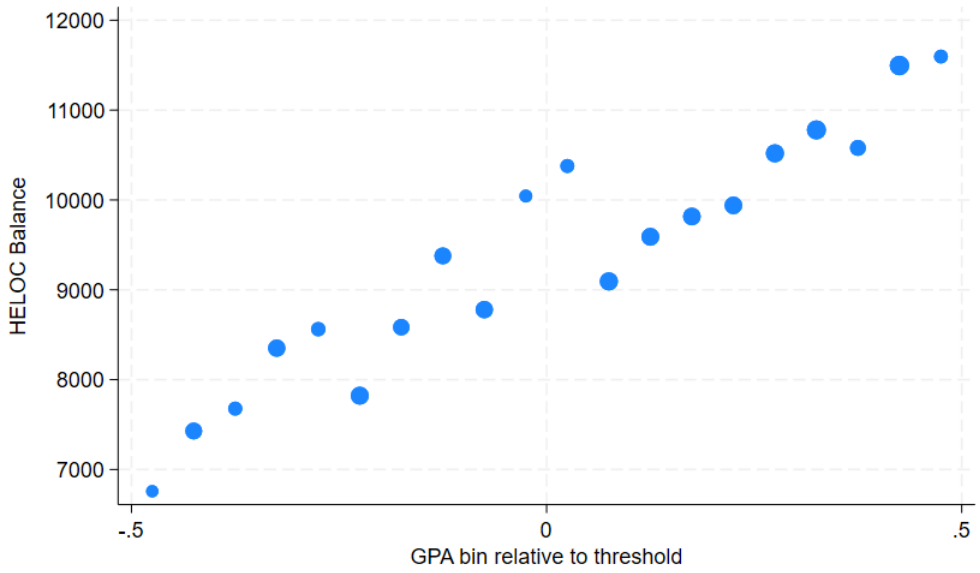
Notes: This figure plots rates of initial postsecondary enrollment in California's public two-year and four-year colleges. Results use the regression discontinuity sample of students from "middle-income" families, as described in the text, in GPA bins of size 0.05 but removing students with a 3.0 GPA. The sample is restricted to only the 2014 and 2015 cohorts, for which we have enrollment data for all three sectors.

Figure 12: Parent Education Loan Balances 4 Years After First FASFA Submission



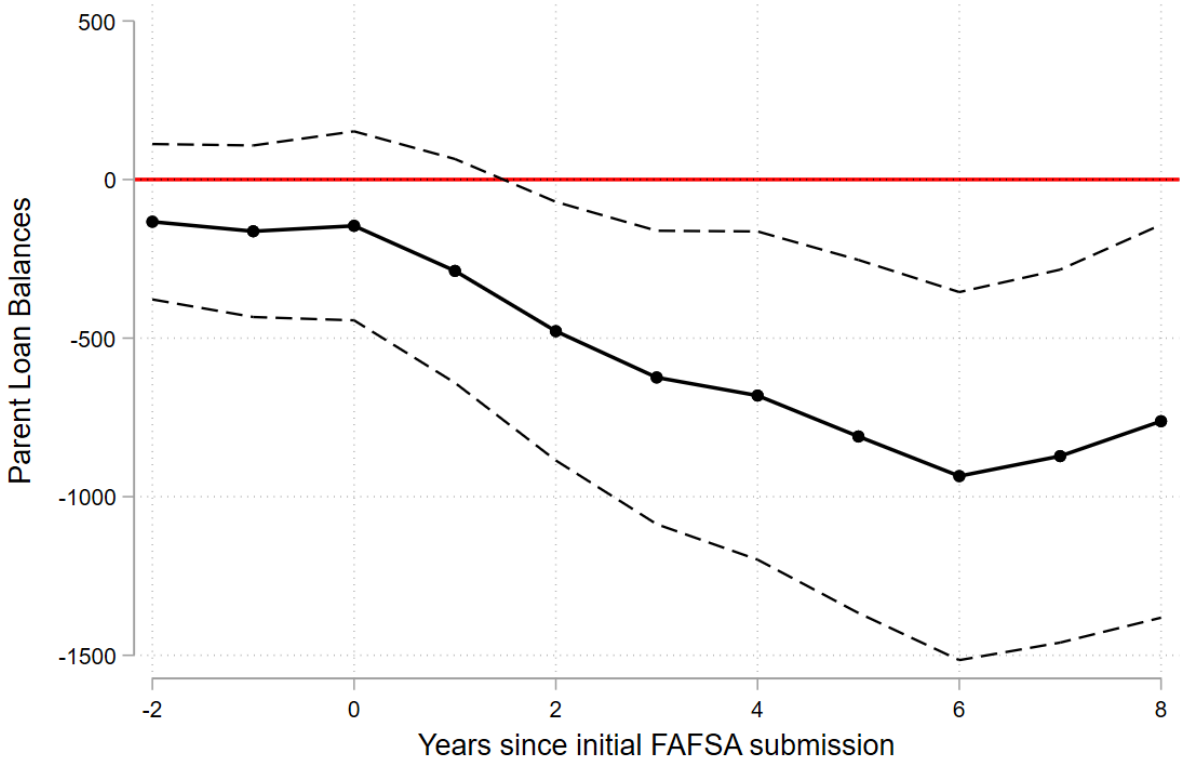
Notes: This figure plots the weighted sum of the parent's educational loan balances four years after the student's initial FAFSA submission. The weights are described in the text but are designed to avoid double counting of balances of jointly held debt. Results use the regression discontinuity sample of students from "middle-income" families, as described in the text, in GPA bins of size 0.05 but removing students with a 3.0 GPA.

