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Beyond the enrolment gap: Financial barriers and high-achieving, low-income students' persistence in higher education

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Abstract
Little is known about what influences high-achieving, low-income students' persistence in higher education, despite extensive work on their enrolment decision. This paper investigates the role of credit constraints. Using exhaustive administrative data for France, I estimate the impact of automatically granting generous additional aid to enrolled high-achieving, low-income students. Eligibility is communicated too late to affect initial enrolment, allowing me to recover the pure effect on the intensive margin. I find this aid had precisely estimated null effects on persistence, graduation, and did not induce switches to higher quality degrees. This suggests non-financial factors largely explain these students' observed attrition.

Keywords: financial aid, higher education, high-achieving low-income students
JEL Codes: I22; I23; I24; I28

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1 Introduction

In many countries, low-income students enrol in higher education at lower rates, in lower quality institutions and are less likely to graduate than their high-income peers, even when they are top performers in high school (Hoxby and Avery, 2013; Crawford et al., 2016; Altmejd et al., 2023). This is especially worrisome since these talented but disadvantaged students stand to benefit greatly from attending elite institutions (Dillon and Smith, 2020), thereby improving intergenerational mobility and generating more efficient allocations of talent (Bell et al., 2019). Extensive research has investigated the underlying reasons behind their application and enrolment behaviors, the *extensive margin*.[1] However, less is known about the factors that influence their ability to persist once enrolled, the *intensive margin*, particularly the role of credit constraints. Isolating the effects of financial aid – which relaxes credit constraints – on persistence from its impact on enrolment is crucial for understanding how it benefits inframarginal students, those who would enrol regardless but may gain from aid once enrolled. This has proved challenging as most aid schemes are designed to induce enrolment.

This paper investigates whether alleviating credit constraints can improve the persistence and graduation rates of high-achieving, low-income students' in higher education. I do so by leveraging a unique policy implemented in France in 2008, the *merit aid* (*aide au mérite*), which automatically granted generous financial assistance throughout undergraduate studies to students who were eligible for need-based aid and scored in the top 5% at the national high school exit exam. The merit aid consisted in an additional 200 euros per month, representing a top up of at least 40% in monthly allowances relative to need-based aid, a sizable increase in financial support. If credit constraints are binding, we expect this aid to have a positive effect on persistence as inframarginal students would be prevented from investing more in their human capital due to insufficient financial means.

This setting is particularly well-suited to isolate financial aid's effects on the intensive margin. First, on-time graduation rates in France are low, with only 66% of merit-aid eligible students persisting on-time to their third year of studies, down from 96% initial enrolment. Second, information about merit aid eligibility is communicated very late, ensuring (as I show) it does not affect initial enrolment decisions. I can thus cleanly estimate the effects on the intensive margin separately from the extensive margin, which few studies have been able to so far (e.g., Stinebrickner and Stinebrickner (2008); Denning (2019); Murphy and Wyness (2023); Montalbán (2023)). Third, the merit aid was *automatically* awarded without any additional paperwork, eliminating take-up issues that plague many financial aid programs (Bettinger et al., 2012; Marx

[1] For example: financial constraints (Dynarski et al., 2023b), limited information about higher education's costs and benefits (Bleemer and Zafar, 2018; Dynarski et al., 2021), lack of personalised guidance (Hoxby and Turner, 2013; Carrell and Sacerdote, 2017), and low self-confidence (Hakimov et al., 2022).

and Turner, 2018; Deneault, 2023). Lastly, financial constraints likely bind since the median student's need-based aid covers only about 25% of estimated expenses (Fack and Grenet, 2015)[2], leaving the rest to be covered by parents, work or taking out a loan.

Using administrative data on the universe of high school students between 2009 and 2014 in France, I exploit the sharp discontinuity in merit aid eligibility induced by the high school exit exam score to investigate its effects on the intensive margin of higher education. Due to discretionary grade adjustments by teacher juries, there is bunching of students just above the merit aid grade threshold. I therefore implement a *donut* regression discontinuity design, a commonly used method in such instances (Barreca et al., 2016; Canaan and Mouganie, 2018; Angrist et al., 2019; Barr et al., 2022), ensuring students' observable characteristics are well-balanced around the threshold.[3]

Consistent with the very late awareness about eligibility, I first show eligibility for the merit aid in the high school graduation year did not induce students to enrol in higher education, nor did it influence the type or quality of degree pursued. Since the merit aid did not induce any marginal students to enrol, its effect on persistence solely captures the impact on inframarginal students. Therefore, any observed intensive margin effects, such as changes in persistence or graduation rates, can only be attributed to how the additional financial assistance influenced the outcomes of inframarginal students. I then estimate the causal effect of eligibility for the merit aid on numerous medium- and long-term intensive margin measures. Specifically, I estimate its impact on persistence, graduation, degree quality in years following initial enrolment, proxies for academic performance, and graduate school enrolment.

I find that being eligible for the merit aid in the high school graduation year had precisely estimated zero effects on all medium- and long-term intensive margin measures. Additionally, I find no evidence that eligibility for the additional financial aid induced students to switch to higher quality degrees during their studies. While degree change is uncommon in some countries, it is relatively widespread in France, with about one in five high school graduate who enrolled in higher education changing degree after their first year (IGESR, 2020). For most outcomes, I can reject effects as small as one to three percentage points, and there are no significant heterogeneities based on students' characteristics. These results suggest that, at least in this context, credit constraints do not explain the relatively low persistence levels of high-achieving, low-

[2]The median student eligible to the merit aid received roughly 1,650 euros as part of their annual need-based grant, and Fack and Grenet (2015) estimate the average living expenses for students living away from home to be around 6,300 euros annually.

[3]I also address another minor potential concern with the empirical analysis which is that the purely symbolic "Very High" honors (*Mention Très Bien*) associated with scoring at the merit aid eligibility grade threshold may contaminate the results. For example, students could get a self-confidence boost from getting this honor or they may be admitted in one of the very few higher education institutions that has a special admission track for such high-achieving students. I find there is no discontinuity in outcomes at this grade threshold for students *not* eligible for the need-based grant, therefore not eligible for the merit aid, thus rejecting this potential concern.

income students over time.

Considering (i) need-based aid could not fully cover students' expenses, (ii) the merit aid represented a substantial increase in financial assistance, and (iii) the general consensus of (context-dependent) positive effects of financial aid (Dynarski et al., 2023b), what could explain these null results? I explore four potential (non-mutually exclusive) explanations. First, the merit aid may have been offset by reductions in parental transfers, leaving students' available resources unchanged. Second, need-based grants may have already been set at an "optimal" level, such that additional aid had no marginal benefit. Third, merit aid recipients may not have used the additional funds to reduce their labor supply, and/or working while studying may have limited effects on academic performance. Lastly, high-achieving, low-income students may be less responsive to financial aid due to their high expected returns from completing their degree, making them more likely to persist regardless of additional aid.

While I cannot directly test each potential explanation for the null results, I leverage heterogeneity analyses across specific subgroups of students and findings from the literature to provide suggestive evidence on the plausibility of each mechanism. The analysis suggests that the fourth explanation – high-achieving students being less responsive to financial aid –, in line with a number of existing studies, is the most plausible driver of the null effects observed in this context. I briefly assess the plausibility of each explanation in the following paragraphs.

First, I evaluate whether parental transfers fully offset the merit aid, driving the null effects. Grobon and Wolff (2024) analyse a 2014 survey of young adults in France specifically designed to measure their financial resources, and estimate that each additional euro of need-based aid crowds out between 0.5 and 0.6 euros of parental assistance. Applying this to the merit aid suggests recipients would be around 100 euros better off financially each month than non-recipients, making full offsetting an unlikely explanation unless parents react differently to merit aid. Additionally, I find no effects of the merit aid for the lowest-income students who, based on Grobon and Wolff (2024)'s analysis, receive less from their parents than the merit aid amount. Even with full crowding-out, these students would still benefit financially from the merit aid. Thus, the evidence collectively suggests full parental transfers offsetting is unlikely to be the main explanation for the null effects.

Second, I assess whether the need-based aid amounts were already set at optimal amounts, explaining the lack of effects of additional aid. In other words, need-based aid completely relaxed students' credit constraints. By definition this cannot be tested directly. However, I find that students who are eligible only to the tuition fee waiver and no cash allowance as part of their need-based grant, and those who are eligible to cash allowances smaller than the merit aid amount, also do not benefit from the merit aid. These results hold even when restricting to students with very similar parent

incomes, suggesting these findings are not simply the result of differential parental incomes. This implies that the null effects are probably not driven by the need-based aid already fully relaxing students' credit constraints.

Third, I address whether labor supply responses might explain the null results. About a quarter of students in France work while studying (DARES, 2017), which could potentially impede persistence in higher education. Existing evidence suggests working, especially more than part-time, has a negative effect on higher education outcomes in France (Beffy et al., 2009; Body et al., 2014; Wolff, 2017). However, financial aid can mitigate the need for students to work, with Kofoed (2022) finding that Pell Grants in the U.S. significantly reduce students' labor supply. If the merit aid were sufficient to reduce labor supply and mitigate the negative effects of working, one should expect positive impacts on academic outcomes. The null effects therefore suggest either that the merit aid was insufficient to influence students' labor supply, or that low-income, high-achieving were able to overcome the challenges of working while studying without it affecting their higher education outcomes.

Finally, I discuss whether *high-achieving*, low-income students are less responsive to financial aid, explaining the lack of observed effects. Several reasons might explain why: (i) they may have higher expected returns to higher education, providing greater incentives to invest in their human capital, and (ii) their academic advantages could allow them to better cope with working while studying. This explanation aligns with a number of studies finding small (or null) impacts of financial aid for highest ability students, but sizable effects for lower ability students (Goodman, 2008; Cohodes and Goodman, 2014; Fack and Grenet, 2015; Bettinger et al., 2019; Angrist et al., 2022). Murphy and Wyness (2023) is an exception, finding that high-achieving students benefited more from financial aid in England. My findings and these studies collectively highlight potential complementarities between financial aid and academic ability.

This paper contributes to two distinct literatures. First, it extends the growing body of work on the *undermatching* phenomenon, whereby high-achieving, low-income students disproportionally apply to and enrol in less selective institutions than their more affluent peers (Hoxby and Avery, 2013; Campbell et al., 2022; Hakimov et al., 2022; Altmejd et al., 2023). Many papers have explored factors influencing these students' application decisions. For example, targeted and timely information about and mentoring on college options, the application process and financial aid seem to mitigate part of the gap (Hoxby and Turner, 2013; Carrell and Sacerdote, 2017). Certainty over the amount of financial aid received also significantly increases high-achieving, low-income students' enrolment rates (Dynarski et al., 2021; Burland et al., 2023). I contribute to this literature by providing evidence that alleviating credit constraints through additional financial aid does not improve these students' outcomes once enrolled, suggesting

non-financial barriers play a more important role in their low persistence rates.

Second, this paper contributes to the vast literature on postsecondary financial aid[4], and specifically programs combining need- and merit-based components. The closest studies, Cohodes and Goodman (2014) (Massachusetts Adams Scholarship) and Andrews et al. (2020) (UT-Austin Longhorn Opportunity Scholars), estimate the effects of financial aid with merit-based criteria on high-achieving students (top 25% and 30% respectively). This paper differs from these studies in three ways. First, I focus specifically on students with very high labor market potential, those in the top 5% of the ability distribution. Second, I isolate the effect on the intensive margin separately from any enrolment effects. Lastly, I leverage a national-level program covering all higher education institutions, the effects of which cannot be confounded by the quality of covered institutions. Indeed, the existing evidence on merit aid is based on U.S. state-level programs available only to students attending the state's public universities. These programs' effects are therefore largely dependent on the quality of the state's higher education institutions Cohodes and Goodman (2014), limiting their external validity.

More generally, this paper sheds light on the potential mechanisms underlying the effects of financial aid, and points towards the importance of the academic level of the targeted student population. Though several studies have found that financial aid effects tend to be larger for low-ability students compared to high-ability students (Goodman, 2008; Cohodes and Goodman, 2014; Fack and Grenet, 2015; Bettinger et al., 2019; Angrist et al., 2022), this study puts much greater emphasis on this aspect as a key ingredient to the potential effectiveness of financial aid schemes. Finally, the postsecondary financial aid literature is overwhelmingly U.S.-centred[5] and analyses short-, medium- and long-run outcomes of financial aid schemes that, by and large, are meant to cover expensive tuition fees. Much less is known about the impact of financial aid in higher education systems where aid is designed to cover living costs rather than tuition fees. This paper aims to help fill this gap in the literature.

The rest of the paper is organised as follows. Section 2 provides institutional background. Section 3 describes the data and sample used for the analysis, while Section 4 details the empirical strategy I adopt. Section 5 presents the main results and robustness checks, and Section 6 investigates the potential mechanisms. Section 7 concludes.

[4]See Nguyen et al. (2019); Herbaut and Geven (2020); Dynarski et al. (2023a) for systematic reviews of the evidence.

[5]The exceptions are Nielsen et al. (2010) (Denmark), Fack and Grenet (2015) (France, need-based aid), Baumgartner and Steiner (2006) and Steiner and Wrohlich (2012) (Germany), Vergolini et al. (2014) (Province of Trento, Italy), Montalbán (2023) (Spain), and Dearden et al. (2014) and Murphy and Wyness (2023) (UK/England). In contract, Nguyen et al. (2019)'s meta-analysis includes 42 U.S. studies.

2 Institutional Background

2.1 Merit aid (*Aide au mérite*)

Overview.[6] The merit aid was introduced as part of a broader reform of higher education financial aid in France which came into effect in the 2008 academic year. This new grant consisted in nine monthly installments of 200 euros[7], for a yearly total of 1,800 euros, for at most three years (the duration of a typical bachelor's degree in France) over the course of the student's undergraduate studies.[8] Eligible students had to fulfill various academic requirements in order to continue receiving the aid (such as not failing exams unless due to serious medical reasons, attending classes and exams).[9]

Eligibility criteria. There were two eligibility criteria for the merit aid: (i) being eligible for a need-based grant, and (ii) scoring at least 16 out of 20 at the high school exit exam (the *Bac*).[10] This grade criteria corresponds to the top 5% of high school students. Eligibility was automatically assessed each year based on students' Bac grade and their need-based grant status. Since eligibility to need-based grants can vary from year to year, a student could be eligible for the merit aid in a given year and not be in the next. Students *receive* the aid amount only if they actually enrol in higher education.

Annual quotas. Each academic region was annually allocated a given number of merit aid grants they could award to eligible students in their geographic purview. In practice, these quotas were not very binding: around 5% of students are registered in the data as not receiving the merit aid in their high school graduation year even though they fulfil the required criteria and are enrolled in higher education.[11]

High school exit exam. The Bac (abbreviation for *Baccalauréat*) is the French high

[6] All details regarding the merit aid can be found in the circulaire N°2008-1013 du 12 juin 2008 (in French).

[7] The amount was halved starting in the fall of 2015, with the reduced amount only applying to new recipients. My analysis is limited to the cohorts that benefited from the pre-reduction amount.

[8] This three-year limitation applied to students with a linear trajectory as well as to students who changed degree over the course of their studies. The only exception to this three-year limitation was for students in medical degrees who could benefit from this aid during the entirety of their medical studies.

[9] It is unclear how scrupulously these were enforced in practice. There were two exceptions to these requirements: (i) for first-year medical students, and (ii) for second-year preparatory class (*classes préparatoires aux grandes écoles*) students, who could repeat the grade without losing eligibility. This reflects the specificities of these programs in France: (i) there is very strict selection into second-year of medical studies due to a *numerus clausus*, and (ii) after the second year of preparatory classes, students take competitive exams in order to get into *Grandes Écoles*, and can choose to retake them the following year.

[10] The official criteria is actually to have obtained the "Very Good" honors *(Mention Très Bien)* at the high school exit exam, which corresponds to obtaining at least 16/20. For ease of understanding, I use the latter formulation.

[11] The rule academic regions used to allocate the grants among eligible students is unclear. In any case, since I conduct an intent-to-treat analysis, this is not a big concern for the analysis.

school exit exam. It is organised in June each year and consists of a number of subject-level exams (between 5 and over 15 depending on the track). A final grade out of 20 is then computed as a weighted average of subject grades. I refer to this final grade as Bac grade. Students scoring 10 or above obtain the Bac.

2.2 Need-Based Grants

Overview. The main higher education financial aid scheme in France is a need-based grants system called the *bourses sur critères sociaux*. In 2009-10, around 565,000 students benefited from such grants, representing roughly a third of students enrolled in higher education (MESR, 2011). Fack and Grenet (2015) analysed these grants in detail.

Eligibility criteria. Eligibility for need-based grants is assessed annually (regardless of previous eligibility status) based on the combination of two criteria: (i) financial resources (parents' total gross income in year $t-2$), and (ii) disadvantage points (up to 17; based on number of siblings and distance to the higher education institution). Importantly, students have to file an online application with the above information in order for their eligibility to be assessed by the higher education financial aid agency.

Amounts. Each combination of parent income and disadvantage points corresponds to a given *echelon* of financial aid, which gives a right to an amount of cash allowance handed out in ten monthly installments (September to June).[12] Between 2009-10 and 2012-13 there were 7 echelons, from 0 (least generous) to 6 (most generous). In 2013 two additional echelons were created, "0 bis" (between 0 and 1) and 7 (most generous). Appendix Table A2 displays the annual amounts of aid given to each echelon between 2009 and 2014. Echelon 0 students were only exempt from paying tuition and social security fees, and did not receive any cash allowance while echelon 6 students received just over 4,000 euros (in addition to being exempt from tuition and social security fees).

Discussion of merit aid amount. The amount of the merit aid, 200 euros per month, seems like a small amount in absolute terms, yet it was very generous in relative terms. First, since merit aid recipients were exempt from paying tuition fees, this grant aimed to help cover living expenses. Second, the merit aid was a sizable top up relative to the need-based grants these students received: 125% and 43% of the minimum and maximum need-based grant amounts respectively for the 2009-10 academic year. Lastly, it represented about a third of the average student's monthly budget, estimated to be around 700 euros by Fack and Grenet (2015).

[12] Appendix Table A1 shows the combinations of (parent income, disadvantage points) and the related echelon for the academic year 2009-10.

2.3 Timeline

A summary of the timeline of events is presented in Figure 1.

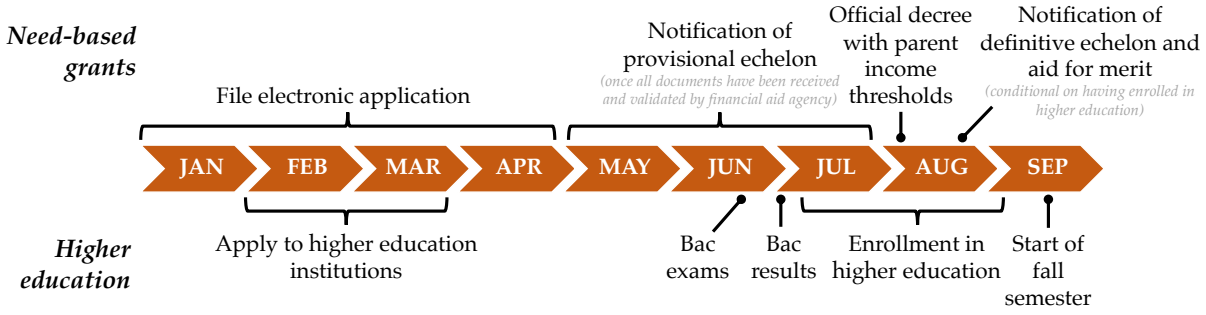
Higher education. Students submit their applications to degrees between January and April through a centralised platform (*Admission Post-Bac*) or directly to the higher education institutions not on the platform. They receive a decision on their applications in various waves between June and mid-July, and officially enrol over the summer.

Bac. High school students take the exams in June and get their grade in early July.

Financial aid. Students apply electronically for need-based grants between January and May. They can apply after this deadline if circumstances justify it. The financial aid agency processes applications to ensure all supporting documents have been transmitted and are in due form. Students are then informed of their provisional need-based grant echelon (should there be one).[13] The official parent income thresholds for eligibility for each need-based grant echelon are published between mid-July and mid-August. Students receive a definitive notification of their need-based grant echelon and merit aid amounts once they officially enrol in higher education.

As such, students know about their eligibility for the merit aid at the earliest in July when Bac grades are published. This is too late to influence applications and also very late to influence enrolment. The merit aid can therefore only affect the intensive margin of higher education, and I show extensively that it did not affect initial enrolment.

Figure 1: Timeline of Events



Notes: This figure shows the timing of events related to need-based grants, higher education, and the Bac, for the months between January and September in a typical year. Exact dates vary slightly from year to year. The Bac is the French high school exit exam.

[13] This provisional notice also includes eligibility for the merit aid in years other than the high school graduation year, since in that year the Bac grade is unknown at this stage of the process.

2.4 Higher Education in France

Structure. A very clear overview of the French higher education landscape and its costs can be found in Fack and Grenet (2015). I only describe the key institutional elements needed to understand the analysis here.

High school students wishing to pursue postsecondary education essentially have the choice between five pathways: (i) non-selective public universities[14], (ii) selective *vocational* schools (*Sections de Technicien Supérieur* (STS)), (iii) selective *technical* institutes (*Instituts Universitaires de Technologie* (IUT)), (iv) selective *academic* preparatory classes (*Classes Préparatoires aux Grandes Écoles* (CPGE), also known as *prépas*), and (v) other selective private schools.[15] The only criterion to pursue higher education in France is to obtain the Bac. The Bac grade obtained does not play any role in one's likelihood of being accepted in a selective degree except in extremely few instances[16], and therefore cannot influence the degree of enrolment. Among all students who obtained the Bac in 2009, 78% enrolled in higher education in the same year (MESR, 2011). Of these, 44% were enrolled in a public university, 25% in a vocational school, 11% in a technical institute, 10% in a preparatory class, and 10% in other private institutions.

Cost. The cost of higher education in France depends on the type of institution attended. Annual tuition fees at public universities and technical institutes are very low (171 euros in 2009-10 at the undergraduate level), while in vocational schools or preparatory classes they depend on whether the institution is public (no tuition fees) or private. Fees at private institutions can go up to several thousand euros. In addition, students pay a social security fee (198 euros in 2009-10).

The main financial barrier concerns living costs rather than tuition fees. Fack and Grenet (2015) estimate, using data from 2010, that the total average budget for a nine-months academic year is around 6,300 euros, i.e. 700 euros per month. As such, available financial aid is insufficient to fully cover these expenses, requiring parents to help out if they can or students to work while studying. The French Ministry of Employment estimates that on average between 2013 and 2015 23% of students enrolled in higher education were employed at some point during their studies, of which 40% in a job not linked to their studies and not only over the summer months (DARES, 2017).

[14] The vast majority of public universities' undergraduate degrees were not selective, other than having obtained the Bac. There is selection only in instances where there are more applicants to the degree than available seats, though this selection was done through a random lottery. In practice, this concerns few degrees. See Bechichi and Thebault (2021) for additional details.

[15] Mostly engineering and business schools as well as institutions not attached to a university (accounting, architecture, ...), art schools, and paramedical and social schools.

[16] A known exception is Sciences Po Paris which for a long time admitted students with an exceptionally high Bac grade.

3 Data, Sample, and Descriptive Statistics

3.1 Data

I combine four administrative sources provided by the French Ministry of Education and the Ministry of Higher Education using a unique anonymised student identifier:

High school exit exam (Bac) *(Organisation des Concours et des Examens Académiques et Nationaux (OCEAN))*, 2006-2020. Covers the universe of high school students taking the Bac. For each student, the dataset provides information on their high school, their Bac track, their Bac grade, as well as socio-demographic characteristics such age, gender, and socio-economic status (SES) based on legal guardian's occupation.[17]

Financial aid *(Application pour la Gestion du Logement et de l'Aide à l'Étudiant (AGLAE))*, 2008-2018. Covers applications for higher education public grants. It contains information on which type of aid students applied for, whether they obtained the grant, if rejected what the reason was, if accepted what the echelon was, parental income, number of disadvantage points, and whether the student *received* the merit aid[18].

Higher education enrolment and graduation *(Système d'Information sur le Suivi de l'Étudiant (SISE)* and *Base Post-Bac (BPBAC))*, 2009[19]-2020. Covers almost all students enrolled in a higher education institution.[20] For each student, it contains information on the higher education institution and degree enrolled in, the year of the degree, and the length of the degree. Since graduation is not available for vocational schools and preparatory classes, I emphasise persistence outcomes rather than graduation.

3.2 Sample

I restrict my sample to high school students who (i) graduated from high school between 2009 and 2014, (ii) had a unique and non-missing student identifier, (iii) obtained the Bac only once over the 2006-2014 period[21], (iv) did not have a missing Bac grade[22],

[17] See Bonneau et al. (2021, p.72) for the detailed classification.

[18] Note that the data itself does not indicate whether the student was *eligible* for the merit aid. I infer eligibility status based on Bac grade and need-based grant eligibility.

[19] Technically, both datasets are also available in 2008, but BPBAC, which covers vocational schools and preparatory classes, is missing student identifiers that year.

[20] As some paramedical and social diplomas as well as some artistic and cultural higher education institutions are not covered by these datasets, Bonneau et al. (2021) estimate that for the 2016-17 academic year around 90% of students in higher education were covered by the data.

[21] I make this restriction to drop students who may have strategically obtained the Bac again in order to obtain above 16 and receive the merit aid. In practice, extremely few students obtain the Bac more than once over this period (0.34%).

[22] Only 0.1% of students satisfying (i)-(iii) have a missing Bac grade.

and (v) were eligible for a need-based grant in their high school graduation year. The reason for restriction (i) is that the amount of the merit aid was halved for students entering higher education in 2015. The final sample contains 1,101,658 students.[23]

3.3 Descriptive Statistics

Appendix Table A4 provides some descriptive statistics for three samples: (i) the full sample, (ii) students eligible for merit aid in their high school graduation year, and (iii) students scoring between 15 and 17 at the Bac, which will be used in the empirical analysis. Out of the roughly 1 million students in the sample, about 55,000 were eligible for the merit aid in their high school graduation year. Only 5% of the sample obtained above 16/20 at the Bac, a necessary condition to be eligible for the merit aid. This proportion matches very closely to Hoxby and Avery (2013)'s percentage of "high-achieving" students (top 4%[24] of all U.S. high school students).

Compared to the full sample, students eligible for merit aid are slightly more likely to be female, and to come from higher income and SES families. They are also more concentrated among the lower echelons of need-based grants reflecting their less disadvantaged backgrounds, and significantly more likely to have favorable higher education outcomes, including obtaining a degree.

4 Empirical Strategy

I use a regression discontinuity design[25] to estimate the causal effect of being eligible for the merit aid in the high school graduation year on numerous medium- and long-term intensive margin outcomes. Specifically, I exploit the sharp discontinuity in eligibility for the merit aid induced by the 16/20 Bac grade threshold: need-based grant eligible students scoring at or above this threshold are automatically eligible for the merit aid, while students scoring just below are not. Estimating an OLS regression of the outcome on a dummy variable for being eligible for the merit aid would yield a biased estimate because eligible students have higher grades than non-eligible students, which is correlated with better higher educational outcomes. On either side of the threshold, students should be very similar and differ only with respect to their

[23] See Appendix Table A3 for the sample size at each additional restriction.

[24] Specifically, students "who score at or above the 90th percentile on the ACT comprehensive or the SAT I (math and verbal) and who have a high school grade point average of A- or above."

[25] One may want to also conduct a difference-in-differences analysis by comparing need-based grant eligible students below and above 16/20 at the Bac before and after the introduction of the merit aid in 2008. However, simultaneously to the introduction of the merit aid, a vast reform of need-based grants was implemented, simplifying the disadvantage points calculation from 8 criteria to only 2 (see circulaire n°2007-066 du 20 mars 2007 (in French) for details on the pre-2008 system). Moreover, part of the enrolment data for 2008 is missing student identifiers further complicating such an analysis.

eligibility for the merit aid (Lee and Lemieux, 2010; Cattaneo et al., 2019).

Importantly, this analysis therefore estimates *intent-to-treat* effects, i.e., the effect of being *eligible* to the merit aid *in the high school graduation year*, since only students who eventually enrol in higher education actually *receive* this aid. This is done to ensure comparability across estimates. As such, when estimating the impact on outcomes measured in the years following the high school graduation year, I continue to compare students who were at the margin of being eligible for the merit aid *in their high school graduation year*, versus those who were at the margin of not being eligible that year.[26] Since the merit aid does not affect the enrolment margin (as shown below) and initial enrolment is very high (94%), these intent-to-treat estimates are essentially the same as those obtained conditional on enrolment.

4.1 Estimation Details

Running variable. The running variable is the student's Bac grade, which I denote $Bac\ grade_i$, where i refers to a student. If $Bac\ grade_i$ is greater than or equal to 16, then the student is eligible for the merit aid, otherwise the student is not.

Local average treatment effect. Any discontinuity in higher education outcomes between students around the merit aid eligibility grade threshold (16/20) can be interpreted as the causal effect of being eligible for the merit aid in the high school graduation year for students who obtained a Bac grade very close to 16. Given student i's outcome y_i, this causal effect is identified by:

$$\beta^{RDD} = \lim_{\varepsilon \to 16^+} \mathbb{E}(y_i \mid Bac\ grade_i = \varepsilon) - \lim_{\varepsilon \to 16^-} \mathbb{E}(y_i \mid Bac\ grade_i = \varepsilon). \tag{1}$$

Main specification. I estimate the causal effect of the merit aid using the following specification:

$$\begin{aligned} y_i = \alpha + \beta(Bac\ grade_i - 16) + \gamma merit\ aid_i + \\ \lambda(Bac\ grade_i - 16) \times merit\ aid_i + \theta X_i + \varepsilon_i, \end{aligned} \tag{2}$$

where y_i is student i's higher education outcome regressed on i's *Bac grade*, *merit aid* is an indicator for merit aid eligibility ($Bac\ grade_i \geq 16$), the interaction between both variables, and in some specification a rich vector of pre-treatment control variables X_i (gender, age, SES, high-school track and high school cohort). The coefficient of interest is γ. Adding control variables is not needed for identification but it can improve the estimates' efficiency (Calonico et al., 2019). ε_i is the error term.

Following Cattaneo et al. (2019)'s guidelines, the coefficient of interest is estimated

[26] Appendix Figures A1 and A2 show the evolution of students in the full sample's merit aid and need-based grant status over time. These are helpful to better interpret the ITT estimates.

nonparametrically using local linear regressions. Specifically, linear regressions are fit on both sides of the threshold using a triangular kernel which gives more weight to observations near the threshold. I report all estimates using two bandwidths: (i) the mean squared error (MSE) optimal bandwidths computed using Calonico et al. (2014)'s procedure and which differ across specifications, and (ii) the $(15, 17)$ bandwidth which has the advantage of keeping the sample constant across outcomes.

Inference. Inference for the MSE-optimal bandwidths is based on Calonico et al. (2014)'s' robust bias-corrected procedure, and the reported robust 95% confidence intervals are therefore not necessarily centered around the point estimate (see Cattaneo et al. (2019)). I report conventional confidence intervals for the $(15, 17)$ bandwidth.

Identifying assumption. The main identifying assumption underpinning the analysis is that at the limit of the merit aid eligibility grade threshold students scoring just below are essentially identical to those scoring just above. This assumption would be threatened if students were able to manipulate their scores.

Since the Bac grade is computed as a weighted average of individual subject grades, there is little scope for grade "manipulation" (i.e. aiming for an exact grade) by students. Therefore, though the merit aid may possibly have incentivised students to obtain higher Bac grades, it is highly implausible that it led them to obtain a grade exactly at 16. However, as evident from Figure 2, which displays the distribution of Bac grades for the full sample, there is bunching around important Bac grade cutoffs[27], and in particular around the 16 merit aid threshold.

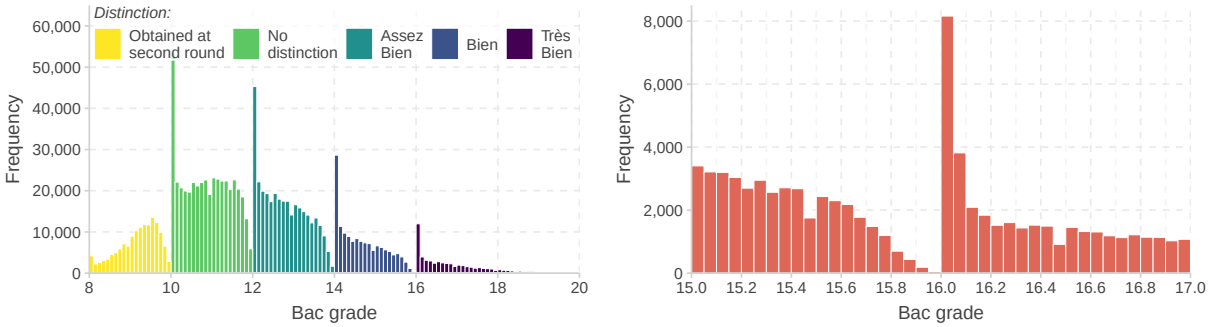
These very sharp discontinuities in Bac grades occur because teacher jurys review students' individual subject exam grades and can discretionarily nudge up slightly the grades of students close to an important threshold, helping them obtain a Bac grade just above the threshold. The decision to "upgrade" a student is not based on any rule and is entirely left to the discretion of the members of the jury in charge of the student's file, which is composed of their grades at the Bac and comments by their professors. This upgrading of original grades by jurys poses an important threat to the identification strategy since adjusted students differ from non-adjusted ones (as discussed below), along margins that are likely related to outcomes.

To overcome the non-random upgrading of students' grades, I adopt a *donut* regression discontinuity strategy, which consists of dropping observations near the cutoff which have potentially been manipulated (Barreca et al., 2016). This is a very common method used in cases where there might be non-random heaping in the running

[27]Obtaining at least 10 implies the student obtains the Bac, at 12, 14 and 16 students are awarded various symbolic honours called *mention*, respectively mention *Assez Bien* (Quite Good), mention *Bien* (Good) and mention *Très Bien* (Very Good). Note that this bunching is not specific to students eligible for need-based grants as can be seen in Appendix Figure A3.

Figure 2: Distribution of Bac Grades, 2009-2014

(a) Bac Grades: 8-20 **(b)** Bac Grades: 15-17



Notes: This figure shows the distribution of Bac grades of full sample students, in panel (a) between 8 and 20, and in panel (b) between 15 and 17. For panel (a) each bin represents the number of students who obtained a Bac grade in $[X, X + 0.1)$, while in panel (b) each bin represents the number of students who obtained a Bac grade in $[X, X + 0.05)$. The full sample consists in students from the 2009-2014 high school cohorts who obtained the Bac, filed a financial aid application in their high school graduation year and were eligible for a need-based grant in that same year. The Bac is the French high school exit exam.

variable (e.g., Angrist et al. (2019), Barr et al. (2022)).[28] In particular, it is used by Canaan and Mouganie (2018) to exploit the 10/20 Bac obtention grade threshold to estimate the returns to higher-education quality for low ability students.

It is impossible to precisely identify which students have been upgraded and which have not. From Appendix Figure A4, it is clear that students are not adjusted above 16.05. Thus the upper limit for the donut can be reasonably set to 16.05 (included). To select the lower limit of the donut, I estimate discontinuities in observable characteristics (see next subsection) for lower limits from 15.6 to 15.95 in .05 increments (the upper limit remains fixed at 16.05). The results are presented in Appendix Figure A5. The smallest donut boundaries which balance characteristics around the 16 threshold is $[15.7, 16.05]$. Thus, in my donut specification I drop observations between 15.7 (included) and 16.05 (included) from the regressions. The results are not sensitive to choosing 15.65 or 15.75 as the lower limit (see Appendix Table A5).

Lastly, the 16/20 Bac grade is associated with a symbolic "Very Good" honors (*Mention Très Bien*), which could have a direct impact on students' outcomes. This effect could be driven by the psychological boost of getting this honor or because some higher education institutions may have special admission tracks for such students.[29] I show in the following subsection that there is no discontinuity in outcomes at the 16

[28] Other notable examples include, birth weight: Bharadwaj et al. (2013), high school GPA: Cohodes and Goodman (2014), blood alcohol content: Hansen (2015), Maimonides rule: Angrist et al. (2019), age-based disability program: Deshpande et al. (2021), among others.

[29] A policy called Best Graduates Scheme (*"Dispositif Meilleurs Bacheliers"*), which guaranteed a seat in a selective degree to students scoring in the top 10% of their high school at the Bac, was introduced in 2014. This affects only the last high school cohort of my sample. In any case, very few students actually benefited from the program (900 in 2017), and is not based specifically on the 16/20 threshold.

threshold for students *not* eligible for the need-based grant in the high school graduation year (i.e., who are not eligible for the merit aid), suggesting the associated honors at the threshold does not threaten the validity of the identification strategy.

Robustness. In Appendix C, I assess the robustness of the main results to (i) estimating equation (2) using a second-order polynomial of the running variable, (ii) including numerous pre-treatment student characteristics as controls, and (iii) varying the size of the bandwidth used for point estimation (Appendix Figure A9). Overall, none of these robustness checks affect the main conclusions.

4.2 Tests of Design Validity

I conduct three tests to validate my empirical design. Specifically, I test for discontinuities (i) in students' pre-treatment observable characteristics, (ii) in predicted outcomes based on those observables, and (iii) at various placebo grade thresholds. For completeness, I conduct all three validity tests (i) without any observation exclusions ("No Donut") and with the donut specification ("Donut $[15.7, 16.05]$"), and (ii) using both the MSE-optimal and $(15, 17)$ bandwidths. These tests suggest employing the donut specification strongly limits the potential bias induced by Bac grade adjustments.

Discontinuity in observable characteristics. Table 1 reports estimates of equation (2) where the left-hand side variable is indicated in the first column's rows, and each row therefore corresponds to a separate regression (see Appendix Figure A6 for associated graphs). While many characteristics are statistically and economically significant in the no donut specifications, almost none remain significant and the coefficients are small in magnitude in the donut specifications. The only characteristics that are large in magnitude in the no donut sample are characteristics that are observed by teacher jurys, such as gender, age, academic region, and Bac track. Importantly, there is no discontinuity in the donut specifications in terms of SES, parent income[30], and echelon level, all characteristics likely to correlate with higher education outcomes.

Discontinuity in outcome prediction. My second validity test consists of estimating a simple prediction model of the outcomes under study using as predictors students' characteristics in Table 1 and then estimating equation (2) with the prediction on the left-hand side. The prediction model includes no interactions and is estimated by OLS. Appendix Table A6 reports the results of this exercise. Consistent with the previous test on observables, all the estimates are statistically significant in the no donut spec-

[30] For parent income, I drop 202 unreasonably large or negative observations ($>$ 100,000 euros and $<$ -100,000 euros).

Table 1: Discontinuity Estimates on Pre-Treatment Observable Characteristics

		No Donut		Donut $[15.7, 16.05]$	
		Bandwidth:			
	Mean *[15.5, 15.7)*	MSE-Optimal	(15, 17)	MSE-Optimal	(15, 17)
	(1)	(2)	(3)	(4)	(5)
Demographic					
Female	0.58	0.181***	0.072***	0.026	0.026**
		[0.13, 0.25]	[0.05, 0.09]	[-0.03, 0.1]	[0, 0.05]
Age	18.09	-0.106***	-0.035***	0.02	0.014
		[-0.16, -0.07]	[-0.06, -0.01]	[-0.02, 0.07]	[-0.02, 0.05]
French Nationality	0.98	-0.008*	-0.007***	-0.003	-0.004
		[-0.02, 0]	[-0.01, 0]	[-0.02, 0.01]	[-0.01, 0]
Parent SES					
Very High SES	0.24	-0.002	0.001	0.019*	0.018
		[-0.03, 0.02]	[-0.01, 0.02]	[0, 0.04]	[0, 0.04]
High SES	0.17	0.004	0.004	-0.014	-0.013
		[-0.01, 0.02]	[-0.01, 0.02]	[-0.04, 0.01]	[-0.03, 0.01]
Middle SES	0.3	-0.006	-0.002	0.002	0.005
		[-0.03, 0.02]	[-0.02, 0.01]	[-0.02, 0.03]	[-0.02, 0.03]
Low SES	0.26	-0.003	0.001	0.036*	-0.002
		[-0.03, 0.03]	[-0.02, 0.02]	[0, 0.08]	[-0.02, 0.02]
Missing SES	0.03	0	-0.004	-0.03***	-0.007
		[-0.01, 0.01]	[-0.01, 0]	[-0.06, -0.01]	[-0.02, 0]
Parent Income	26,928	-627*	-496*	-196	-403
		[-1502, 52]	[-999, 7]	[-943, 467]	[-1102, 295]
Need-Based Grants					
Echelon 0-0bis	0.34	-0.01	-0.011	-0.001	-0.005
		[-0.03, 0.01]	[-0.03, 0.01]	[-0.03, 0.02]	[-0.03, 0.02]
Echelon 1	0.19	0.001	0.001	-0.003	0.004
		[-0.02, 0.02]	[-0.01, 0.02]	[-0.03, 0.03]	[-0.02, 0.02]
Echelon 2-4	0.24	0.008	0.008	-0.003	-0.003
		[-0.01, 0.03]	[-0.01, 0.02]	[-0.03, 0.03]	[-0.02, 0.02]
Echelon 5-7	0.23	0.001	0.001	0.002	0.004
		[-0.02, 0.02]	[-0.01, 0.02]	[-0.02, 0.03]	[-0.02, 0.03]
Geographic					
Paris Academie	0.02	-0.001	-0.002	0.003	0.002
		[-0.01, 0.01]	[-0.01, 0]	[-0.01, 0.02]	[-0.01, 0.01]
5 Largest Academies	0.29	0.057***	0.034***	0.025	0.012
		[0.03, 0.1]	[0.02, 0.05]	[-0.02, 0.08]	[-0.01, 0.04]
High-School					
General Track	0.79	0.199***	0.033***	0.003	-0.002
		[0.16, 0.25]	[0.02, 0.05]	[-0.04, 0.04]	[-0.02, 0.02]
Technological Track	0.12	0.019**	0.017***	0.02	0.005
		[0, 0.04]	[0.01, 0.03]	[-0.02, 0.06]	[-0.01, 0.02]
Professional Track	0.09	-0.037***	-0.05***	-0.006	-0.003
		[-0.05, -0.03]	[-0.06, -0.04]	[-0.02, 0.02]	[-0.02, 0.01]
Private	0.2	-0.026*	-0.021***	-0.033	-0.013
		[-0.06, 0]	[-0.04, -0.01]	[-0.09, 0.01]	[-0.03, 0.01]

Notes: This table reports estimates of the discontinuity in student characteristics at the merit aid eligibility threshold (16/20 Bac grade). The student characteristics are reported in the first column's rows. Columns (2) and (3) report estimates on the full sample ("No Donut"), while columns (4) and (5) report estimates obtained when excluding students with Bac grades in $[15.7, 16.05]$ (Donut $[15.7, 16.05]$). Estimates for two different bandwidths are reported: the MSE-optimal and $(15, 17)$ bandwidths. The MSE-optimal bandwidth, obtained using the *rdrobust* R package, varies across each outcome. For MSE-optimal bandwidth estimates, the ranges in brackets correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

ifications while no estimate is significant in the donut case, though some predictions have admittedly low adjusted R^2.