Figure 13: HELOC Balances 4 Years After First FAFSA Submission



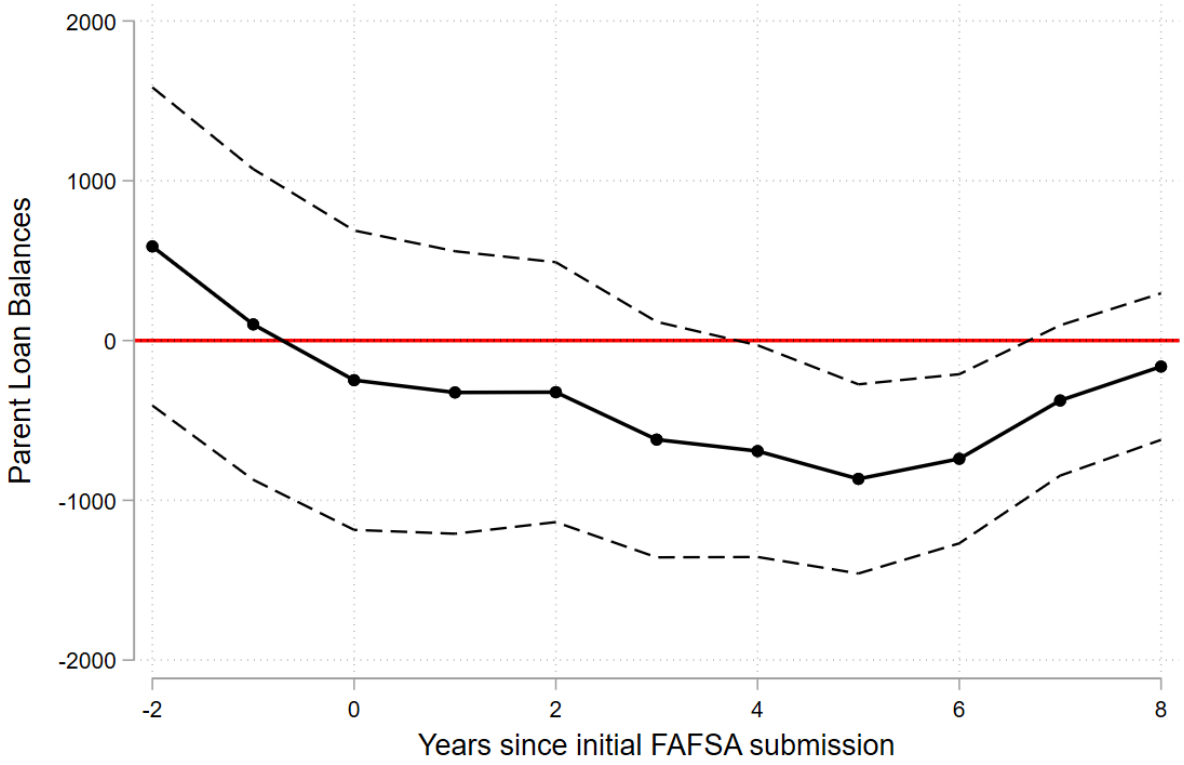
Notes: This figure plots the weighted sum of the parent's HELOC four years after the student's initial FAFSA submission. The weights are described in the text but are designed to avoid double counting of balances of jointly held debt. Results use the regression discontinuity sample of students from "middle-income" families, as described in the text, in GPA bins of size 0.05 but removing students with a 3.0 GPA.