Discontinuity at placebo thresholds. Lastly, I use three placebo tests to validate the donut approach and to ensure the results are not driven by the potential psychological effect or preferential admission from obtaining the highest honors at 16/20. I estimate equation (2) at (i) grades 14/20, and (ii) 15/20, where there should be no effect since nothing happens at these grades, and (iii) grade 16/20 for students *not* eligible for a need-based grant, who are therefore not eligible for the merit aid and for whom no effects should be found. Since there is no bunching at grade 15 (see Figure 2a), the no donut estimates should be close to zero. Table 2 shows the estimates obtained for these placebo tests for the six main outcomes using the MSE-optimal bandwidth (Appendix Table A7 reports estimates using the $(15, 17)$ bandwidth).

First, all coefficients for the grade 15 placebo are very small in magnitude and overwhelmingly insignificant in the no donut specifications. This is reassuring since these coefficients should indeed be zero. Second, the estimates for the other placebo tests in the no donut specifications are sizable and statistically significant, which is expected considering grade adjustments are based on student characteristics correlated with higher education outcomes. Third, all coefficients in the donut specifications are very small in magnitude and insignificant. This alleviates any concern that the results conflate the effect of the merit aid with other factors occurring at the 16/20 threshold.

Table 2: Placebo Analysis at Grade Thresholds Not Related to Financial Aid

	Enrollment in High School Graduation Year	Enrollment in 2nd Year in HS Grad. Year + 1	Enrollment in 3rd Year in HS Grad. Year + 2	Number of Years in Higher Education	Highest Level of Study Attained	Obtaining a Degree
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Grade 15						
No Donut	0.009***	0.005	0.006	0.034	0.034*	0
	[0, 0.02]	[-0.01, 0.02]	[-0.01, 0.02]	[-0.03, 0.12]	[-0.01, 0.09]	[-0.01, 0.01]
Donut [14.7, 15.05]	-0.004	0	0.009	0.026	0.039	-0.001
	[-0.02, 0]	[-0.02, 0.03]	[-0.01, 0.03]	[-0.13, 0.13]	[-0.07, 0.11]	[-0.03, 0.03]
Panel B. Grade 14						
No Donut	0.009***	0.043***	0.111***	0.595***	0.599***	0.087***
	[0, 0.02]	[0.03, 0.06]	[0.1, 0.13]	[0.53, 0.69]	[0.54, 0.68]	[0.08, 0.1]
Donut [13.7, 14.05]	0.002	0	0.003	0.073	0.063*	0.003
	[-0.01, 0.01]	[-0.01, 0.02]	[-0.02, 0.02]	[-0.04, 0.16]	[-0.01, 0.14]	[-0.02, 0.02]
Panel C. Grade 16 for Students Not Eligible to a Need-Based Grant in Bac Year						
No Donut	0.083***	0.094***	0.103***	1.19***	0.991***	0.176***
	[0.07, 0.1]	[0.08, 0.12]	[0.08, 0.13]	[1.04, 1.41]	[0.87, 1.16]	[0.14, 0.22]
Donut [15.7, 16.05]	-0.016	-0.008	-0.001	-0.028	-0.054	-0.005
	[-0.04, 0]	[-0.03, 0.02]	[-0.02, 0.02]	[-0.25, 0.16]	[-0.21, 0.07]	[-0.04, 0.04]

Notes: This table reports estimates of the discontinuity in higher education outcomes for three placebo grade thresholds: grade 15 (panel A), grade 14 (Panel B), and grade 16 for students not eligible to a need-based grant (panel C). Each higher education outcome is reported in the column headers. The grade 15 and grade 14 placebo tests are estimated over the full sample. The grade 16 placebo is estimated on the sample of students from the same high school cohorts who were not eligible to a need-based grant in their high school graduation year. In all three cases, students on both sides of placebo grade thresholds are not eligible to different amounts of financial aid. I report full sample estimates ("No Donut") and estimates obtained when excluding students with Bac grades in $[\text{placebo} - 0.3, \text{placebo} + 0.05]$ ("Donut [...]"). I use the MSE-optimal bandwidth obtained using the *rdrobust* R package, which varies across each specification. Associated robust 95% confidence intervals are reported in brackets. Statistical significance is computed based on the robust p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

5 Main Results

In this section I present the main results of the analysis. First, I show the merit aid had no effect on enrolment because, as discussed previously, information about eligibility was communicated too late to students to affect this margin. Second I show the merit aid had no impact on (i) persistence in higher education, (ii) degree completion, (iii) degree quality after initial enrolment, and (iv) enrolment in graduate school and proxies for academic performance. Since the merit aid does not affect the extensive margin, the intensive margin results are only driven by inframarginal students, i.e., students who would have enrolled in higher education regardless of eligibility for the merit aid.

5.1 Extensive Margin

Eligibility for the merit aid in the high school graduation year had no effect on any enrolment margins, consistent with the fact that students become aware of their eligibility too late. This can be seen in Figures 3a and 3b, which respectively display the probability of being enrolled in higher education in the high school graduation year and the quality of the degree[31] of enrolment (proxied by the median Bac grade of students contemporaneously enrolled in the degree[32]) as a function of Bac grade.

enrolment for students around the merit aid eligibility threshold is extremely high: 95% of students eligible for a need-based grant enrol in higher education in the high school graduation year. Non-upgraded students just below 16 have worse outcomes than their lower grade counterparts, though the sample size is very small. This is expected since teacher jurys use students' professors' comments when awarding upgrades, so more unruly students are less likely to be upgraded. Reassuringly, students just above 16, who are overwhelmingly upgraded students, have very similar outcomes to students further above in the grade distribution. This suggests that unless one believes the effects of eligibility for the merit aid to be extremely local, the donut specification captures reasonably well the causal effects had there been no adjustments.

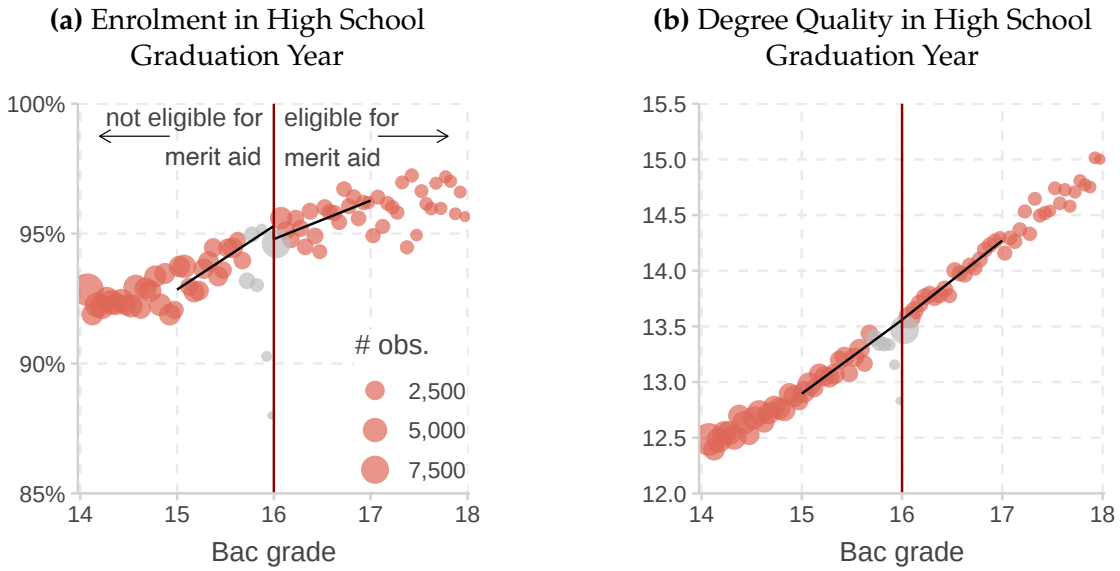
There is no visual evidence of a discontinuity in enrolment or degree quality at the merit aid eligibility threshold, and the estimates reported in Table 3 confirm this null results. They are insignificant, very small and precisely estimated. There are also no effects on the type of degree pursued[33] (Appendix Figure A7 shows these estimates

[31] Degrees are defined at the institution x subject level (e.g., BSc Mathematics at Sorbonne University).

[32] I opt for not defining degree quality as the median Bac grade of students enrolled in the *previous* year because (i) students in new degrees cannot be allocated a degree quality, (ii) students enrolled in preparatory classes and vocational schools in 2009 cannot be allocated a degree quality due to the missing student identifiers for these degrees in 2008, and (iii) because a number of public universities merged in 2014 preventing me from allocating students in these merged institutions a degree quality.

[33] Since 13% of students have multiple enrolments, I follow Bonneau et al. (2021) and assign a main enrolment to each student using the following priority rule: (i) engineering school, (ii) business school, (iii) Institutes of Political Studies (IEP), (iv) academic preparatory classes (CPGE), (v) vocational schools

Figure 3: Extensive Margin Outcomes as a Function of Bac Grade Around the Merit Aid Eligibility Threshold



Notes: This figure shows non-parametric binned scatter plots of the relationship between extensive margin outcomes and Bac grade, around the merit aid eligibility threshold (16/20 Bac grade). The outcomes are reported in the subfigure captions. Degree quality is defined as the median Bac grade of all students contemporaneously enrolled in the degree. The sample used corresponds to students who graduated from high school between 2009 and 2014, filed a financial aid application in the high school graduation year and were eligible for a need-based grant in that same year. Each red bubble corresponds to the average outcome value for students with Bac grade in $[X, X + 0.05)$, with the size of the bubble corresponding to the number of observations in that grade range. The grey bubbles represent the excluded donut observations, that is observations in $[15.7, 16.05]$. The black fitted lines correspond to local linear regressions with a triangular kernel on each side of the threshold, using the $(15, 17)$ bandwidth, and excluding donut observations. Note that each subfigure has its own y-axis scale.

graphically), consistent with the fact that students could not anticipate their eligibility status at the time of submitting their higher education applications.

Moreover, I show in Appendix Table A8 that these null effects on enrolment are not explained by students being unaware of the merit aid in the first place. Indeed, since it was introduced at the same time as a vast reform of the need-based grant system it might have attracted less attention and therefore been less salient to eligible students. I test whether information about eligibility to the program might explain these results by assessing whether students who may have been better informed exhibited larger responses. I find no difference in effects for (i) more recent cohorts, who are reasonably expected to have been better informed, (ii) students attending high schools with more students receiving the merit aid in the previous graduating cohort[34], and (iii) students with more high school peers eligible for the merit aid.

Taken together, these findings confirm that eligibility for the merit aid in the high school graduation year had no effect on initial enrolment in higher education.

(STS), (vi) technical institutes (IUT), (vii) other private schools, (viii) public universities.

[34]By construction, this test excludes the 2009 cohort.

Table 3: Effects of Eligibility for the Merit Aid in the High School Graduation Year on Extensive Margin Outcomes

	Mean *[15.5, 15.7)* (1)	Point Estimate (2)	95% Confidence Interval (3)	Bandwidth (4)	# obs. left (5)	# obs. right (6)
Panel A. Enrollment						
Enrollment in HS Graduation Year	0.94	-0.005	[-0.02, 0.01]	(15.04, 16.96)	33,599	24,826
Enrollment in HS Graduation Year	0.94	-0.005	[-0.02, 0.01]	(15, 17)	35,234	25,357
Panel B. Degree Quality						
Degree Quality in HS Graduation Year	13.28	-0.012	[-0.15, 0.08]	(15.12, 16.88)	26,671	22,174
Degree Quality in HS Graduation Year	13.28	0.001	[-0.09, 0.09]	(15, 17)	33,000	24,211
Panel C. Degree Type						
Public University (excl. Medical Degrees)	0.28	-0.003	[-0.04, 0.03]	(15.2, 16.8)	24,015	21,613
Public University (excl. Medical Degrees)	0.28	-0.016	[-0.04, 0.01]	(15, 17)	35,234	25,357
Medical Degrees	0.13	0.013*	[0, 0.03]	(14.77, 17.23)	50,907	29,561
Medical Degrees	0.13	0.014	[0, 0.04]	(15, 17)	35,234	25,357
Vocational Diploma (STS)	0.12	0.001	[-0.02, 0.03]	(15.13, 16.87)	28,440	23236
Vocational Diploma (STS)	0.12	-0.001	[-0.02, 0.02]	(15, 17)	35,234	25,357
Technical Diploma (IUT)	0.1	0.005	[-0.01, 0.03]	(15.15, 16.85)	27,049	22,675
Technical Diploma (IUT)	0.1	0.001	[-0.01, 0.02]	(15, 17)	35,234	25,357
Academic Preparatory Classes (CPGE)	0.25	-0.016	[-0.06, 0.02]	(15.2, 16.8)	24,015	21,613
Academic Preparatory Classes (CPGE)	0.25	-0.003	[-0.03, 0.02]	(15, 17)	35,234	25,357
Other (Business and Engineering Schools, IEP)	0.06	0.001	[-0.04, 0.03]	(15.41, 16.59)	12,704	16,644
Other (Business and Engineering Schools, IEP)	0.06	0.001	[-0.01, 0.01]	(15, 17)	35,234	25,357

Notes: This table reports estimates of the discontinuity in extensive margin outcomes at the aid for merit eligibility threshold (16/20 Bac grade), excluding students with Bac grades in $[15.7, 16.05]$. The outcomes are reported in the first column's rows. HS stands for high school. Degree quality is defined as the median Bac grade of all students contemporaneously enrolled in the degree. Column (1) reports the mean outcome for students with Bac grade in $[15.5, 15.7)$. Estimates (col. (2)) are reported for both the MSE-optimal (upper row) and the $(15, 17)$ (lower row) bandwidths. The MSE-optimal bandwidth, obtained using the *rdrobust* R package, varies across each outcome. For MSE-optimal bandwidth estimates, the associated confidence intervals (col. (3)) correspond to robust 95% confidence intervals, while they correspond to conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. Column (4) reports the bandwidth over which the local linear regressions are estimated (it is centered around 16), while columns (5) and (6) report, respectively, the number of observations used for estimation to the left and right of the 16/20 threshold. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively. All the detailed regression tables can be found in Appendix C.

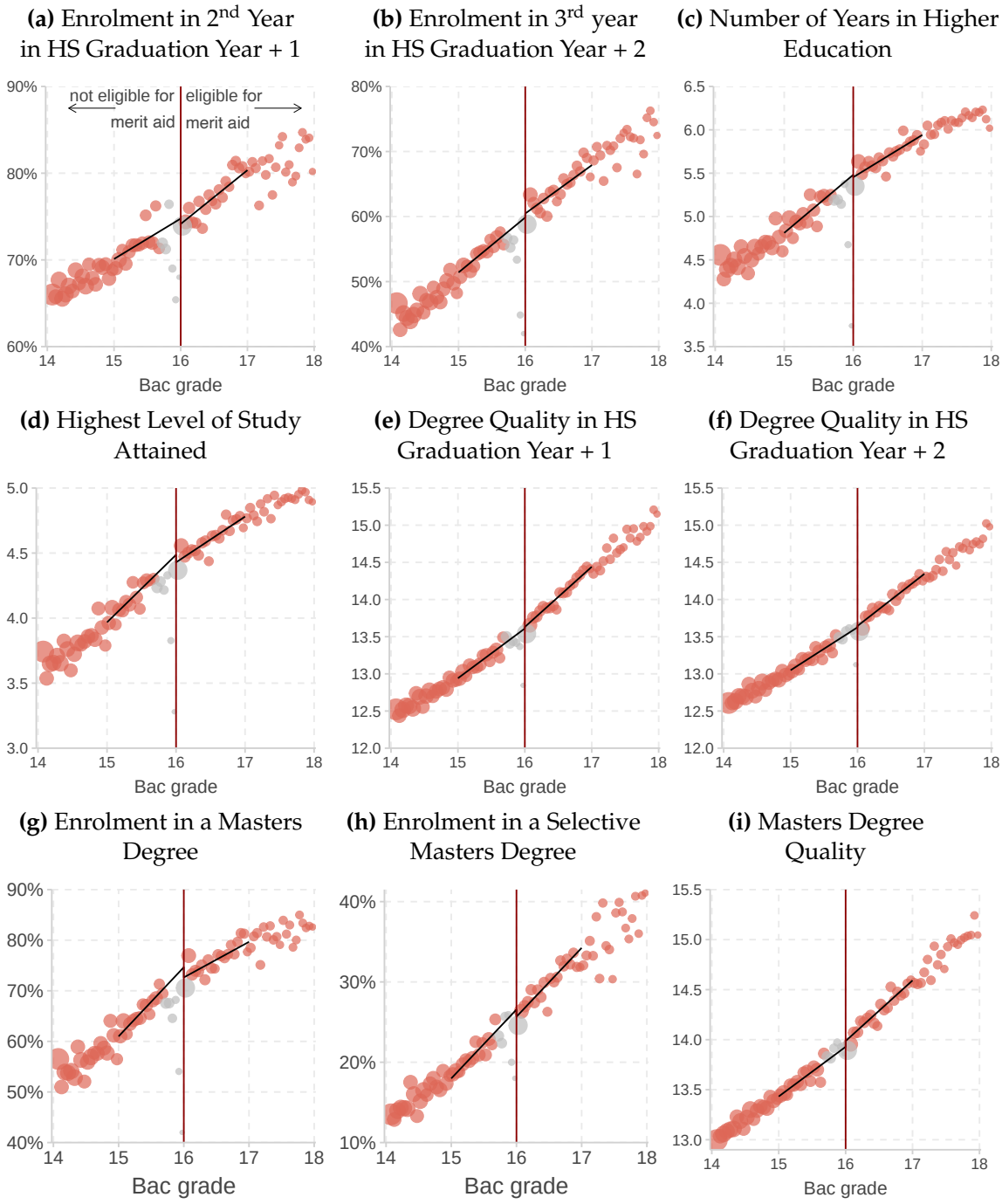
5.2 Intensive Margin

Persistence. First, I investigate the effect of eligibility to the merit aid in the high school graduation year on various measures of persistence in higher education. Specifically, I assess whether eligibility had an effect on (i) being enrolled in 2nd year in high school graduation year + 1, (ii) being enrolled in 3rd year in high school graduation year + 2, (iii) the total number of years enrolled in higher education, and (iv) the highest level of study attained.[35] The latter two outcomes are measured up to 2020, meaning all cohorts in the sample are followed for at least six years.

As in many countries, persistence is a particularly important outcome in the French context since on-time graduate rates are relatively low, especially for students in public universities. Only 30% of students who graduated from high school in 2016 and enrolled in a 3-year bachelors degree at a public university graduated on time in 2019. For students scoring at or above 16/20 at the Bac, this likelihood is greater, at 69%,

[35] I also report results for *any* enrolment in 2nd and 3rd year in Appendix Tables A13 and A15. The estimates are qualitatively similar to those presented in Table 4.

Figure 4: Intensive Margin Outcomes as a Function of Bac Grade Around the Merit Aid Eligibility Threshold



Notes: This figure shows non-parametric binned scatter plots of the relationship between various intensive margin outcomes and Bac grade, around the merit aid eligibility threshold (16/20 Bac grade). The outcomes are reported in the subfigure captions. HS stands for high school. Degree quality is defined as the median Bac grade of all students contemporaneously enrolled in the degree. The sample used corresponds to students who graduated from high school between 2009 and 2014, filed a financial aid application in the high school graduation year and were eligible for a need-based grant in that same year. Each red bubble corresponds to the average outcome value for students with Bac grade in $[X, X + 0.05)$, with the size of the bubble corresponding to the number of observations in that grade range. The grey bubbles represent the excluded donut observations, that is observations in $[15.7, 16.05]$. The black fitted lines correspond to local linear regressions with a triangular kernel on each side of the threshold, using the $(15, 17)$ bandwidth, and excluding donut observations. Note that each subfigure has its own y-axis scale.

implying that 30% of high-achieving students fall behind at least one year (Ménard, 2021). Moreover, persistence serves as a useful measurable intermediate outcome for students enrolled in programs for which it is not obvious to measure graduation, typically students enrolled in academic preparatory classes which do not deliver diplomas or in vocational schools for which graduation data is unavailable.

The merit aid had no impact on persistence in higher education, as can be seen in Figures 4a-4d, which display the relationship between measures of persistence and Bac grade. enrolment in 2nd year around the merit aid eligibility threshold is high, at roughly 75%, and it is about 60% for enrolment in 3rd year. These students are, on average, enrolled in higher education for 5.5 years and their highest level of study attained is between the 4th and 5th year, corresponding to a master's level degree. There is no visual discontinuity at 16 for any outcome. The corresponding regression discontinuity estimates reported in Table 4 *Panel A* confirm the graphical evidence. The donut estimates are close to zero and insignificant. Most confidence intervals reject effects larger than 5% of the baseline mean. Overall, these results suggest that being eligible for the merit aid in the high school graduation year had no effect on future persistence in higher education.

Graduation. Second, I asses whether eligibility for the merit aid in the high school graduation year had an impact on degree completion. As highlighted previously, graduation cannot be measured for students in vocational schools nor in academic preparatory classes, and therefore is a bit less informative than persistence. I focus on degree completion at any point in time between 2009 and 2019 since depending on the chosen degree, the time to graduation will differ. Appendix Figure A8 graphically displays the results. The data are significantly more noisy and unexpectedly the likelihood of obtaining a degree is decreasing in Bac grade above 16, likely reflecting the imperfect coverage of the graduation data. The regression discontinuity estimates from the donut specification in Table 4's *Panel B* suggest there may be a very small negative effect of eligibility though the coefficient's significance depends on the chosen bandwidth. This is consistent with the results on persistence in 3rd year which are a good proxy for graduation.

Degree Quality. Third, I estimate whether eligibility to the merit aid in the high school graduation year affected the quality of degrees in which students enrolled in up to two years later. The reason for also analysing degree quality in subsequent years is that roughly 20% of students change degrees between their first and second year in higher education (IGESR, 2020), despite having to re-apply to do so. Degree quality is defined in the same way as in the extensive margin analysis, as the median Bac grade of all students contemporaneously enrolled in the degree.

Table 4: Effects of Eligibility for the Merit Aid in the High School Graduation Year on Intensive Margin Outcomes

	Mean *[15.5, 15.7)*	Point Estimate	95% Confidence Interval	Bandwidth	# obs. left	# obs. right
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Persistence						
Enrollment in 2nd Year in HS Graduation Year + 1	0.73	-0.001	[-0.04, 0.02]	(15.09, 16.91)	30,331	23,948
Enrollment in 2nd Year in HS Graduation Year + 1	0.73	-0.006	[-0.03, 0.02]	(15, 17)	35,234	25,357
Enrollment in 3rd Year in HS Graduation Year + 2	0.56	0.015	[-0.02, 0.05]	(15.13, 16.87)	27,203	23,175
Enrollment in 3rd Year in HS Graduation Year + 2	0.56	0.006	[-0.02, 0.03]	(15, 17)	35,234	25,357
Number of Years in Higher Education	5.23	-0.007	[-0.21, 0.15]	(15.19, 16.81)	24,015	21,613
Number of Years in Higher Education	5.23	-0.028	[-0.14, 0.09]	(15, 17)	35,234	25,357
Highest Level of Study Attained	4.29	-0.038	[-0.18, 0.07]	(15.23, 16.77)	21,646	20,890
Highest Level of Study Attained	4.29	-0.058	[-0.13, 0.02]	(15, 17)	35,234	25,357
Panel B. Degree Completion						
Obtain a Degree	0.62	-0.022	[-0.05, 0]	(14.81, 17.19)	47,773	29,075
Obtain a Degree	0.62	-0.026**	[-0.05, 0]	(15, 17)	35,234	25,357
Panel C. Degree Quality						
Degree Quality in HS Graduation Year + 1	13.33	0.011	[-0.17, 0.14]	(15.28, 16.72)	17,691	18,574
Degree Quality in HS Graduation Year + 1	13.33	0.021	[-0.07, 0.11]	(15, 17)	31,843	23,778
Degree Quality in HS Graduation Year + 2	13.39	-0.018	[-0.21, 0.15]	(15.32, 16.68)	14,062	16,772
Degree Quality in HS Graduation Year + 2	13.39	0.019	[-0.07, 0.1]	(15, 17)	28,287	22,518
Panel D. Enrollment in Graduate Degree and Academic Performance Proxies						
Enrollment in a Masters Degree	0.69	-0.019	[-0.06, 0.01]	(15.22, 16.78)	22,335	20,989
Enrollment in a Masters Degree	0.69	-0.02*	[-0.04, 0]	(15, 17)	35,234	25,357
Enrollment in a Selective Masters Degree	0.23	-0.011	[-0.05, 0.01]	(15.12, 16.88)	28,440	23,236
Enrollment in a Selective Masters Degree	0.23	-0.009	[-0.03, 0.01]	(15, 17)	35,234	25,357
Median Bac Grade of Masters Degree	13.72	0.05	[-0.11, 0.18]	(15.21, 16.79)	15,163	16,160
Median Bac Grade of Masters Degree	13.72	0.058	[-0.03, 0.15]	(15, 17)	23,059	19,286

Notes: This table reports estimates of the discontinuity in intensive margin outcomes at the merit aid eligibility threshold (16/20 Bac grade), excluding students with Bac grades in $[15.7, 16.05]$. The higher education outcomes are reported in the first column's rows. HS stands for high school. Degree quality is defined as the median Bac grade of all students contemporaneously enrolled in the degree. Column (1) reports the mean outcome for students with Bac grade in $[15.5, 15.7)$. Estimates (col. (2)) are reported for both the MSE-optimal (upper row) and the $(15, 17)$ (lower row) bandwidths. The MSE-optimal bandwidth, obtained using the *rdrobust* R package, varies across each outcome. For MSE-optimal bandwidth estimates, the associated confidence intervals (col. (3)) correspond to robust 95% confidence intervals, while they correspond to conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. Column (4) reports the bandwidth over which the local linear regressions are estimated (it is centered around 16), while columns (5) and (6) report, respectively, the number of observations used for estimation to the left and right of the 16/20 threshold. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively. All the detailed regression tables can be found in Appendix C.

Figures 4e-4f graphically display the relationship between degree quality in various years and Bac grade. There is no clear discontinuity at the merit aid eligibility threshold for any subsequent degree quality. Table 4 *Panel C* reports the associated regression discontinuity estimates. All estimates are close to zero and insignificant, suggesting being eligible for the merit aid in the high school graduation year had no effect on the quality of the degree in which one enrolled after initial enrolment. These results rule out the hypothesis that eligible students might have opted to switch to higher quality degrees (which could have been located in more expensive cities) only once they were certain they would receive the merit aid.

enrolment in Graduate Degrees and Proxies for Academic Performance. Lastly, I analyse whether eligibility to the merit aid in the high school graduation year may have affected enrolment in graduate degrees and the academic performance of stu-

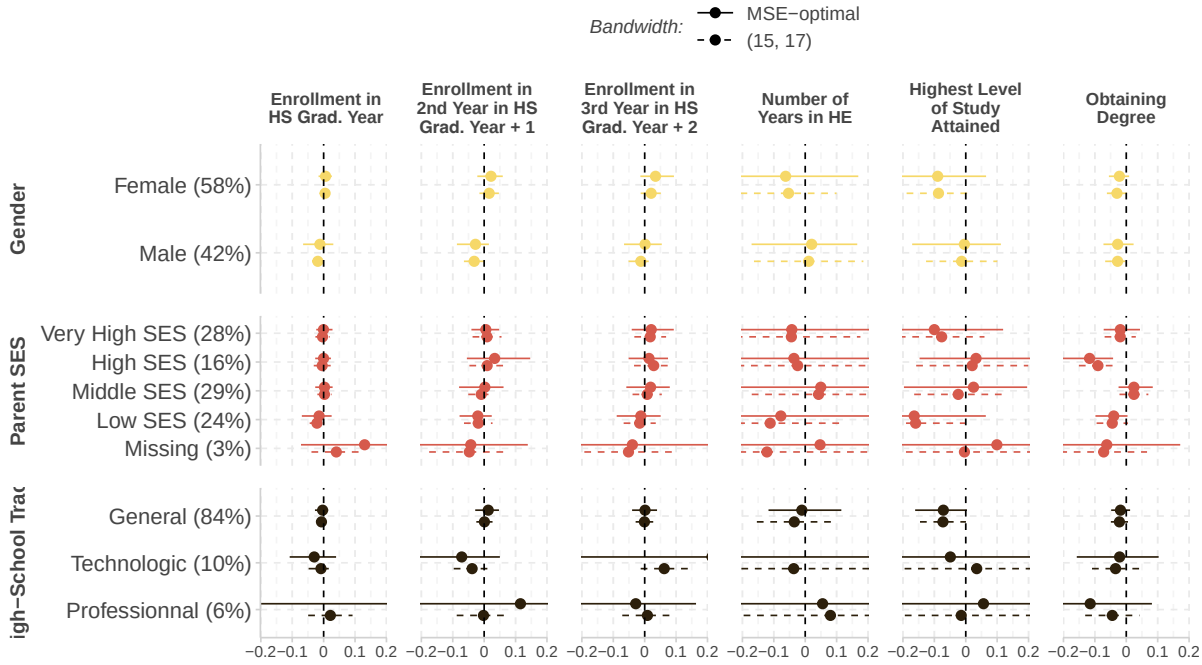
dents during their studies. Indeed, it may well be that students obtaining around 16/20 at the Bac are sufficiently good academically to be able to pass on to the next academic year regardless of their financial situation. However, potentially having to work while studying may affect students' grades, and later on their likelihood of purusing a graduate degree. Since the administrative data does not contain any information on how well students performed[36], I investigate this hypothesis by assessing the effect on (i) enrolment in any masters degrees (defined as degrees for which the final year of study is 4 or 5), (ii) enrolment in a selective masters degrees (defined as masters degrees from engineering, business and other private schools), and (iii) the quality of the masters degree (defined in the same way as for undergraduate degrees). The reasoning is that selective or high quality masters degrees choose students mostly based on their undergraduate grades. Both the visual evidence of Figures 4g-4i and the estimates reported in Table 4's *Panel D* suggest eligibility to the merit aid in the high school graduation year had no effect on enrolment in graduate degrees nor on other proxies for academic performance.

5.3 Heterogeneity

Before explicitly attempting to uncover potential mechanisms, I explore the heterogeneity of the effects by various characteristics such as gender, SES and high school track. The objective is in a sense to find out whether a particular subgroup of students might have been more responsive to the additional financial aid awarded by the merit aid. Figure 5 displays the point estimates and associated 95% confidence intervals for the main outcomes, for both the MSE-optimal (solid line) and $(15, 17)$ bandwidths (dashed line). The results indicate eligibility to the merit aid had no statistically differential effect between men and women, with the coefficients being small in magnitude and statistically insignificant. There is also no clear differential effect across SES, with small point estimates (though the confidence intervals are sometimes large). The same applies for high school track, though sample sizes for the technologic and professional tracks are small. This points towards the null effects found previously reflecting true nulls rather than hidden heterogeneous effects averaging out.

[36]The only measure of academic performance in the data is how many ECTS credits students obtained in the past year, though it is only available for students at public universities.

Figure 5: Heterogeneity of Effects of Eligibility for the Merit Aid in the High School Graduation Year on Higher Education Outcomes



Notes: This figure shows estimates of the discontinuity in higher education outcomes at the merit aid eligibility threshold (16/20 Bac grade), for subsamples of students, excluding students with Bac grades in $[15.7, 16.05]$. The higher education outcomes are reported in column's titles, while the subsamples (and % among students with Bac grade in $[15.5, 15.7)$) are reported in the first column's rows. The horizontal axis is in percentage points. Estimates for two different bandwidths are reported: the MSE-optimal and $(15, 17)$ bandwidths. The MSE-optimal bandwidth, obtained using the *rdrobust* R package, varies across each outcome. For MSE-optimal bandwidth estimates, associated confidence intervals correspond to robust 95% confidence intervals, while they correspond to conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates.

6 Discussion of Potential Mechanisms

In the previous sections, I showed that the merit aid had precisely estimated null effects on all medium- and long-term intensive margin outcomes. These results cannot be explained by the merit aid inducing less motivated students, who subsequently fall behind, to enrol in higher education since the aid did not affect initial enrolment. This appears somewhat puzzling considering (i) need-based aid did not fully cover students' expenses, (ii) the merit aid represented a substantial increase in financial assistance, and (iii) the general consensus of (context-dependent) positive effects of financial aid (Dynarski et al., 2023b). What could explain these null results?

I investigate four possible (and potentially interacting) explanations. First, the merit aid might have been counterbalanced by reductions in parental support, leaving students' overall financial resources unaffected. Second, existing need-based grants were possibly already at an "optimal" level, rendering any additional aid ineffective. Third, merit aid recipients might not have used the funds to decrease their work hours,

or perhaps working while studying has only a minimal impact on academic outcomes. Finally, high-achieving, low-income students might be less sensitive to financial aid due to their high expected returns from higher education and intrinsic motivation, potentially leading them to persist regardless of the additional support.

While I cannot directly test each explanation, I exploit heterogeneity across specific groups of students and use existing findings from the literature to provide my best assessment of the plausibility of each mechanism. This investigation suggests the fourth explanation – high-achieving students being less responsive to financial aid –, consistent with a number of existing studies, is the most likely driver of the null effects observed in this context. This could be explained by these students (i) having high expected returns to higher education and therefore greater incentives to persist, (ii) having high intrinsic motivation helping them overcome adversity, and (iii) being better able to cope with having to work while studying due to their academic advantages. In the following subsections, I evaluate the plausibility of each explanation.

6.1 Was the Merit Aid Compensated by Crowding Out of Parents' Financial Support?

The first explanation for the absence of effects of the merit aid might be that reductions in parental support fully compensated the additional aid. If parents of merit aid students decreased their financial assistance by exactly 200 euros per month, then eligible and non-eligible students were equally well off financially and no effect could therefore be observed. Since I cannot directly observe parents' financial assistance[37], I investigate this channel by relying on existing evidence from France on financial aid's effect on parental contributions, as well as analysing whether the most financially disadvantaged students experienced benefits from eligibility to the merit aid.

The best available evidence for France finds only a partial crowding out rather than a full compensation: Grobon and Wolff (2024) use a 2014 survey of young adults specifically designed to measure their financial resources, and estimate that each additional euro of need-based aid crowds out between 0.5 and 0.6 euros of parental assistance. Naively applying this finding to the merit aid suggests recipients would be around 100 euros better off financially each month compared to non-recipients. Unless parents react differently to the merit aid than they do to need-based grants, full compensation does not appear to be a very reasonably explanation for the null results.

To provide further evidence, I estimate the effects of merit aid eligibility on students receiving less parental transfers than the aid amount (200 euros per month).

[37] Two existing datasets contain this information: (i) the 2014 Survey of youth's resources (*Enquête nationale sur les ressources des jeunes*), and (ii) the Surveys of students' living conditions (*Enquête condition de vie des étudiants*) conducted every three years since 1994. Regrettably, neither contains students' Bac grade and thus cannot be used to investigate this explanation.

Specifically, I focus on the bottom 10% of the parent income distribution and need-based echelons 6 and 7 students.[38] Grobon and Wolff (2024) shows echelon 7 students received, on average, around 100 euros from parents monthly, while echelon 6 students received about 150 euros. Thus, even with full parental crowding out, these students would still experience a net financial gain from the merit aid. Table 5 displays the effects of meriy aid eligibility for students in the bottom 10% of parent income, and echelons 6 and 7. Across all outcomes, the effects are small and insignificant, though confidence intervals are wide due to small samples, suggesting that even these students did not benefit from the merit aid. While I cannot rule out that the net (post-parental assistance reduction) financial gain was too small to help, these results indicate compensation of parental aid is an improbable explanation.

Table 5: Effects of Merit Aid on Students Receiving Less Parental Assistance than Merit Aid Amount

	Enrollment in High School Graduation Year	Enrollment in 2nd Year in HS Grad. Year + 1	Enrollment in 3rd Year in HE Grad. Year + 2	Number of Years in Higher Education	Highest Level of Study Attained	Obtaining a Degree
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Parent Income in Bottom 10%						
Mean [15.5, 15.7)	0.92	0.66	0.47	4.9	3.85	0.54
MSE-Optimal	0.024	0.02	-0.01	0.412	0.441	0.019
	[-0.03, 0.09]	[-0.12, 0.17]	[-0.13, 0.09]	[-0.37, 1.24]	[-0.13, 1.16]	[-0.15, 0.19]
(15, 17)	0.022	0.007	0.014	0.345	0.336*	-0.013
	[-0.03, 0.08]	[-0.09, 0.11]	[-0.1, 0.12]	[-0.19, 0.88]	[-0.02, 0.7]	[-0.12, 0.1]
Panel B. Echelons 6 & 7 (most disadvantaged)						
Mean [15.5, 15.7)	0.93	0.69	0.49	5.01	3.98	0.6
MSE-Optimal	0.006	-0.001	0.002	0.199	0.102	-0.056
	[-0.03, 0.04]	[-0.09, 0.07]	[-0.07, 0.07]	[-0.32, 0.72]	[-0.22, 0.42]	[-0.17, 0.03]
(15, 17)	0.003	-0.001	0.022	0.189	0.095	-0.064*
	[-0.04, 0.04]	[-0.07, 0.07]	[-0.05, 0.1]	[-0.17, 0.55]	[-0.15, 0.34]	[-0.14, 0.01]

Notes: This table reports estimates of the discontinuity in higher education outcomes at the merit aid eligibility threshold (16/20 Bac grade), excluding students with Bac grades in [15.7, 16.05]. Panel A reports estimates on the subsample of students with parents in the bottom 10% of the parent income distribution in the high school graduation year. Panel B reports estimates on the subsample of students with need-based grant echelons 6 or 7 in the high school graduation year. For each panel, the first row reports the average outcome for students with Bac grades in [15.5, 15.7), the second row reports estimates obtained using the MSE-optimal bandwidth (using the *rdrobust* R package), and the third row reports estimates obtained using the (15, 17) bandwidth. For MSE-optimal bandwidth estimates, the ranges in brackets correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for (15, 17) bandwidth estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

6.2 Were the Need-Based Grants Already Set at Optimal Levels?

A second possible explanation for the null results is that need-based grant amounts were already at optimal levels, making any additional aid ineffective. This hypothesis implies that above some financial aid level, further increases have no marginal effect on student behavior. While this mechanism is a theoretically possibility, it cannot be directly tested, and seems a priori unlikely. However, I can evaluate whether students receiving smaller need-based grants than the merit aid amount benefit from the additional aid. Specifically, I estimate the effects for echelons 0, 0 bis, and 1, who received

[38] Due to sample size restrictions it is not possible to estimate the effects only for echelon 7 students.

less aid than the annual 1,800 euros of merit aid. Echelon 0 students only received tuition exemption, echelon 0 bis received 1,000 euros annually, while echelon 1 received roughly 1,500 euros (see Appendix Table A2 for precise amounts).

Table 6 presents the results. The estimates are very small in magnitude for these three echelons, except for echelon 1 students' enrolment in 3rd year. There are therefore no differences between students receiving no cash allowance (echelon 0), small amounts (echelon 0 bis), or roughly the merit aid amount (echelon 1). These findings hold when restricting to students whose parents' incomes are within 5% of the echelon 1 threshold in 2009-2012 (before the introduction of the 0 bis echelon), as shown in Appendix Table A9, though confidence intervals are large due to smaller samples. Overall, these results suggest that the merit aid's null effects are likely not primarily driven by the aid being provided on top of existing optimally-set financial assistance.

Table 6: Effects of Merit Aid for Students Receiving Lower Amounts of Need-Based Grant than Merit Aid

	Enrollment in High School Graduation Year	Enrollment in 2nd Year in HS Grad. Year + 1	Enrollment in 3rd Year in HS Grad. Year + 2	Number of Years in Higher Education	Highest Level of Study Attained	Obtaining a Degree
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Echelon 0 (No Cash Allowance)						
Mean [15.5, 15.7)	0.95	0.74	0.61	5.53	4.52	0.64
MSE-Optimal	-0.002	-0.011	0.007	0.005	-0.042	-0.006
	[-0.02, 0.02]	[-0.1, 0.06]	[-0.07, 0.07]	[-0.24, 0.24]	[-0.25, 0.16]	[-0.09, 0.08]
(15, 17)	-0.01	-0.016	-0.001	0.028	-0.048	-0.009
	[-0.03, 0.01]	[-0.06, 0.03]	[-0.05, 0.05]	[-0.2, 0.25]	[-0.19, 0.09]	[-0.06, 0.04]
Panel B. Echelons 0 bis (1,000 Euros of Annual Cash Allowance)						
Mean [15.5, 15.7)	0.95	0.74	0.61	4.94	4.28	0.61
MSE-Optimal	0.002	-0.026	-0.022	0.088	0.012	-0.012
	[-0.06, 0.06]	[-0.09, 0.03]	[-0.16, 0.12]	[-0.21, 0.4]	[-0.21, 0.22]	[-0.09, 0.09]
(15, 17)	0	-0.008	-0.01	0.077	0.038	-0.015
	[-0.04, 0.04]	[-0.08, 0.07]	[-0.09, 0.07]	[-0.24, 0.39]	[-0.21, 0.29]	[-0.1, 0.07]
Panel C. Echelons 1 (1,500 Euros of Annual Cash Allowance)						
Mean [15.5, 15.7)	0.94	0.73	0.56	5.27	4.32	0.62
MSE-Optimal	0.003	0.027	0.111***	0.211	0.22	-0.014
	[-0.02, 0.03]	[-0.03, 0.09]	[0.04, 0.21]	[-0.37, 0.86]	[-0.08, 0.56]	[-0.08, 0.06]
(15, 17)	0.014	0.028	0.081***	0.062	0.042	-0.013
	[-0.01, 0.04]	[-0.02, 0.08]	[0.02, 0.14]	[-0.2, 0.32]	[-0.13, 0.21]	[-0.07, 0.04]

Notes: This table reports estimates of the discontinuity in higher education outcomes at the aid for merit eligibility threshold (16/20 Bac grade), excluding students with Bac grades in [15.7, 16.05]. Panel A reports estimates on the subsample of students with need-based grant echelon 0, i.e., who received no cash allowance. Panel B reports estimates on the subsample of students with need-based grant echelon 0 bis, i.e., who received a cash allowance of roughly 1,000 euros annually. Panel C reports estimates on the subsample of students with need-based grant echelon 1, i.e., who received a cash allowance of roughly 1,500 euros annually. For each panel, the first row reports the average outcome for students with Bac grades in [15.5, 15.7), the second row reports estimates obtained using the MSE-optimal bandwidth (using the *rdrobust* R package), and the third row reports estimates obtained using the (15, 17) bandwidth. For MSE-optimal bandwidth estimates, the ranges in brackets correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for (15, 17) bandwidth estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

6.3 Did Student Employment Have Limited Impacts on Outcomes?

A third potential explanation is that the merit aid did not significantly reduce the need for students to work while studying, or that such employment had a negligible impact on their persistence in higher education. About a quarter of students in France

worked while enrolled (DARES, 2017), which could potentially impede their academic progress.[39] Evidence from U.S. Pell Grants suggests financial aid similar to the merit aid amount can substantially affect students' labor supply, both in terms of employment status and hours worked (Kofoed, 2022). If applicable to the French context, the merit aid may have decreased the need for recipients to be employed while studying.