Figure 14: RD Estimates by years since first FAFSA submission, Educational Loan Balances



Notes: Each circle is a point estimate from a regression discontinuity model estimating the impacts of receiving state aid on the associated outcome, using the regression discontinuity sample of students from "middle-income" families as described in the text. Each year uses credit bureau data from the September quarterly snapshot, with year 0 being the September following the student's initial FASFA submission when they would have enrolled in college.

Figure 15: RD Estimates by years since first FAFSA submission, HELOC Balances



Notes: Each circle is a point estimate from a regression discontinuity model estimating the impacts of receiving state aid on the associated outcome, using the regression discontinuity sample of students from "middle-income" families as described in the text. Each year uses credit bureau data from the September quarterly snapshot, with year 0 being the September following the student's initial FASFA submission when they would have enrolled in college.

Table 1a Summary Statistics, Event Study

Variable	Mean	St. Dev	Variable	Mean	St. Dev
Delinquency 90 Days CC	0.029	0.167	HS GPA	2.5	1.3
Delinquency 90 Days Auto	0.007	0.081	Student Age	19.3	1.3
Delinquency 90 Days HELOC	0.018	0.134	Family Size	4.1	1.4
Delinquency 90 Days Mortgage	0.037	0.189	Freshman	0.910	0.287
Delinquency 90 Days Ed Loans	0.019	0.137	Female	0.551	0.497
Delinquency 90 Days CC	0.037	0.189	Citizen	0.942	0.233
Delinquency 90 Days Any	0.104	0.306	BA intention	0.690	0.462
Has Credit Card	0.567	0.495	AA Intention	0.161	0.368
Has Auto Loan	0.370	0.483	Parent: College	0.519	0.500
Has HELOC	0.159	0.366	Parent: Married	0.628	0.483
Has Mortgage	0.403	0.491	Parent: Divorced	0.215	0.411
Has Educational Loan	0.118	0.323	Parent: Widowed	0.026	0.158
Has Credit Card	0.610	0.488	Parent 1 age	48.1	6.1
Has Any Credit Line	0.723	0.448	Parent 2 age	49.9	6.2
Balance: Auto Loans	6,285	11,475	Hispanic/Black Indicator	0.379	0.485
Balance: HELOCs	12,659	39,962			
Balance: Mortgages	119,212	206,793			
Balance: Edu Loans	2,529	10,169			
Balance: Credit Cards	5,223	10,384			
Balance: Any	146,627	235,824			
Bankruptcy Ch. 7	0.014	0.116			
Bankruptcy Ch. 13	0.008	0.089			
Avg Credit Score	675	103			

Notes: Sample Size is 395,768 except for Average Credit Score(330,441), GPA (211,922), Family Size (391,310), Female (323,620), Intention (255,305), Parent 1 Age (239,150), Parent 2 Age (177,222),