Furthermore, existing research for France indicates that working has negative consequences on students' higher education outcomes (Beffy et al., 2009; Body et al., 2014; Wolff, 2017). However, this adverse effect is primarily observed for those working more than 16 hours per week, while students working fewer hours do not seem to experience significant penalties, though estimates are imprecise. Taken together, these findings suggest two possible explanations for the null effects: either marginally non-eligible students were already working few hours, mitigating any potential detriment from employment, or the reduction in hours worked induced by the merit aid was too small to substantially improve recipients' academic outcomes.

6.4 Were Targeted Students Less Sensitive to Financial Aid?

The final plausible explanation is that targeted high-achieving students were less sensitive to financial aid. The merit aid targeted very academically able students (top 5% of high school exit exam) likely set on persisting in higher education largely regardless of aid, given their large expected returns to higher education, their high intrinsic motivation, and their potentially greater ability to cope with any student employment.

This aligns with studies examining heterogeneous effects of financial aid by the academic ability of eligible students. Goodman (2008) first observed that financial aid's effects (in his case, the Massachussett's Adams Scholarship) varied by skill level, and highlighted its importance in explaining differences in effects across financial aid schemes. Table 7 compiles the results from all the quasi-experimental studies that, to my knowledge, examine such heterogeneity by academic level. Across different contexts, aid types (need-based, merit-based or both) and outcomes (enrolment or graduation), this (admittedly small) set of studies finds that higher-achievers generally benefit less from aid than lower-achievers. The only exceptions is Murphy and Wyness (2023) who find that English bursaries increased the likelihood of obtaining a "good" degree significantly more for high-achieving than for low-achieving students.[40]

My findings thus point to the fact that there may be complementarities between financial aid and academic ability. In other words, students with lower academic levels

[39] As for parental transfers, the 2014 Survey of youth's resources and the Surveys of students' living conditions contain detailed information about students' employment arrangement but unfortunately do not have students' Bac grade.

[40] Another exception isCastleman and Long (2016), who find significantly larger effects of eligibility to Florida's Student Access Grant (FSAG) on degree attainment for students with higher high school GPAs, though these students also received slightly larger FSAG amounts.

Table 7: Summary of Studies Assessing the Heterogeneous Effects of Financial Aid by Students' Academic Ability

Study	Program	Outcome	Student Academic Level	Effect (p.p.)	Baseline (%)
Cohodes and Goodman (2014, Table 7)	Massachusetts Adams Scholarship *(merit-based scholarship covering tuition at in-state public college)*	enrolment	Lower income and less academically skilled	+7.7***	–
			Higher income and more academically skilled	+1.5	–
Fack and Grenet (2015, Table 4)	French need-based grants *(need-based grant of 1,500 euros)*	enrolment	Bac grade in bottom quartile	+3.4***	75
			Bac grade in top quartile	+1.8*	78.5
Bettinger et al. (2019, Table 2)	California Cal Grant *(merit/need-based grant covering 4 years of tuition assistance for in-state HEI)*	BA completion	Students around the GPA cutoff (GPA = 3.08/4)	+4.6***	46
			Students around the income cutoff (GPA = 3.55/4)	+3	67
Angrist et al. (2022, Figure 4)	Nebraska STBF Scholarship *(merit/need-based scholarship covering college costs at in-state public college)*	BA completion	Below-median GPA	+12***	42
			Above-median GPA	+4**	80
Murphy and Wyness (2023, Table 5)	English HE Bursary System *(university-level need-based financial aid, £1,000)*	"Good" degree	Below-median entry score	+2.6*	56
			Above-median entry score	+8.5***	67

at the point of college entry seem to be more adversely impacted by a lack of financial support relative to students with greater college readiness. While targeting lower-achievers could potentially yield greater effects, caution is warranted about perverse incentives if students purposely underperform for aid eligibility.

7 Conclusion

This paper assesses whether credit constraints play a dominant role in explaining the persistence of high-achieving, low-income students in higher education. It focuses on a context where on-time graduation rates are low, and existing financial aid is insufficient. I use a regression discontinuity design and exhaustive administrative data from France to estimate the impact of the merit aid. This scheme automatically granted generous additional aid to low-income students who scored in the top 5% of the national high school exit exam and enrolled in higher education. Crucially, students were informed about their merit aid eligibility very late, well after applications had been submitted. Consistent with this late timing, I find precisely estimated null effects of the merit aid on all possible enrolment margins. This result highlights that to affect enrolment, information about financial aid eligibility should be communicated to students very early in the process.

The null effects on the extensive margin (enrolment) imply that any intensive margin effects can only be observed for inframarginal students, i.e., students who would have enrolled in higher education regardless of merit aid eligibility. I find that the merit aid had precisely estimated no effect on any medium- or long-term persistence measures nor on graduation and enrolment in a graduate degree. These null effects on the intensive margin suggest that the additional financial assistance did not impact the academic outcomes of inframarginal, high-achieving, low-income students. The most

plausible explanation, aligning with evidence from other settings, is that such students are less sensitive to financial aid. This could be because they have higher expected returns to higher education or because they are better able to manage the challenges of working while studying.

These results highlight complementarities between financial aid and student ability. Students with lower academic preparedness upon college entry are likely more adversely impacted by a lack of financial support compared to those with greater college readiness. This suggests that merit aid targeting very high-achieving students may be inadequate for improving their higher education outcomes. Instead, such aid could potentially benefit students lower in the ability distribution more. A fruitful future research avenue would be to investigate more precisely how financial aid effects vary along the distribution of student ability.

It's important to note that financial aid's impact extends beyond academic outcomes. It may significantly influence unobserved factors like students' mental health and financial distress -– aspects that have received limited attention in the literature due to data constraints. However, these unobserved outcomes could be of great importance and merit further investigation.

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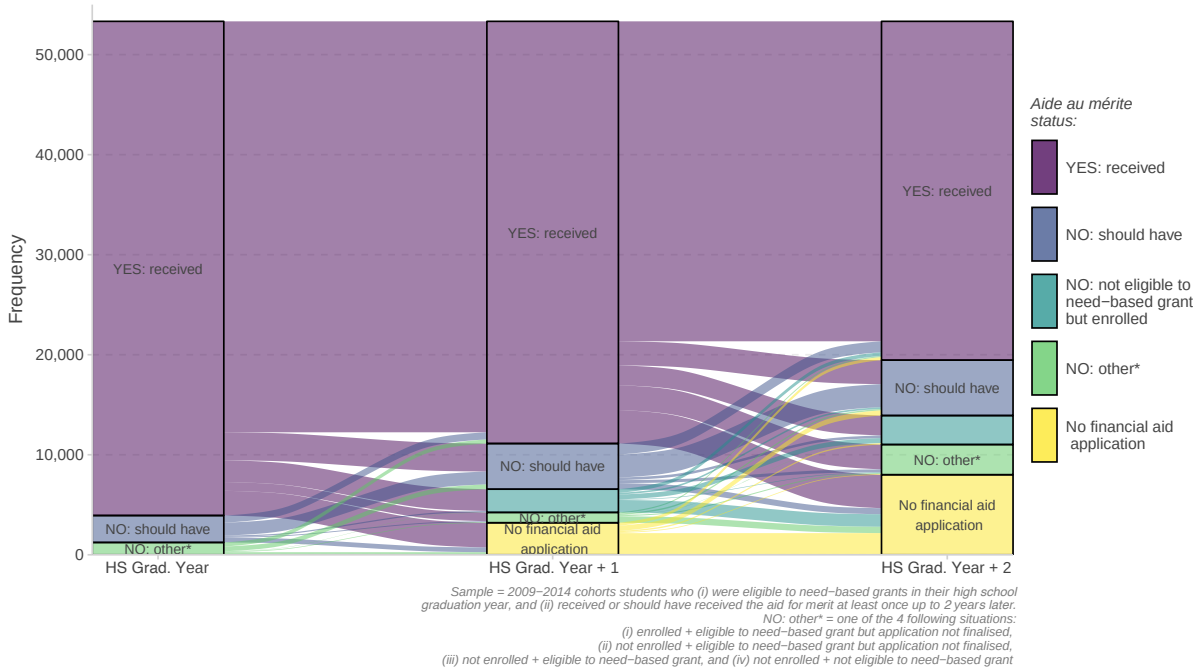
Online Appendix

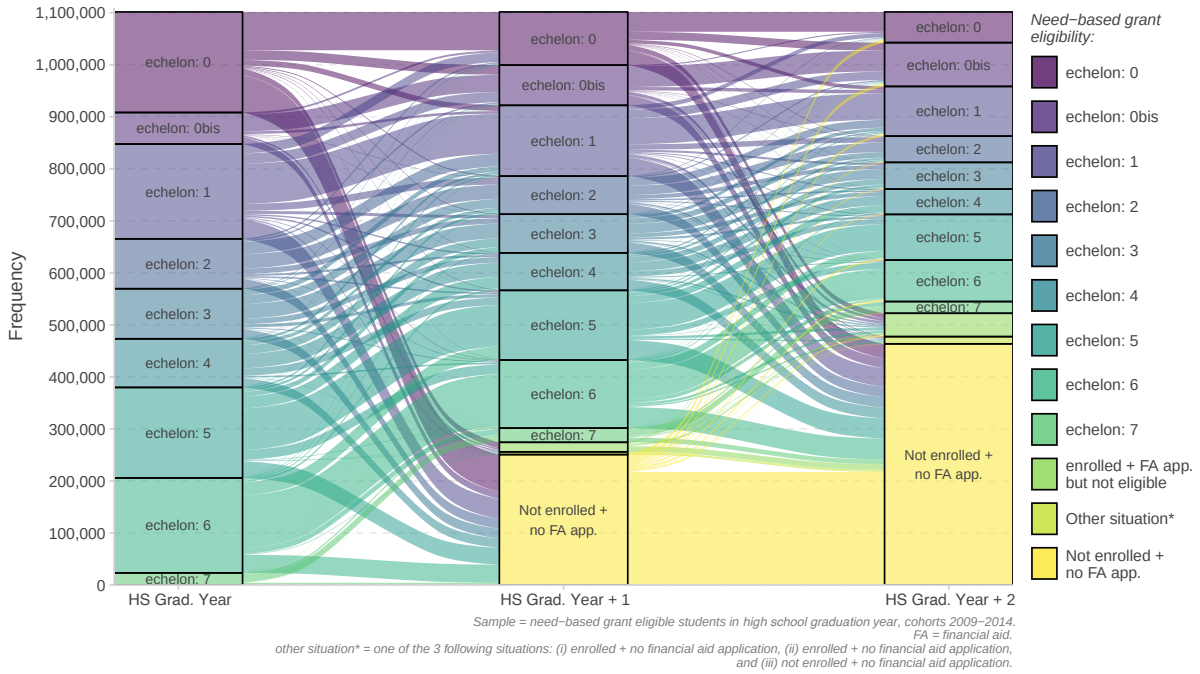
A Appendix Figures

Figure A1: Merit Aid Status Over Time



Notes: This figure displays the evolution over time of merit aid status for students in the 2009-2014 high school cohorts who were eligible to a need-based grant in their high school graduation year, and received or should have received the aid for merit at least once up to high school graduation year + 2. The first "Bac year" (i.e. high school graduation year) column shows that among these students, the vast majority received the aid for merit, as they should have, in their high school graduation year ("Yes: received"). Approximately 5% fulfilled all the necessary criteria (at least 16/20 at the Bac, eligible to a need-based grant, and enrolled in higher education) yet did not receive it ("NO: should have"). The remaining couple of percentages are students who did not receive it in their high school graduation year but ended up receiving it or being in the group that should have received it in subsequent years ("NO: other*", see the figure's caption for additional details on this category). Among students who received the aid for merit in their high school graduation year, a very large fraction continued to receive it the following years.

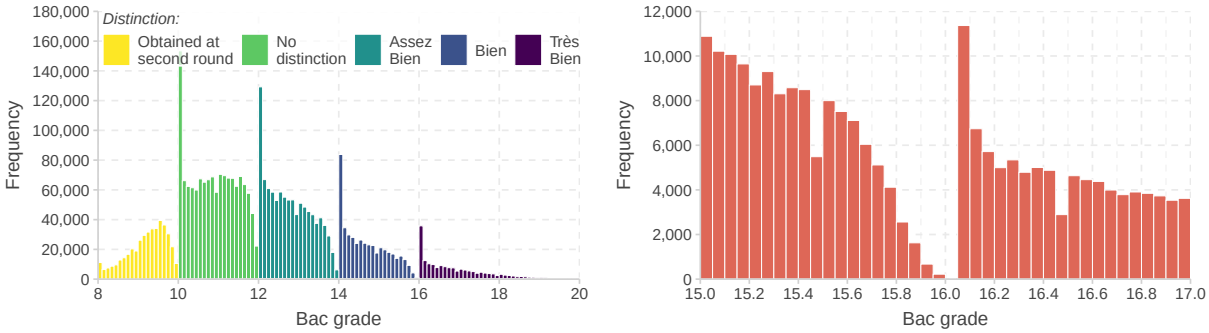
Figure A2: Need-Based Grant Eligibility Over Time



Notes: This figure displays the evolution over time of need-based grant eligibility status over time for students in the full sample. The first "Bac year" (i.e., high school graduation year) column shows that all these students were eligible to a need-based grant (echelons 0 to 7), which is expected since the full sample contains only students eligible to a need-based grant in their high school graduation year. In the following years, the vast majority who file a financial aid application remain eligible while some do not enrol in higher education and do not file a financial aid application.

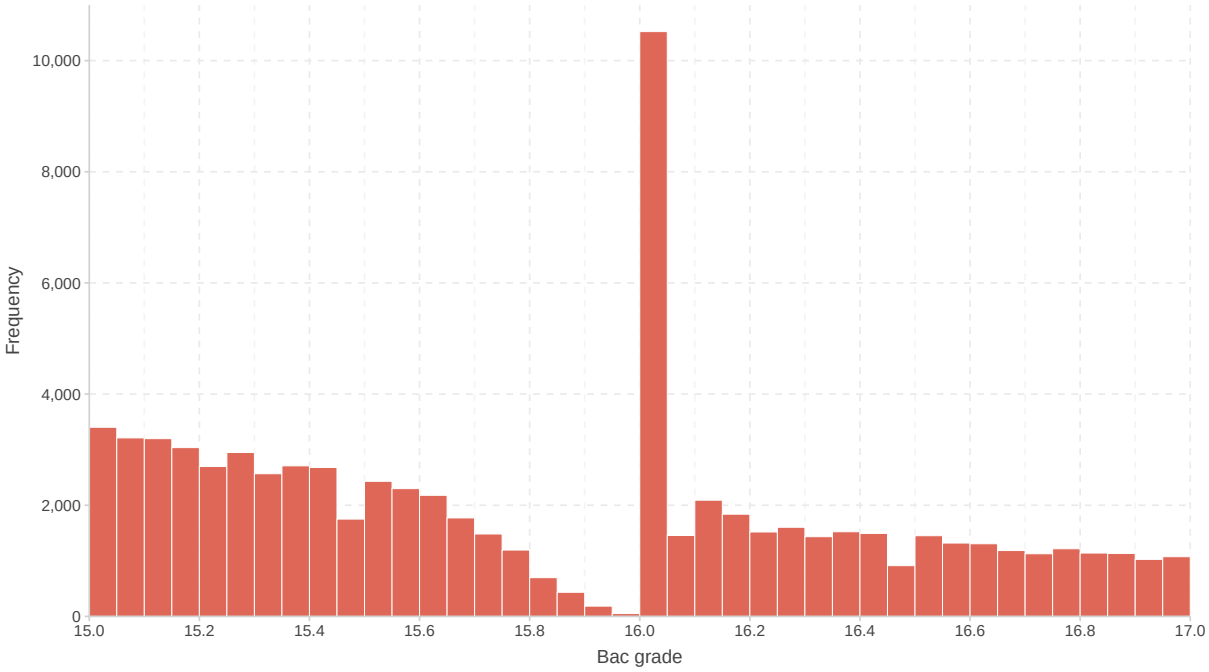
Figure A3: Distribution of Bac Grades, 2009-2014, All Students

(a) Grades: 8-20 **(b)** Grades: 15-17



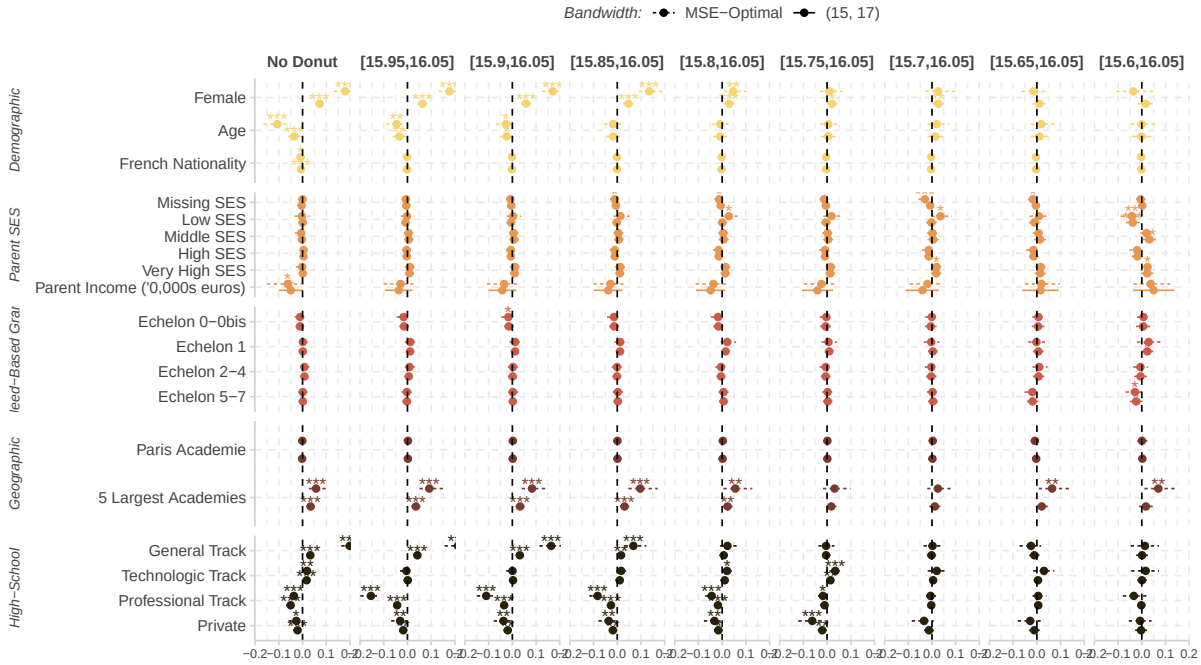
Notes: This figure shows the distribution of Bac grades of all students in the 2009-2014 high school graduating cohorts, in panel (a) between 8 and 20, and in panel (b) between 15 and 17. For panel (a) each bin represents the number of students who obtained a Bac grade in $[X, X + 0.1)$, while in panel (b) each bin represents the number of students who obtained a Bac grade in $[X, X + 0.05)$.

Figure A4: Distribution of Bac Grades, 2009-2014 - 16.05 Grades In $[16, 16.05)$ Bin



Notes: This figure shows the distribution of Bac grades between 15 and 17 for the 2009-2014 high school graduating cohorts. Each bin represents the number of students who obtained a Bac grade in $[X, X + 0.05)$, except for the $[16, 16.05]$ bar which includes students scoring at 16.05.

Figure A5: Discontinuity Estimates on Pre-Treatment Observable Characteristics for Different Donut Limits



Notes: This figure shows the estimated discontinuities in students' observable characteristics (on the vertical axis) around the aid for merit eligibility threshold (16/20 Bac grade) for different donut boundaries.

Figure A6: Discontinuity in Pre-Treatment Observable Characteristics

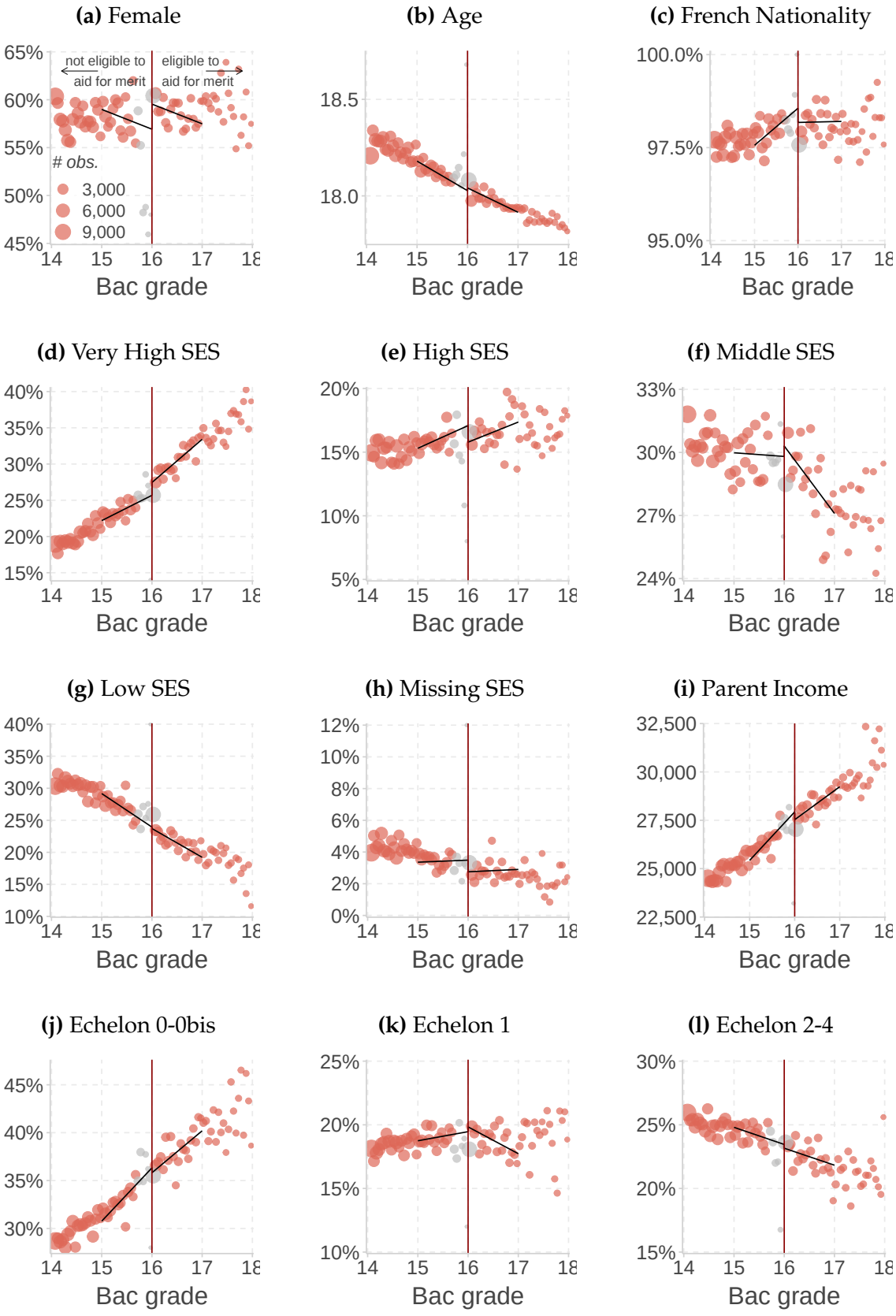
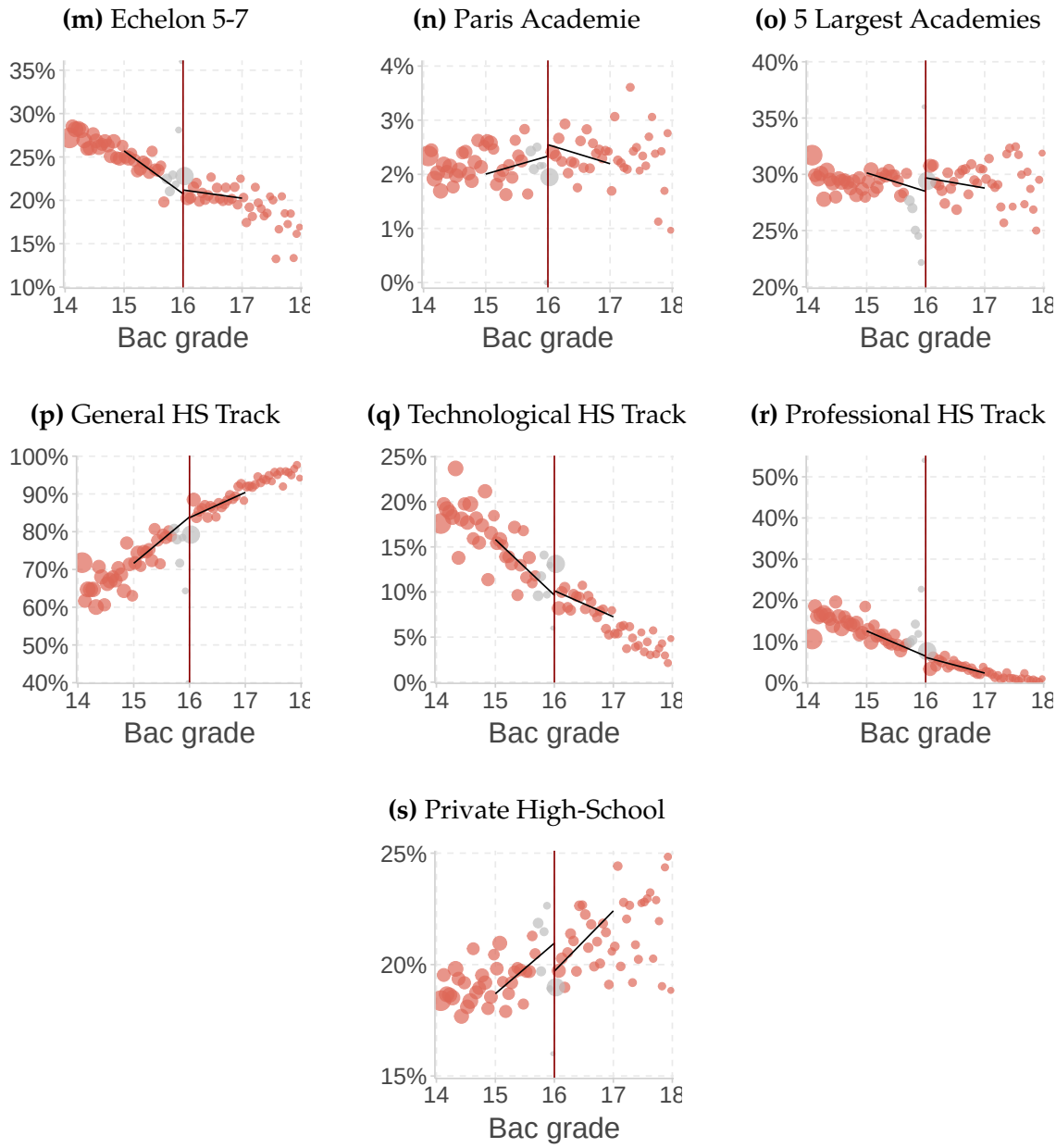
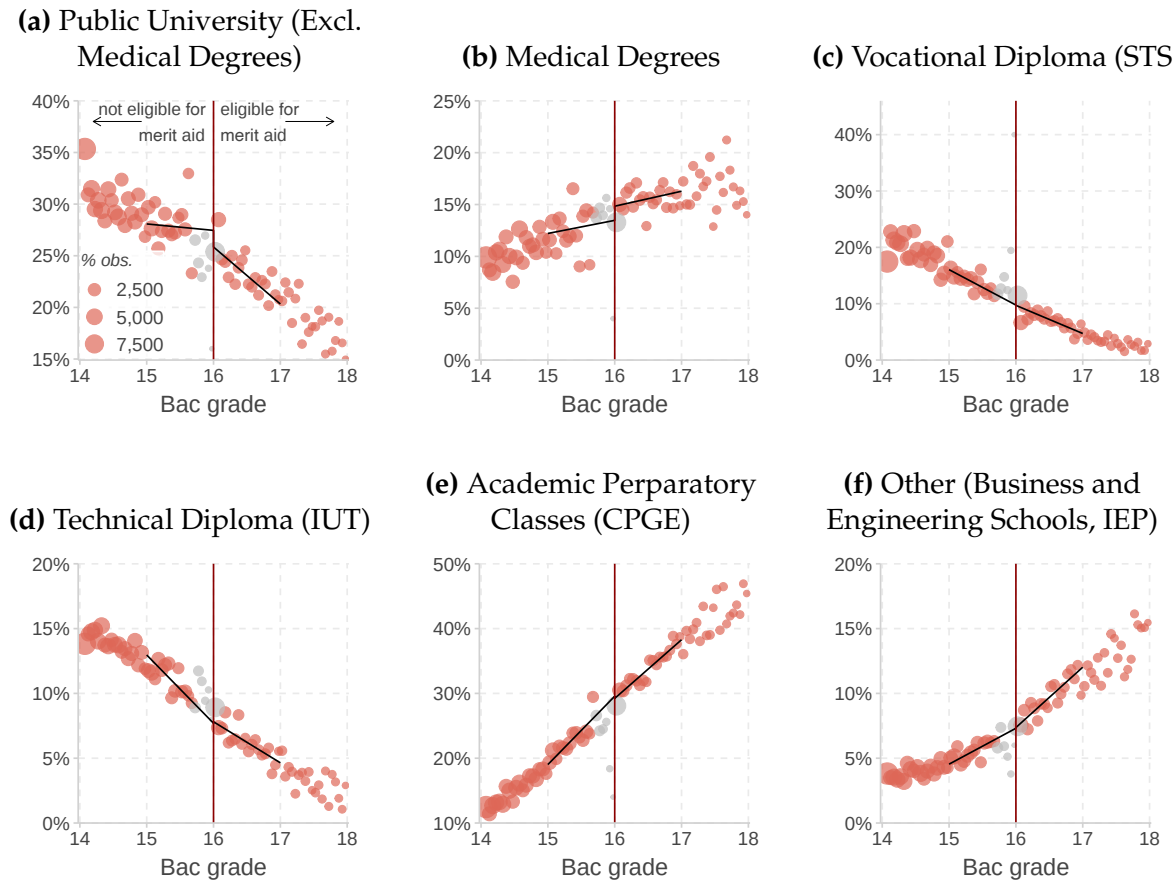


Figure A6: Discontinuity in Pre-Treatment Observable Characteristics *(continued)*



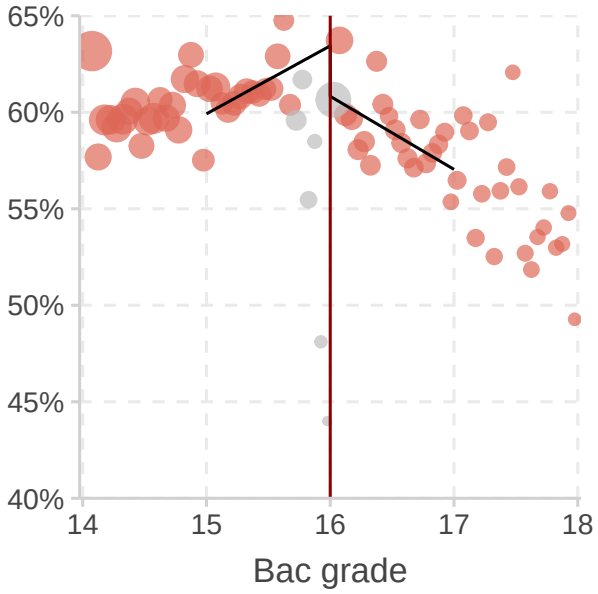
Notes: This figure shows non-parametric binned scatter plots of the relationship between various student characteristics and Bac grade, around the aid for merit eligibility threshold (16/20 Bac grade). The student characteristics are reported in the subfigure captions. HS stands for high school. The sample used corresponds to students who graduated from high school between 2009 and 2014, filed a financial aid application in the high school graduation year and were eligible to a need-based grant in that same year. Each red bubble corresponds to the average outcome value for students with Bac grade in $[X, X + 0.05)$, with the size of the bubble corresponding to the number of observations in that grade range. The grey bubbles represent the excluded donut observations, that is observations in $[15.7, 16.05]$. The black fitted lines correspond to local linear regressions with a triangular kernel on each side of the threshold, using the $(15, 17)$ bandwidth, and excluding donut observations. Note that each subfigure has its own y-axis scale.

Figure A7: Effect of Eligibility for the Merit Aid in the High School Graduation Year on Degree Type



Notes: This figure shows non-parametric binned scatter plots of the relationship between various main enrollment degree types and Bac grade, around the merit aid eligibility threshold (16/20 Bac grade). The degree types are reported in the subfigure captions. The sample used corresponds to students who graduated from high school between 2009 and 2014, filed a financial aid application in the high school graduation year and were eligible to a need-based grant in that same year. Each red bubble corresponds to the average outcome value for students with Bac grade in $[X, X + 0.05)$, with the size of the bubble corresponding to the number of observations in that grade range. The grey bubbles represent the excluded donut observations, that is observations in $[15.7, 16.05]$. The black fitted lines correspond to local linear regressions with a triangular kernel on each side of the threshold, using the $(15, 17)$ bandwidth, and excluding donut observations. Note that each subfigure has its own y-axis scale.

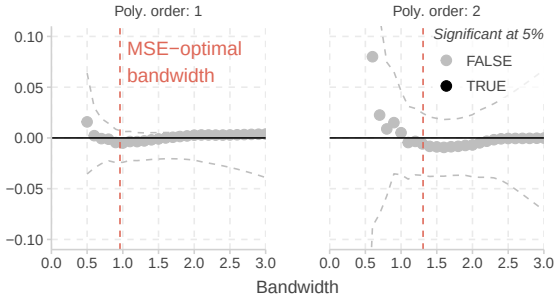
Figure A8: Effect of Eligibility for the Merit Aid on Obtaining a Degree



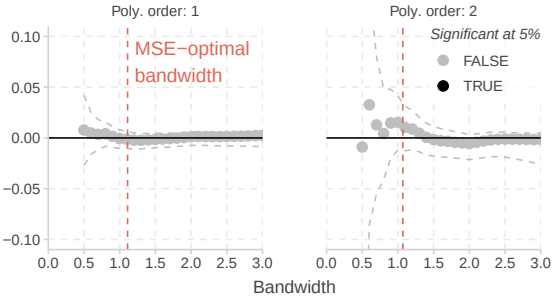
Notes: This figure shows non-parametric binned scatter plots of the relationship between the probability of obtaining a degree and Bac grade, around the merit aid eligibility threshold (16/20 Bac grade). The sample used corresponds to students who graduated from high school between 2009 and 2014, filed a financial aid application in the high school graduation year and were eligible to a need-based grant in that same year. Each red bubble corresponds to the average outcome value for students with Bac grade in [X, X + 0.05), with the size of the bubble corresponding to the number of observations in that grade range. The grey bubbles represent the excluded donut observations, that is observations in [15.7, 16.05]. The black fitted lines correspond to local linear regressions with a triangular kernel on each side of the threshold, using the (15, 17) bandwidth, and excluding donut observations.

Figure A9: Effect of Eligibility for the Merit Aid in the High School Graduation Year on Higher Education Outcomes by Bandwidth Size

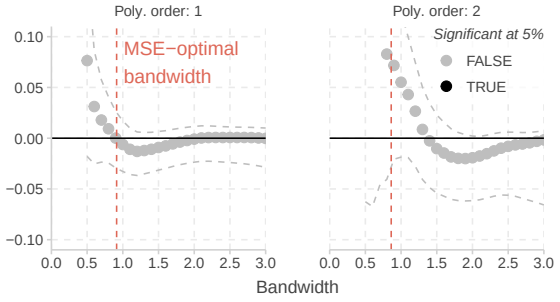
(a) Enrollment in HS Graduation Year



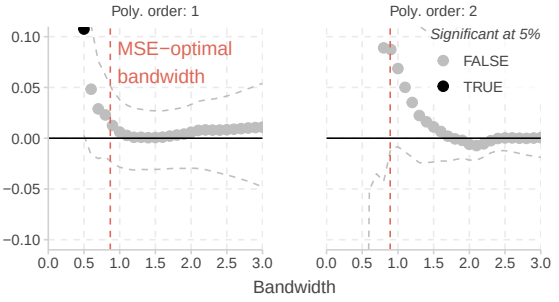
(b) Any Enrollment



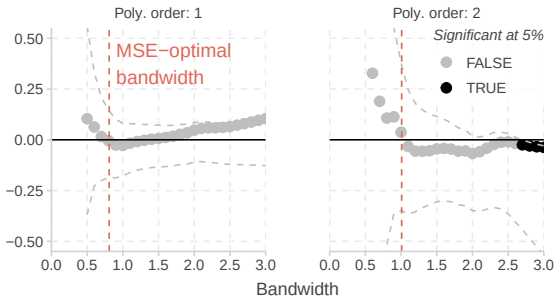
(c) Enrollment in 2nd Year in HS Grad. Year + 1



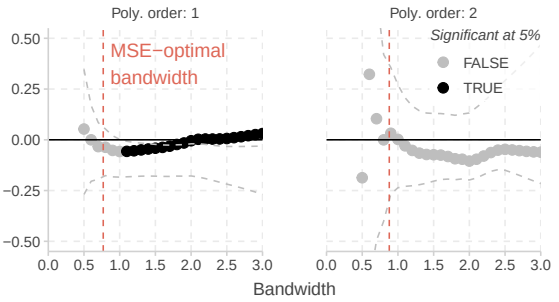
(d) Enrollment in 3rd Year in Hs Grad. Year + 2



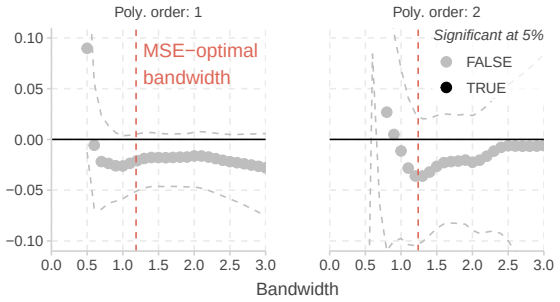
(e) # of Years in Higher Education



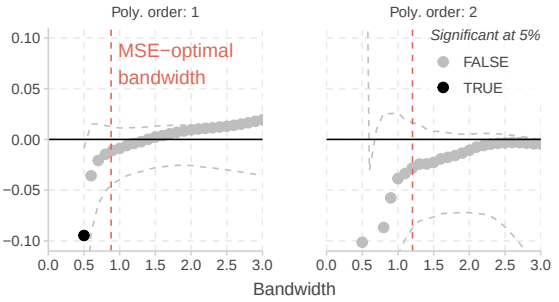
(f) Highest Level of Study Attained



(g) Obtaining a Degree



(h) Enrollment in a Selective Masters Degree



Notes: This figure shows estimates of the discontinuity in higher education outcomes at the merit aid eligibility threshold (16/20 Bac grade), excluding students with Bac grades in [15.7, 16.05], varying the bandwidth over which the estimates are obtained. The higher education outcomes are reported in the subfigure captions. HS stands for high school. The MSE-optimal bandwidth is denoted with the red dashed line. The dashed grey lines correspond to the robust 95% confidence intervals, where the inference bandwidth (b bandwidth in *rdrobust* terminology) over which these are estimated is fixed over the inference bandwidth of the MSE-optimal point estimate.

B Appendix Tables

Table A1: Combinations of Parent Income and Disadvantage Points for each Need-Based Grant Echelon for the 2009-10 Academic Year

Echelon # → Points ↓	0	1	2	3	4	5	6
0	32,440	22,060	17,830	15,750	13,710	11,710	7,390
1	36,040	24,510	19,810	17,500	15,230	13,010	8,210
2	39,650	26,960	21,790	19,250	16,760	14,310	9,030
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
16	90,110	61,280	49,530	43,750	38,080	32,530	20,530
17	93,720	63,730	51,510	45,500	39,610	33,830	21,350

Notes: See *Arrêté du 18 août 2009 fixant les plafonds de ressources relatifs aux bourses d'enseignement supérieur du ministère de l'enseignement supérieur et de la recherche pour l'année universitaire 2009-2010*.

Table A2: Need-Based Grants Annual Amounts by Echelon

Echelon	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Merit aid (% 2009-10)
0	Exemption from tuition and social security fees						-
0 bis	-	-	-	-	1,000	1,007	-
1	1,445	1,525	1,606	1,640	1,653	1,665	125
2	2,177	2,298	2,419	2,470	2,490	2,507	83
3	2,790	2,945	3,100	3,165	3,190	3,212	65
4	3,401	3,590	3,779	3,858	3,889	3,916	53
5	3,905	4,122	4,339	4,430	4,465	4,496	46
6	4,140	4,370	4,600	4,697	4,735	4,768	44
7	-	-	-	-	5,500	5,539	-

Notes: Amounts are not adjusted for inflation. All echelons above 0 are also exempt from tuition and social security fees. Students in the academic regions of Créteil, Paris and Versailles received an additional 153 euros annually. Merit aid amount = 1,800 euros per year.

Table A3: Number of Observations at Each Sample Restriction

Restriction ↓ / Bac cohort →	2009	2010	2011	2012	2013	2014	2009-2014	%
Raw number of obs.	652,109	648,555	690,726	753,742	712,160	745,818	4,203,110	100
+ Obtained the Bac in June session	550,483	544,209	581,087	626,263	608,782	646,121	3,556,945	84.63
+ Unique and non-missing student identifier	525,552	520,859	556,712	588,513	578,586	606,892	3,377,114	94.94
+ Obtained the Bac only once over the period	523,691	519,019	554,809	586,409	576,870	605,564	3,366,362	99.68
+ Bac grade not missing	522,916	518,505	554,404	586,026	576,479	605,384	3,363,714	99.92
+ Eligible to a need-based grant in Bac year	169,660	170,917	183,990	193,853	190,941	192,297	1,101,658	32.75

Notes: This table shows the number of observations for each Bac cohort and for the full sample (2009-2014) at each sample restriction mentioned in Section 3.2.