Table 1b: Parent Summary Statistics for RD Sample

Credit Data

Variable	Mean	SD
Credit Score	692	93
Any Bankruptcy	0.031	0.172
Delinquency 30 days Any	0.192	0.394
Delinquency 90 days Any	0.066	0.249
Has Educational Loan	0.144	0.351
Has Credit Card	0.822	0.382
Has Auto Loan	0.494	0.500
Has Mortgage	0.559	0.496
Has HELOC	0.196	0.397
Has Secured Loan	0.134	0.340
Has Any Credit Line	0.940	0.237
Delinquency 30 days Ed. Loan	0.025	0.155
Delinquency 30 days Credit Card	0.142	0.349
Delinquency 30 days Auto	0.059	0.235
Delinquency 30 days Mortgages	0.092	0.289
Delinquency 30 days HELOCs	0.034	0.181
Delinquency 90 days Ed. Loan	0.021	0.142
Delinquency 90 days Credit Card	0.044	0.206
Delinquency 90 days Auto	0.006	0.079
Delinquency 90 days Mortgages	0.051	0.221
Delinquency 90 days HELOCs	0.024	0.153
Balance: Education Loans	3,127	10,975
Balance: Credit Cards	7,074	11,220
Balance: Auto Loans	8,630	12,701
Balance: Mortgages	153,500	206,476
Balance: HELOCs	14,602	40,630
Balance: Secured	900	3,669
Credit Prediction: Black or Hispanic	0.488	0.500
N	213,617	

CSAC Data

Variable	Mean	SD
Child's GPA	3.03	0.27
Adjusted Gross Income	60,168	13,109
Child's Age	18.9	0.8
Family Size	4.1	1.2
Have Different Child in College	0.070	0.255
Freshman	0.958	0.200
Female	0.577	0.494
Citizen	0.964	0.186
Objective: BA	0.683	0.465
Objective: AA general	0.168	0.373
Objective: AA tech	0.031	0.174
Objective: Tech Unknown	0.092	0.289
Parent: College Educated	0.464	0.499
Parent: Married	0.696	0.460
Parent Never Married	0.082	0.275
Parent: Divorced	0.203	0.402
Parent: Widowed	0.019	0.136
Parent 1 Age	47.1	6.1
Parent 2 Age	48.5	6.3

Notes: This tables presents the mean and standard deviation of several variables for the RD sample. This table includes a GPA bandwidth of .5 (from 2.51 to 3.49 GPA). Sample size is 213,617 for all outcomes except for Female (209,282), Objective variables (212,235), Parent 1 Age (199, 121), Parent 2 Age(151,208)

Table 1b: Parent Summary Statistics for RD Sample

Credit Data

Variable	Mean	SD
Credit Score	692	93
Any Bankruptcy	0.031	0.172
Delinquency 30 days Any	0.192	0.394
Delinquency 90 days Any	0.066	0.249
Has Educational Loan	0.144	0.351
Has Credit Card	0.822	0.382
Has Auto Loan	0.494	0.500
Has Mortgage	0.559	0.496
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CSAC Data

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Table 2. Regression discontinuity estimates of covariate balance at eligibility threshold

Balance table

	Family income	Family Size	Number of other children in college	At least one parent with a self-reported college education	Self-reported freshman	Age as of Sept 1
Discontinuity	43.091	0.006	-0.001	0.001	0.001	-0.007
	(157.397)	(0.015)	(0.003)	(0.006)	(0.003)	(0.010)
Baseline mean	60,075	4.109	0.069	0.450	0.954	18.963
N	125,467	125,467	125,467	125,467	125,467	125,467

	Age of Parent 1	Age of Parent 2	Female	Degree objection: Bachelor's	Citizen	Parents are married
Discontinuity	0.115	0.117	0.001	0.005	-0.004	-0.004
	(0.078)	(0.093)	(0.006)	(0.006)	(0.002)	(0.006)
Baseline mean	46.947	48.347	0.570	0.664	0.970	0.694
N	116,882	88,663	122,880	124,643	125,467	125,467

Notes: This table presents estimates of the discontinuity in Cal Grant eligibility at the 3.0 GPA cutoff. Robust standard errors appear in parentheses.

Table 3. Impacts of state aid eligibility on enrollment and state aid payments

Enrollment

	First year	Fourth year
Community College	-0.023+	-0.006
	(0.013)	(0.012)
Baseline mean	0.494	0.345
California State University (CSU)	0.027*	0.025*
	(0.012)	(0.011)
Baseline mean	0.285	0.193
University of California (UC)	-0.005	-0.007
	(0.005)	(0.006)
Baseline mean	0.029	0.040
Any enrollment	0.001	0.011
	(0.011)	(0.013)
Baseline mean	0.785	0.551
Estimated Tuition	70.411	
	(73.047)	
Baseline mean	2399.409	