Table A4: Descriptive Statistics

	Full sample *Need-based grant eligibles in HS grad. year, 2009-2014 cohorts* (1)	Aid for merit eligibles in HS grad. year *Bac grade* ≥ 16 (2)	RD sample *Bac grade* $\in (15, 17)$ (3)
Panel A. Socio-demographic characteristics			
Female (%)	56.6	59.3	58.5
Age at Bac (mean)	18.5	18.0	18.1
Parents' taxable income (median; euros)	21,492	28,910	27,133
Very high SES (%)	14.4	31.9	26.2
High or middle SES (%)	43.2	44.6	45.6
Low SES (%)	37.3	20.8	25.0
Missing SES (%)	5.1	2.6	3.2
Panel B. Academic characteristics			
$\geq 16/20$ at Bac (%)	5.0	100.0	47.7
Bac grade (mean)	12.0	16.8	15.8
General high-school track (%)	59.5	88.9	80.4
Technologic high-school track (%)	26.5	7.5	11.6
Professional high-school track (%)	14.0	3.6	8.0
Private high-school (%)	15	21	20
Panel C. Financial aid			
Eligible to merit aid in Bac year	55,347	55,347	35,879
Eligible to merit aid in Bac year + 1	49,122	49,122	31,767
Eligible to merit aid in Bac year + 2	42,754	42,754	27,431
Echelon 0-0 bis (%)	23.1	39.1	35.1
Echelon 1 (%)	16.5	18.9	18.8
Echelon 2-4 (%)	25.9	22.0	23.5
Echelon 5-7 (%)	34.5	20.0	22.6
Panel D. Higher education outcomes			
Enrolled in Bac year (%)	90.4	95.7	94.5
Among enrolled:			
Public university (%)	53.1	39.0	42.1
Vocational degree (STS) (%)	24.6	6.5	11.8
Technical degree (IUT) (%)	12.8	5.7	9.6
Academic preparatory classes (CPGE) (%)	6.8	37.6	28.9
Other institutions (%)	2.7	11.3	7.6
Enrolled in 2nd year in Bac year + 1 (%)	49.4	78.5	73.8
Enrolled in 3rd year in Bac year + 2 (%)	28.2	66.3	58.3
Obtained a degree (2009-2019) (%)	45.9	58.1	60.3
Observations	1,101,658	55,347	75,188

Notes: This table shows descriptive statistics for three samples: (1) the full sample, i.e., students from the 2009-14 high school graduating cohorts who are eligible to a need-based grant in their high school graduation year, (2) the aid for merit eligibles in their that same year, i.e., students from the full sample who obtained at least 16/20 at the Bac, and (3) the RD sample, i.e., students from the full sample who obtained between 15 and 17 at the Bac. HS grad. stands for high school graduation. Since 13% of students in the full sample have multiple enrollments in their high school graduation year, I follow Bonneau et al. (2021)'s ranking across enrollments to assign them a main enrollment. This ranking is based on knowledge of the French higher education system.

Table A5: Effects of Eligibility for the Merit Aid in the High School Graduation Year on Main Outcomes - Different Donut Limits

	MSE-Optimal Bandwidth			(15, 17) Bandwidth		
	Baseline Donut [15.7, 16.05]	[15.75, 16.05]	[15.65, 16.05]	Baseline Donut [15.7, 16.05]	[15.75, 16.05]	[15.65, 16.05]
	(1)	(2)	(3)	(4)	(5)	(6)
Enrollment in HS Graduation Year	-0.005	0.002	-0.011*	-0.005	0.001	-0.009
	[-0.02, 0.01]	[-0.01, 0.01]	[-0.03, 0]	[-0.02, 0.01]	[-0.01, 0.01]	[-0.02, 0]
Enrollment in 2nd Year in HS Graduation Year + 1	-0.001	0.003	-0.019	-0.006	0.001	-0.023*
	[-0.04, 0.02]	[-0.03, 0.02]	[-0.06, 0.01]	[-0.03, 0.02]	[-0.02, 0.02]	[-0.05, 0]
Enrollment in 3rd Year in HS Graduation Year + 2	0.015	0.023	0.003	0.006	0.01	-0.006
	[-0.02, 0.05]	[-0.01, 0.06]	[-0.05, 0.04]	[-0.02, 0.03]	[-0.01, 0.03]	[-0.03, 0.02]
Number of Years in Higher Education	-0.007	0.038	-0.02	-0.028	0.018	-0.037
	[-0.21, 0.15]	[-0.13, 0.18]	[-0.26, 0.16]	[-0.14, 0.09]	[-0.09, 0.13]	[-0.16, 0.09]
Highest Level of Study Attained	-0.038	0.022	-0.069	-0.058	-0.01	-0.069
	[-0.18, 0.07]	[-0.09, 0.13]	[-0.25, 0.07]	[-0.13, 0.02]	[-0.08, 0.06]	[-0.15, 0.01]
Obtain a Degree	-0.022	-0.013	-0.032**	-0.026**	-0.012	-0.042***
	[-0.05, 0]	[-0.04, 0.01]	[-0.06, 0]	[-0.05, 0]	[-0.04, 0.01]	[-0.07, -0.01]
Enrollment in a Masters Degree	-0.011	-0.006	0.004	-0.009	-0.005	0.004
	[-0.05, 0.01]	[-0.04, 0.02]	[-0.03, 0.03]	[-0.03, 0.01]	[-0.03, 0.02]	[-0.02, 0.03]

Notes: This table reports estimates of the discontinuity in the main outcomes at the aid for merit eligibility threshold (16/20 Bac grade), for different donut limits. In particular, estimates for three donut limits are shown: the baseline donut ([15.7, 16.05]), a slightly narrower lower limit [15.75, 16.05], and a slightly wider lower limit [15.65, 16.05]. The outcomes are reported in the first column's rows. HS stands for high school. Estimates are reported for both the MSE-optimal (col. (1)-(3)) and the (15, 17) (col. (4)-(6)) bandwidths. The MSE-optimal bandwidth, obtained using the *rdrobust* R package, varies across each outcome. For MSE-optimal bandwidth estimates, the ranges in brackets correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for (15, 17) bandwidth estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A6: Discontnuity in Predicted Outcomes at the Merit Aid Eligibility Threshold

	No Donut		Donut [15.7, 16.05]	
	Bandwidth:			
	MSE-Optimal	(15, 17)	MSE-Optimal	(15, 17)
	(1)	(2)	(3)	(4)
Predicted enrollment in high school graduation year (adj. R2 = 0.04)	0.004***	0.006***	0.002	0
	[0, 0.01]	[0, 0.01]	[0, 0.01]	[0, 0]
Predicted any enrollment (adj. R2 = 0.04)	0.012***	0.005***	0.001	0
	[0.01, 0.01]	[0, 0.01]	[0, 0]	[0, 0]
Predicted persistence in 2nd year in Hs grad. year + 1 (adj. R2 = 0.04)	0.011***	0.003**	-0.004	-0.002
	[0.01, 0.02]	[0, 0.01]	[-0.01, 0]	[-0.01, 0]
Predicted persistence in 2nd Year (adj. R2 = 0.09)	0.056***	0.011***	-0.001	-0.002
	[0.04, 0.07]	[0.01, 0.02]	[-0.01, 0.01]	[-0.01, 0]
Predicted persistence in 3rd year in HS grad. year + 2 (adj. R2 = 0.11)	0.052***	0.009***	-0.002	-0.001
	[0.04, 0.07]	[0, 0.01]	[-0.01, 0.01]	[-0.01, 0]
Predicted persistence in 3rd year (adj. R2 = 0.22)	0.105***	0.018***	-0.001	-0.002
	[0.09, 0.13]	[0.01, 0.03]	[-0.02, 0.01]	[-0.01, 0.01]
Predicted number of years in HE (adj. R2 = 0.23)	0.487***	0.084***	0.002	-0.007
	[0.39, 0.61]	[0.05, 0.12]	[-0.09, 0.08]	[-0.05, 0.04]
Predicted highest level of study attained (adj. R2 = 0.25)	0.364***	0.063***	-0.005	-0.007
	[0.29, 0.46]	[0.04, 0.09]	[-0.07, 0.05]	[-0.04, 0.03]
Predicted degree obtention (adj. R2 = 0.16)	0.108***	0.019***	0	-0.001
	[0.09, 0.13]	[0.01, 0.03]	[-0.01, 0.01]	[-0.01, 0.01]
Predicted enrollment in masters degree (adj. R2 = 0.2)	0.084***	0.014***	-0.001	-0.001
	[0.07, 0.11]	[0.01, 0.02]	[-0.02, 0.01]	[-0.01, 0.01]
Predicted enrollment in selective masters degree (adj. R2 = 0.06)	0.003	-0.001	-0.003	-0.002
	[0, 0.01]	[0, 0]	[-0.01, 0]	[0, 0]

Notes: This table reports estimates of the discontinuity in predicted outcomes at the merit aid eligibility threshold (16/20 Bac grade). Each predicted outcome is reported in the first column's rows, with the prediction regression adjusted R^2 in parenthesis. HS grad. stands for high school graduation. The predictors used for the predictions are: female dummy, age, French nationality dummy, SES (5 categories), parent income, need-based grant echelon (4 cat.), education academie (Paris, 5 largest), high school track (3 categories) and private high school dummy (i.e., students' characteristics in Table 1). The prediction model includes no interactions and is estimated by OLS. I report full sample estimates ("No Donut") and estimates obtained when excluding students with Bac grades in [15.7, 16.05] ("Donut [15.7, 16.05]"). Moreover, estimates for two different bandwidths are reported: the MSE-optimal and (15, 17) bandwidths. The MSE-optimal bandwidth, obtained using the *rdrobust* R package, varies across each outcome. For MSE-optimal bandwidth estimates, the ranges in brackets correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for (15, 17) bandwidth estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A7: Placebo Analysis using $(15, 17)$ Bandwidth

	Enrollment in High School Graduation Year	Enrollment in 2nd Year in HS Grad. Year + 1	Enrollment in 3rd Year in HS Grad. Year + 2	Number of Years in HE	Highest Level of Study Attained	Obtaining a Degree
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Grade 15						
No donut	0.007**	0.004	0.008	0.047*	0.04**	0.001
	[0, 0.01]	[-0.01, 0.02]	[0, 0.02]	[-0.01, 0.1]	[0, 0.08]	[-0.01, 0.01]
Donut [14.7, 15.05]	-0.003	0	0.008	0.045	0.051	0.003
	[-0.01, 0.01]	[-0.02, 0.02]	[-0.01, 0.03]	[-0.04, 0.13]	[-0.01, 0.11]	[-0.02, 0.02]
Panel B. Grade 14						
No donut	0.012***	0.025***	0.051***	0.289***	0.245***	0.056***
	[0.01, 0.02]	[0.01, 0.03]	[0.04, 0.06]	[0.24, 0.34]	[0.21, 0.28]	[0.05, 0.07]
Donut [13.7, 14.05]	0.003	0.001	0.002	0.049	0.05*	0.001
	[-0.01, 0.01]	[-0.01, 0.02]	[-0.01, 0.02]	[-0.02, 0.12]	[0, 0.1]	[-0.01, 0.02]
Panel C. Grade 16 for non-eligibles to need-based grants						
No donut	0.027***	0.029***	0.035***	0.183***	0.164***	0.041***
	[0.02, 0.04]	[0.02, 0.04]	[0.02, 0.05]	[0.11, 0.25]	[0.11, 0.21]	[0.03, 0.05]
Donut [15.7, 16.05]	-0.013*	-0.005	-0.001	-0.053	-0.057	-0.001
	[-0.03, 0]	[-0.02, 0.01]	[-0.02, 0.02]	[-0.15, 0.05]	[-0.13, 0.01]	[-0.02, 0.02]

Notes: This table reports estimates of the discontinuity in higher education outcomes, using the $(15, 17)$ bandwidth, for three placebo grade thresholds: grade 15 (panel A), grade 14 (Panel B), and grade 16 for students not eligible to a need-based grant (panel C). Each higher education outcome is reported in the column headers. The grade 15 and grade 14 placebos are estimated over the the sample of students who graduated from high school between 2009 and 2014, filed a financial aid application in their high school graduation year and were eligible to a need-based grant in that same year. The grade 16 placebo is estimates on the sample of students from the same cohorts who were not eligible to a need-based grant in their high school graduation year. In all three cases, students on both sides of placebo grade threshold are not eligible to different amounts of financial aid. I report full sample estimates ("No Donut") and estimates obtained when excluding students with Bac grades in $[\text{placebo} - 0.3, \text{placebo} + 0.05]$ ("Donut [...]"). Statistical significance is computed based on the robust p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A8: Effects of Eligibility to the Merit Aid on Enrollment in High School Graduation Year by Student Awareness Proxy

		Bandwidth:			
	Mean *[15.5, 15.7)*	MSE-Optimal		(15, 17)	
	(1)	(2)	(3)	(4)	(5)
Panel A: High School Cohort					
2009	0.94	0.003	0.002	-0.001	0.001
		[-0.03, 0.03]	[-0.03, 0.04]	[-0.03, 0.03]	[-0.03, 0.03]
2010	0.94	0.004	0.003	0.002	0.002
		[-0.05, 0.05]	[-0.05, 0.05]	[-0.03, 0.04]	[-0.03, 0.03]
2011	0.94	-0.004	0.003	0.002	0.006
		[-0.05, 0.04]	[-0.04, 0.04]	[-0.03, 0.03]	[-0.02, 0.04]
2012	0.94	-0.007	-0.01	-0.011	-0.014
		[-0.05, 0.03]	[-0.06, 0.04]	[-0.04, 0.02]	[-0.04, 0.01]
2013	0.95	0.002	0.003	0.002	0.003
		[-0.03, 0.03]	[-0.02, 0.03]	[-0.02, 0.03]	[-0.02, 0.03]
2014	0.95	-0.02	-0.017	-0.018	-0.019
		[-0.06, 0.01]	[-0.05, 0.01]	[-0.04, 0.01]	[-0.04, 0.01]
Panel B: Number of Recipients in Same High School in Previous Cohort					
0-2 (33.7%)	0.92	0.01	0.009	0.01	0.009
		[-0.01, 0.03]	[-0.01, 0.03]	[-0.02, 0.04]	[-0.02, 0.03]
3-5 (28.7%)	0.96	-0.009	-0.005	-0.009	-0.009
		[-0.04, 0.02]	[-0.03, 0.02]	[-0.03, 0.01]	[-0.03, 0.01]
6-9 (22.3%)	0.96	0.02	0.019	-0.003	-0.003
		[-0.03, 0.06]	[-0.03, 0.07]	[-0.03, 0.02]	[-0.03, 0.02]
10+ (15.2%)	0.96	-0.03*	-0.028	-0.029**	-0.029**
		[-0.07, 0]	[-0.07, 0.01]	[-0.06, 0]	[-0.06, 0]
Panel C: Number of Other Eligible Students in Same High School in Same Cohort					
0-2 (27.3%)	0.95	-0.044**	-0.025	-0.037***	-0.018
		[-0.09, -0.01]	[-0.07, 0.01]	[-0.06, -0.01]	[-0.04, 0.01]
3-5 (27.1%)	0.96	-0.001	-0.003	-0.001	-0.003
		[-0.03, 0.03]	[-0.03, 0.02]	[-0.02, 0.02]	[-0.02, 0.02]
6-9 (23.7%)	0.95	-0.002	0	-0.005	-0.005
		[-0.05, 0.04]	[-0.05, 0.04]	[-0.03, 0.02]	[-0.03, 0.02]
10+ (21.8%)	0.95	-0.006	-0.004	0.002	0.003
		[-0.03, 0.01]	[-0.03, 0.02]	[-0.02, 0.03]	[-0.02, 0.03]
Controls			✓		✓

Notes: This table reports estimates of the discontinuity in enrollment in the high school graduation year at the merit aid eligibility threshold (16/20 Bac grade), for subsamples of students, excluding students with Bac grades in $[15.7, 16.05]$. Panel A reports estimates for each high school cohort separately. Panel B reports estimates by students' number of aid for merit recipients from the same high school in the previous graduating cohort. Panel C reports estimates by students' number of aid for merit eligibles in the same high school in the same cohort. Estimates for two different bandwidths are reported: the MSE-optimal and $(15, 17)$ bandwidths. The MSE-optimal bandwidth, obtained using the *rdrobust* R package, varies across each outcome. For MSE-optimal bandwidth estimates, the ranges in brackets correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. Control variables are gender, age, SES, Bac track, and high school cohort. Column (1) reports the mean of the row's subsample enrollment in the high school graduation year for students with Bac grade in $[15.5, 15.7)$. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A9: Effects of Merit Aid for Students Receiving Lower Amounts of Need-Based Grant than Merit Aid - Parent Income Within 5% of Parent Income Threshold (2009-2012)

	Enrollment in High School Graduation Year	Enrollment in 2nd Year in HS Grad. Year + 1	Enrollment in 3rd Year in HS Grad. Year + 2	Number of Years in HE	Highest Level of Study Attained	Obtaining Degree
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Echelon 0						
Mean [15.5, 15.7)	0.92	0.7	0.58	5.51	4.47	0.64
MSE-optimal bandwidth	0.055	0.04	0.074	-0.645	-0.266	0.055
	[-0.04, 0.16]	[-0.17, 0.2]	[-0.14, 0.26]	[-2.04, 0.68]	[-1.01, 0.46]	[-0.15, 0.26]
(15, 17) bandwidth	0.056	0.035	0.075	-0.33	-0.224	0.054
	[-0.02, 0.13]	[-0.11, 0.18]	[-0.09, 0.24]	[-1.09, 0.42]	[-0.68, 0.23]	[-0.11, 0.22]
Panel B. Echelons 1						
Mean [15.5, 15.7)	0.94	0.76	0.59	5.38	4.37	0.61
MSE-optimal bandwidth	0.004	0.076	0.209**	0.139	0.244	0.065
	[-0.07, 0.08]	[-0.14, 0.33]	[0.03, 0.44]	[-0.97, 1.13]	[-0.36, 0.79]	[-0.08, 0.25]
(15, 17) bandwidth	0.015	0.067	0.145**	0.038	0.181	0.078
	[-0.06, 0.09]	[-0.06, 0.2]	[0, 0.29]	[-0.67, 0.75]	[-0.25, 0.61]	[-0.07, 0.23]

Notes: This table reports estimates of the discontinuity in higher education outcomes at the aid for merit eligibility threshold (16/20 Bac grade), excluding students with Bac grades in [15.7, 16.05] for the exact same specification as Table 6 except the sample is restricted to students whose parent income is within 5% of the echelon 1 income threshold in 2009-2012. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

C Detailed Regression Tables

Table A10: Effect of Eligibility to the Merit Aid in the High School Graduation Year on Enrollment in the High School Graduation Year

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.004	-0.005	-0.003	0.009	-0.006	-0.009
Robust 95% CI	[0, 0.01]	[-0.02, 0.01]	[-0.02, 0.01]	[0, 0.02]	[-0.03, 0.01]	[-0.03, 0.01]
Robust p-value	0.361	0.294	0.539	0.164	0.433	0.261
# obs. left	58,463	33,599	25,535	77,108	56,892	77,447
# obs. right	40,919	24,826	22,272	44,193	30,778	34,343
Bandwidth	(14.73, 17.27)	(15.04, 16.96)	(15.17, 16.83)	(14.48, 17.52)	(14.69, 17.31)	(14.44, 17.56)
Panel B: (15, 17) bandwidth						
Eligibility	0.007	-0.005	-0.005	0.026***	0.005	0.002
Conventional 95% CI	[0, 0.02]	[-0.02, 0.01]	[-0.02, 0.01]	[0.01, 0.04]	[-0.03, 0.04]	[-0.03, 0.04]
Conventional p-value	0.136	0.402	0.410	0.007	0.785	0.934
# obs. left	39,274	35,234	35,234	39,274	35,234	35,234
# obs. right	35,879	25,357	25,357	35,879	25,357	25,357
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	0.944	0.944	0.944	0.944	0.944	0.944

Notes: This table reports estimates of the discontinuity in enrollment in the high school graduation year at the merit aid eligibility threshold (16/20 Bac grade). Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). For example, column (1) indicates that, using the MSE-optimal bandwidth and including all students from the full sample, the estimated discontinuity in enrollment in Bac year around 16/20 is 0.4 percentage points, with the share of such students enrolled among students with Bac grade in $[15.5, 15.7)$ being 94.4%. This discontinuity estimate is 0.7 percentage points when using the $(15, 17)$ bandwidth. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A11: Effect of Eligibility to the Merit Aid in the High School Graduation Year on Enrollment at Least Once

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.002	-0.001	-0.002	0.018***	0.011	0.007
Robust 95% CI	[0, 0.01]	[-0.01, 0.01]	[-0.01, 0.01]	[0.01, 0.03]	[-0.01, 0.04]	[-0.01, 0.03]
Robust p-value	0.388	0.581	0.589	0.006	0.299	0.416
# obs. left	60,206	43,505	57,326	44,392	40,247	50,907
# obs. right	41,228	27,783	31,048	37,676	26,825	29,561
Bandwidth	(14.71, 17.29)	(14.89, 17.11)	(14.68, 17.32)	(14.92, 17.08)	(14.93, 17.07)	(14.77, 17.23)
Panel B: (15, 17) bandwidth						
Eligibility	0.006*	-0.001	0	0.02***	0.015	0.013
Conventional 95% CI	[0, 0.01]	[-0.01, 0.01]	[-0.01, 0.01]	[0.01, 0.03]	[-0.01, 0.04]	[-0.01, 0.04]
Conventional p-value	0.078	0.887	0.936	0.006	0.249	0.313
# obs. left	39,274	35,234	35,234	39,274	35,234	35,234
# obs. right	35,879	25,357	25,357	35,879	25,357	25,357
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	0.973	0.973	0.973	0.973	0.973	0.973