Cal Grant Payments

	First year		Over six years	
	Received payment	Total payment ($)	Received payment	Total payment ($)
Discontinuity	0.356**	2151.6**	0.311**	5905.6**
	(0.005)	(34.0)	(0.005)	(128.5)
Baseline mean	0.03	88.4	0.155	2,081.1

Notes: This table presents estimates of the discontinuity in Cal Grant eligibility at the 3.0 GPA cutoff, using ordinary least squares and a 0.3 GPA bandwidth. Robust standard errors appear in parentheses. Enrollment results use only the final two cohorts (2014 and 2015) for whom we can observe enrollment in in-state public colleges (n = 29,671). Cal Grant payment results use all cohorts from 2006 through 2015 (n = 125,467). Baseline mean is the average value for all individuals within 0.1 GPA points below the eligibility cutoff.

Table 4. Regression Discontinuity Estimates of Eligibility for State Aid on Students' Credit Data Balances, by Tradelines

Years from initial FASFA	0	1	2	3	4	5	6	7	8	9	10
Student loan	1	-15	-49	4	-48	44	85	42	48	-2	174
	(14)	(54)	(89)	(123)	(156)	(184)	(214)	(242)	(269)	(316)	(366)
Baseline mean	166	2,260	3,987	5,814	7,696	9,035	10,015	10,884	11,739	12,820	13,600
Credit card	18*	3	-5	-10	-9	4	9	4	4	48	49
	(9)	(11)	(14)	(18)	(23)	(28)	(33)	(38)	(43)	(51)	(59)
Baseline mean	74	223	424	679	993	1,259	1,523	1,826	2,084	2,293	2,470
Auto	12	-7	-28	-36	-113+	-169*	-123	-3	-65	15	229+
	(19)	(30)	(42)	(55)	(67)	(79)	(90)	(99)	(105)	(116)	(129)
Baseline mean	156	464	934	1,528	2,188	2,997	3,760	4,475	4,970	5,331	5,521
Mortgage	-49	-171	-162	-246	-232	-375	-680+	-357	-317	893	1171
	(162)	(153)	(142)	(150)	(182)	(247)	(356)	(473)	(596)	(761)	(958)
Baseline mean	532	571	547	792	1,294	2,326	4,425	7,418	11,262	15,277	20,484
HELOC	2	-5	-15	4	6	-8	-10	6	1	-3	43
	(22)	(19)	(19)	(15)	(13)	(11)	(12)	(15)	(18)	(25)	(31)
Baseline mean	43	39	43	31	21	21	26	34	51	94	96
Total Balance	-28	-190	-248	-281	-400	-544	-815+	-467	-498	979	1763
	(162)	(166)	(175)	(205)	(257)	(336)	(458)	(600)	(757)	(955)	(1200)
Baseline mean	914	3,429	5,826	8,809	12,363	16,172	20,893	26,896	33,888	40,768	48,660
N	126,510	126,510	126,510	126,510	126,510	126,510	126,510	126,510	126,510	111,164	96,364

Notes: This table presents regression discontinuity estimates at the 3.0 eligibility threshold for Cal Grant receipt, using ordinary least squares and a 0.3 GPA bandwidth. Robust standard errors appear in parentheses. Baseline mean is the average value for all individuals within 0.1 GPA points below the eligibility cutoff.

Table 5. Regression Discontinuity Estimates of Eligibility for State Aid on Parents' Credit Data Balances, by Tradelines

Years from initial FASFA	0	1	2	3	4	5	6	7	8	9	10
Student loan	-146	-288	-478*	-624**	-681**	-810**	-935**	-872**	-883**	-639*	-363
	(152)	(180)	(208)	(236)	(264)	(284)	(296)	(300)	(302)	(319)	(336)
Baseline mean	3,843	5,190	6,271	7,234	8,112	8,731	8,974	8,889	8,699	8,285	7,748
Credit card	22	-104	-94	-16	-30	-35	-34	25	-86	-30	85
	(134)	(126)	(119)	(110)	(105)	(101)	(97)	(95)	(94)	(99)	(105)
Baseline mean	6,777	6,377	6,081	5,697	5,472	5,298	5,085	4,932	4,913	4,825	4,616
Auto	-417**	-108	53	71	206	235	173	-101	-72	-6	48
	(158)	(159)	(160)	(162)	(163)	(166)	(168)	(169)	(170)	(180)	(191)
Baseline mean	9,017	9,225	9,318	9,597	9,699	9,828	9,897	9,961	9,721	9,478	9,193
Mortgage	-1384	-980	603	289	83	164	1182	753	977	-17	-269
	(2468)	(2367)	(2247)	(2147)	(2056)	(1999)	(1974)	(1952)	(1939)	(2039)	(2170)
Baseline mean	146,457	140,084	132,485	128,012	124,027	122,237	121,035	120,125	120,107	118,437	116,249
HELOC	-248	-325	-323	-620+	-692*	-866**	-740**	-375	-99	-140	57
	(478)	(451)	(415)	(376)	(338)	(302)	(270)	(240)	(212)	(210)	(206)
Baseline mean	13,095	11,694	10,164	8,820	7,725	6,741	5,760	4,902	4,159	3,888	3,496
Total Balance	-1925	-1641	-130	-652	-869	-1075	-33	-403	239	-552	116
	(2,542)	(2,471)	(2,376)	(2,293)	(2,233)	(2,207)	(2,217)	(2,254)	(2,303)	(2,448)	(2,631)
Avg Credit Score	0.045	0.288	0.871	1.287	0.412	0.934	1.096	0.567	0.658	0.250	0.214
	(1.169)	(1.165)	(1.156)	(1.150)	(1.138)	(1.118)	(1.093)	(1.072)	(1.053)	(1.104)	(1.171)
Baseline mean	703.142	707.227	710.635	714.930	720.470	726.233	731.572	736.947	742.125	746.392	749.531
N	125,467	125,467	125,467	125,467	125,467	125,467	125,467	125,467	125,467	110,388	95,796

Notes: This table presents regression discontinuity estimates at the 3.0 eligibility threshold for Cal Grant receipt, using ordinary least squares and a 0.3 GPA bandwidth. Robust standard errors appear in parentheses. Baseline mean is the average value for all individuals within 0.1 GPA points below the eligibility cutoff.

Table 6. Regression Discontinuity Estimates of Eligibility for State Aid on Parents' 90-Day Delinquencies, by Tradelines

Years from initial FASFA	0	1	2	3	4	5	6	7	8	9	10
Student loan	-0.002	-0.003	-0.003	-0.003	-0.001	0.001	-0.002	-0.001	-0.002	0.000	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Baseline mean	0.025	0.026	0.029	0.029	0.029	0.03	0.028	0.026	0.021	0.017	0.015
Credit card	-0.002	-0.006*	-0.005+	-0.006*	-0.003	-0.004+	-0.002	0.000	-0.004+	-0.002	-0.003
	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Baseline mean	0.045	0.045	0.043	0.043	0.039	0.038	0.033	0.032	0.033	0.029	0.028
Auto	0.001	0.001	0.001	-0.001	-0.002*	-0.003*	-0.001	-0.001	0.000	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Baseline mean	0.006	0.007	0.007	0.007	0.008	0.008	0.006	0.006	0.006	0.006	0.005
Mortgage	-0.002	-0.005+	0.000	0.000	0.002	0.000	0.000	0.001	0.000	-0.002	0.000
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Baseline mean	0.055	0.053	0.045	0.04	0.031	0.023	0.016	0.013	0.009	0.008	0.007
HELOC	0.000	-0.003	-0.002	-0.003	-0.002	-0.001	-0.001	-0.001	0.000	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Baseline mean	0.025	0.023	0.02	0.017	0.013	0.009	0.007	0.005	0.004	0.003	0.002
Total Balance	0.000	-0.009**	-0.004	-0.009**	-0.004	-0.003	-0.002	0.000	-0.003	-0.002	-0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Baseline mean	0.072	0.078	0.074	0.077	0.073	0.068	0.064	0.06	0.057	0.049	0.048
N	125,467	125,467	125,467	125,467	125,467	125,467	125,467	125,467	125,467	110,388	95,796

Notes: This table presents regression discontinuity estimates at the 3.0 eligibility threshold for Cal Grant receipt, using ordinary least squares and a 0.3 GPA bandwidth. Robust standard errors appear in parentheses. Baseline mean is the average value for all individuals within 0.1 GPA points below the eligibility cutoff.