Notes: This table reports estimates of the discontinuity in enrollment at least once at the merit aid eligibility threshold (16/20 Bac grade). Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A12: Effect of Eligibility to the Merit Aid in the High School Graduation Year on Enrollment in 2nd Year in High School Graduation Year + 1

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.001	-0.001	-0.011	0.052***	0.076	0.073
Robust 95% CI	[-0.02, 0.02]	[-0.04, 0.02]	[-0.03, 0.01]	[0.02, 0.1]	[-0.02, 0.2]	[-0.03, 0.2]
Robust p-value	0.854	0.682	0.198	0.005	0.107	0.136
# obs. left	51,813	30,331	58,868	33,034	27,203	26,042
# obs. right	39,597	23,948	31,161	34,275	23,175	22,620
Bandwidth	(14.82, 17.18)	(15.09, 16.91)	(14.66, 17.34)	(15.1, 16.9)	(15.14, 16.86)	(15.16, 16.84)
Panel B: (15, 17) bandwidth						
Eligibility	0.009	-0.006	-0.005	0.047***	0.055	0.056
Conventional 95% CI	[-0.01, 0.03]	[-0.03, 0.02]	[-0.03, 0.02]	[0.01, 0.08]	[-0.02, 0.13]	[-0.01, 0.13]
Conventional p-value	0.267	0.593	0.668	0.005	0.123	0.114
# obs. left	39,274	35,234	35,234	39,274	35,234	35,234
# obs. right	35,879	25,357	25,357	35,879	25,357	25,357
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	0.726	0.726	0.726	0.726	0.726	0.726

Notes: This table reports estimates of the discontinuity in enrollment in 2nd year in high school graduation year + 1 at the merit aid eligibility threshold (16/20 Bac grade). Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A13: Effect of Eligibility to the Merit Aid in the High School Graduation Year on Enrollment in 2nd Year at Least Once

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.001	-0.018	-0.018*	0.026**	-0.025	-0.025
Robust 95% CI	[-0.01, 0.01]	[-0.05, 0]	[-0.05, 0]	[0.01, 0.05]	[-0.07, 0.03]	[-0.07, 0.02]
Robust p-value	0.787	0.101	0.093	0.010	0.404	0.300
# obs. left	47,870	20,012	20,807	47,545	36,991	40,352
# obs. right	38,342	20,238	20,263	38,305	26,327	27,154
Bandwidth	(14.88, 17.12)	(15.27, 16.73)	(15.25, 16.75)	(14.88, 17.12)	(14.98, 17.02)	(14.92, 17.08)
Panel B: (15, 17) bandwidth						
Eligibility	0.004	-0.016**	-0.015**	0.032***	-0.023	-0.026
Conventional 95% CI	[-0.01, 0.02]	[-0.03, 0]	[-0.03, 0]	[0.01, 0.06]	[-0.07, 0.02]	[-0.07, 0.02]
Conventional p-value	0.459	0.036	0.046	0.007	0.332	0.266
# obs. left	39,274	35,234	35,234	39,274	35,234	35,234
# obs. right	35,879	25,357	25,357	35,879	25,357	25,357
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	0.905	0.905	0.905	0.905	0.905	0.905

Notes: This table reports estimates of the discontinuity in enrollment in 2nd year at least once at the merit aid eligibility threshold (16/20 Bac grade). Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A14: Effect of Eligibility to the Merit Aid in the High School Graduation Year on Enrollment in 3rd Year in High School Graduation Year + 2

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.021**	0.015	0.01	0.101***	0.088*	0.066
Robust 95% CI	[0.01, 0.04]	[-0.02, 0.05]	[-0.02, 0.04]	[0.07, 0.15]	[-0.01, 0.21]	[-0.02, 0.17]
Robust p-value	0.011	0.442	0.566	0.000	0.077	0.110
# obs. left	54,947	27,203	30,924	39,216	28,994	33,599
# obs. right	40,083	23,175	24,289	35,877	23,753	24,826
Bandwidth	(14.78, 17.22)	(15.13, 16.87)	(15.08, 16.92)	(15.01, 16.99)	(15.11, 16.89)	(15.04, 16.96)
Panel B: (15, 17) bandwidth						
Eligibility	0.033***	0.006	0.006	0.1***	0.069*	0.061
Conventional 95% CI	[0.01, 0.05]	[-0.02, 0.03]	[-0.02, 0.03]	[0.06, 0.14]	[-0.01, 0.15]	[-0.01, 0.14]
Conventional p-value	0.000	0.639	0.639	0.000	0.084	0.115
# obs. left	39,274	35,234	35,234	39,274	35,234	35,234
# obs. right	35,879	25,357	25,357	35,879	25,357	25,357
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	0.563	0.563	0.563	0.563	0.563	0.563

Notes: This table reports estimates of the discontinuity in enrollment in 3rd year in high school graduation year + 2 at the merit aid eligibility threshold (16/20 Bac grade). Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A15: Effect of Eligibility to the Merit Aid in the High School Graduation Year on Enrollment in 3rd Year at Least Once

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.02***	-0.013	-0.012	0.04***	-0.019	-0.012
Robust 95% CI	[0.01, 0.04]	[-0.03, 0.01]	[-0.03, 0.01]	[0.02, 0.07]	[-0.07, 0.02]	[-0.04, 0.01]
Robust p-value	0.003	0.144	0.220	0.000	0.290	0.315
# obs. left	42,906	45,498	42,043	72,766	52,358	79,912
# obs. right	37,331	28,281	27,307	43,499	29,894	34,670
Bandwidth	(14.94, 17.06)	(14.86, 17.14)	(14.9, 17.1)	(14.55, 17.45)	(14.75, 17.25)	(14.41, 17.59)
Panel B: (15, 17) bandwidth						
Eligibility	0.022***	-0.014	-0.014	0.086***	-0.007	-0.016
Conventional 95% CI	[0.01, 0.04]	[-0.03, 0.01]	[-0.03, 0]	[0.06, 0.12]	[-0.07, 0.05]	[-0.07, 0.04]
Conventional p-value	0.002	0.146	0.129	0.000	0.811	0.560
# obs. left	39,274	35,234	35,234	39,274	35,234	35,234
# obs. right	35,879	25,357	25,357	35,879	25,357	25,357
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	0.816	0.816	0.816	0.816	0.816	0.816

Notes: This table reports estimates of the discontinuity in enrollment in 3rd year at least once at the merit aid eligibility threshold (16/20 Bac grade). Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A16: Effect of Eligibility to the Merit Aid in the High School Graduation Year on the Number of Years Enrolled in Higher Education

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.084**	-0.007	0.008	0.241***	0.022	-0.07
Robust 95% CI	[0.01, 0.17]	[-0.21, 0.15]	[-0.09, 0.11]	[0.13, 0.4]	[-0.37, 0.43]	[-0.33, 0.15]
Robust p-value	0.022	0.723	0.890	0.000	0.886	0.448
# obs. left	62,376	24,015	53,272	63,390	36,851	51,424
# obs. right	41,624	21,613	30,001	41,921	25,853	29,808
Bandwidth	(14.67, 17.33)	(15.19, 16.81)	(14.75, 17.25)	(14.65, 17.35)	(14.99, 17.01)	(14.76, 17.24)
Panel B: (15, 17) bandwidth						
Eligibility	0.133***	-0.028	-0.019	0.433***	0.037	0.001
Conventional 95% CI	[0.05, 0.22]	[-0.14, 0.09]	[-0.12, 0.08]	[0.27, 0.6]	[-0.31, 0.39]	[-0.31, 0.31]
Conventional p-value	0.002	0.632	0.723	0.000	0.835	0.995
# obs. left	39,274	35,234	35,234	39,274	35,234	35,234
# obs. right	35,879	25,357	25,357	35,879	25,357	25,357
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	5.23	5.23	5.23	5.23	5.23	5.23

Notes: This table reports estimates of the discontinuity in the number of years enrolled in higher education at the merit aid eligibility threshold (16/20 Bac grade). Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A17: Effect of Eligibility to the Merit Aid in the High School Graduation Year on the Highest Level of Study Attained (in Years)

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.168***	-0.038	-0.05	0.324***	0.023	-0.028
Robust 95% CI	[0.1, 0.26]	[-0.18, 0.07]	[-0.15, 0.03]	[0.23, 0.46]	[-0.33, 0.39]	[-0.28, 0.22]
Robust p-value	0.000	0.402	0.165	0.000	0.860	0.806
# obs. left	26,375	21,646	28,994	41,031	28,440	35,176
# obs. right	31,511	20,890	23,753	36,849	23,236	25,355
Bandwidth	(15.22, 16.78)	(15.23, 16.77)	(15.1, 16.9)	(14.98, 17.02)	(15.12, 16.88)	(15.02, 16.98)
Panel B: (15, 17) bandwidth						
Eligibility	0.087***	-0.058	-0.053	0.339***	0.002	-0.032
Conventional 95% CI	[0.03, 0.14]	[-0.13, 0.02]	[-0.12, 0.01]	[0.23, 0.45]	[-0.23, 0.24]	[-0.24, 0.17]
Conventional p-value	0.002	0.136	0.124	0.000	0.987	0.764
# obs. left	39,274	35,234	35,234	39,274	35,234	35,234
# obs. right	35,879	25,357	25,357	35,879	25,357	25,357
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	4.287	4.287	4.287	4.287	4.287	4.287

Notes: This table reports estimates of the discontinuity in the highest level of study attained at the merit aid eligibility threshold (16/20 Bac grade). Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A18: Effect of Eligibility to Merit Aid in the High School Graduation Year on Degree Quality in High School Graduation Year

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.068	-0.012	0.023	0.221***	-0.031	-0.003
Robust 95% CI	[-0.02, 0.18]	[-0.15, 0.08]	[-0.09, 0.1]	[0.09, 0.4]	[-0.18, 0.1]	[-0.12, 0.11]
Robust p-value	0.101	0.531	0.894	0.002	0.571	0.964
# obs. left	21,069	26,671	32,950	26,629	75,120	87,033
# obs. right	28,357	22,174	24,210	31,025	33,352	34,743
Bandwidth	(15.29, 16.71)	(15.12, 16.88)	(15.02, 16.98)	(15.18, 16.82)	(14.4, 17.6)	(14.25, 17.75)
Panel B: (15, 17) bandwidth						
Eligibility	0.02	0.001	0.023	0.126**	-0.138	-0.091
Conventional 95% CI	[-0.04, 0.08]	[-0.09, 0.09]	[-0.06, 0.1]	[0.01, 0.24]	[-0.4, 0.12]	[-0.34, 0.15]
Conventional p-value	0.520	0.976	0.582	0.033	0.296	0.465
# obs. left	36,784	33,000	33,000	36,784	33,000	33,000
# obs. right	34,198	24,211	24,211	34,198	24,211	24,211
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	13.282	13.282	13.282	13.282	13.282	13.282

Notes: This table reports estimates of the discontinuity in degree quality in the high school graduation year at the merit aid eligibility threshold (16/20 Bac grade). Degree quality is defined as the median Bac grade of all students contemporaneously enrolled in the degree. Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A19: Effect of Eligibility to the Merit Aid in the High School Graduation on Degree Quality in High School Graduation Year + 1

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.03	0.011	0.022	0.067	-0.017	0.005
Robust 95% CI	[-0.06, 0.14]	[-0.17, 0.14]	[-0.15, 0.16]	[-0.05, 0.22]	[-0.22, 0.18]	[-0.18, 0.18]
Robust p-value	0.480	0.850	0.960	0.206	0.841	0.979
# obs. left	20,397	17,691	17,691	36,962	48,773	50,307
# obs. right	27,723	18,574	18,574	33,953	28,558	28,849
Bandwidth	(15.29, 16.71)	(15.28, 16.72)	(15.28, 16.72)	(15, 17)	(14.73, 17.27)	(14.71, 17.29)
Panel B: (15, 17) bandwidth						
Eligibility	-0.001	0.021	0.034	0.067	-0.042	-0.015
Conventional 95% CI	[-0.06, 0.06]	[-0.07, 0.11]	[-0.05, 0.12]	[-0.05, 0.19]	[-0.3, 0.22]	[-0.26, 0.23]
Conventional p-value	0.964	0.642	0.417	0.266	0.750	0.903
# obs. left	35,505	31,843	31,843	35,505	31,843	31,843
# obs. right	33,483	23,778	23,778	33,483	23,778	23,778
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	13.331	13.331	13.331	13.331	13.331	13.331

Notes: This table reports estimates of the discontinuity in degree quality in the high school graduation year + 1 at the merit aid eligibility threshold (16/20 Bac grade). Degree quality is defined as the median Bac grade of all students contemporaneously enrolled in the degree. Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A20: Effect of Eligibility to the Merit Aid in the High School Graduation on Degree Quality in High School Graduation Year + 2

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	-0.088	-0.018	0	-0.085	-0.009	0.016
Robust 95% CI	[-0.23, 0.03]	[-0.21, 0.15]	[-0.18, 0.17]	[-0.21, 0.04]	[-0.18, 0.14]	[-0.17, 0.19]
Robust p-value	0.132	0.726	0.951	0.186	0.797	0.912
# obs. left	11,901	14,062	14,062	37,078	51,188	44,308
# obs. right	22,997	16,772	16,772	33,746	29,143	27,428
Bandwidth	(15.45, 16.55)	(15.32, 16.68)	(15.31, 16.69)	(14.89, 17.11)	(14.58, 17.42)	(14.71, 17.29)
Panel B: (15, 17) bandwidth						
Eligibility	-0.05	0.019	0.039	-0.094	-0.056	-0.002
Conventional 95% CI	[-0.11, 0.01]	[-0.07, 0.1]	[-0.04, 0.12]	[-0.22, 0.03]	[-0.31, 0.2]	[-0.24, 0.24]
Conventional p-value	0.106	0.667	0.345	0.125	0.667	0.986
# obs. left	31,585	28,287	28,287	31,585	28,287	28,287
# obs. right	31,573	22,518	22,518	31,573	22,518	22,518
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	13.389	13.389	13.389	13.389	13.389	13.389

Notes: This table reports estimates of the discontinuity in degree quality in the high school graduation year + 2 at the merit aid eligibility threshold (16/20 Bac grade). Degree quality is defined as the median Bac grade of all students contemporaneously enrolled in the degree. Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A21: Effect of Eligibility to the Merit Aid in the High School Graduation Year on Obtaining a Degree

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.029***	-0.022	-0.027*	0.089***	-0.039	-0.044*
Robust 95% CI	[0.01, 0.05]	[-0.05, 0]	[-0.06, 0]	[0.06, 0.13]	[-0.1, 0.01]	[-0.11, 0]
Robust p-value	0.001	0.115	0.075	0.000	0.119	0.059
# obs. left	34,282	47,773	36,894	41,031	51,424	51,424
# obs. right	34,315	29,075	25,853	36,849	29,808	29,808
Bandwidth	(15.09, 16.91)	(14.81, 17.19)	(14.99, 17.01)	(14.98, 17.02)	(14.76, 17.24)	(14.77, 17.23)
Panel B: (15, 17) bandwidth						
Eligibility	0.022**	-0.026**	-0.027**	0.094***	-0.011	-0.024
Conventional 95% CI	[0, 0.04]	[-0.05, 0]	[-0.05, 0]	[0.06, 0.13]	[-0.09, 0.06]	[-0.1, 0.05]
Conventional p-value	0.018	0.040	0.028	0.000	0.770	0.527
# obs. left	39,274	35,234	35,234	39,274	35,234	35,234
# obs. right	35,879	25,357	25,357	35,879	25,357	25,357
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	0.622	0.622	0.622	0.622	0.622	0.622

Notes: This table reports estimates of the discontinuity in the probability of obtaining a degree at the merit aid eligibility threshold (16/20 Bac grade). Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A22: Effect of Eligibility to the Merit Aid in the High School Graduation Year on Enrolling in a Masters Degree

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	0.024***	-0.019	-0.017*	0.098***	-0.014	-0.023
Robust 95% CI	[0.01, 0.04]	[-0.06, 0.01]	[-0.04, 0]	[0.07, 0.14]	[-0.12, 0.09]	[-0.11, 0.05]
Robust p-value	0.003	0.191	0.088	0.000	0.790	0.518
# obs. left	47,545	22,335	43,830	46,416	30,242	33,450
# obs. right	38,305	20,989	27,820	38,233	23,793	24,824
Bandwidth	(14.88, 17.12)	(15.22, 16.78)	(14.88, 17.12)	(14.89, 17.11)	(15.1, 16.9)	(15.04, 16.96)
Panel B: (15, 17) bandwidth						
Eligibility	0.032***	-0.02*	-0.018*	0.117***	-0.018	-0.023
Conventional 95% CI	[0.02, 0.05]	[-0.04, 0]	[-0.04, 0]	[0.08, 0.15]	[-0.09, 0.05]	[-0.09, 0.04]
Conventional p-value	0.000	0.091	0.097	0.000	0.628	0.480
# obs. left	39,274	35,234	35,234	39,274	35,234	35,234
# obs. right	35,879	25,357	25,357	35,879	25,357	25,357
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	0.69	0.69	0.69	0.69	0.69	0.69

Notes: This table reports estimates of the discontinuity in the probability of enrolling in a masters degree at the merit aid eligibility threshold (16/20 Bac grade). Masters degrees are defined as degrees for which the final year of study is 4 or 5. Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A23: Effect of Eligibility to the Merit Aid in the High School Graduation Year on Enrolling in a Selective Masters Degree

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	-0.002	-0.011	-0.004	0.003	-0.028	-0.022
Robust 95% CI	[-0.02, 0.02]	[-0.05, 0.01]	[-0.03, 0.02]	[-0.03, 0.04]	[-0.09, 0.02]	[-0.08, 0.02]
Robust p-value	0.674	0.264	0.554	0.740	0.182	0.275
# obs. left	33,034	28,440	38,866	44,392	49,542	49,542
# obs. right	34,275	23,236	26,809	37,676	29,168	29,168
Bandwidth	(15.11, 16.89)	(15.12, 16.88)	(14.94, 17.06)	(14.93, 17.07)	(14.8, 17.2)	(14.8, 17.2)
Panel B: (15, 17) bandwidth						
Eligibility	-0.003	-0.009	-0.005	0.005	-0.039	-0.031
Conventional 95% CI	[-0.02, 0.01]	[-0.03, 0.01]	[-0.03, 0.02]	[-0.03, 0.04]	[-0.1, 0.03]	[-0.1, 0.03]
Conventional p-value	0.681	0.426	0.637	0.739	0.253	0.337
# obs. left	39,274	35,234	35,234	39,274	35,234	35,234
# obs. right	35,879	25,357	25,357	35,879	25,357	25,357
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	0.227	0.227	0.227	0.227	0.227	0.227

Notes: This table reports estimates of the discontinuity in the probability of enrolling in a selective masters degree at the merit aid eligibility threshold (16/20 Bac grade). Selective masters degrees are defined as degrees for which the final year of study is 4 or 5 and is delivered by an engineering, business or other private school. Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

Table A24: Effect of Eligibility to the Merit Aid in the High School Graduation on First Graduate Degree Quality

	First order			*Second order*		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: MSE-optimal bandwidth						
Eligibility	-0.17**	0.05	0.055	-0.154**	0.031	0.033
Robust 95% CI	[-0.36, -0.02]	[-0.11, 0.18]	[-0.09, 0.18]	[-0.32, -0.02]	[-0.18, 0.21]	[-0.15, 0.19]
Robust p-value	0.029	0.622	0.511	0.024	0.877	0.784
# obs. left	6,192	15,163	16,205	24,721	35,037	38,434
# obs. right	16,799	16,160	16,640	26,891	23,491	24,427
Bandwidth	(15.57, 16.43)	(15.21, 16.79)	(15.19, 16.81)	(15.02, 16.98)	(14.71, 17.29)	(14.64, 17.36)
Panel B: (15, 17) bandwidth						
Eligibility	-0.054*	0.058	0.053	-0.149**	0.017	0.042
Conventional 95% CI	[-0.12, 0.01]	[-0.03, 0.15]	[-0.03, 0.14]	[-0.28, -0.02]	[-0.25, 0.28]	[-0.21, 0.29]
Conventional p-value	0.089	0.195	0.210	0.022	0.901	0.744
# obs. left	25,730	23,059	23,059	25,730	23,059	23,059
# obs. right	26,891	19,286	19,286	26,891	19,286	19,286
Bandwidth	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)	(15, 17)
Poly. order	1	1	1	2	2	2
Donut		✓	✓		✓	✓
Controls			✓			✓
Mean [15.5, 15.7)	13.719	13.719	13.719	13.719	13.719	13.719

Notes: This table reports estimates of the discontinuity in masters degree quality at the merit aid eligibility threshold (16/20 Bac grade). Degree quality is defined as the median Bac grade of all students contemporaneously enrolled in the degree. Panel A reports estimates using the MSE-optimal bandwidth (obtained from the *rdrobust* R package). Panel B reports estimates using the $(15, 17)$ bandwidth. For MSE-optimal bandwidth estimates, the reported confidence intervals correspond to associated robust 95% confidence intervals, while they correspond to associated conventional 95% confidence intervals for $(15, 17)$ bandwidth estimates. For each panel, the first row reports the discontinuity estimate in the outcome at the 16/20 Bac grade threshold. Columns (1)-(3) report estimates obtained from local linear regressions (triangular kernel) while columns (4)-(6) report estimates from regressions including a quadratic of the running variable. Columns (1) and (4) report estimates on the full sample, columns (2) and (5) estimates excluding students with Bac grades in $[15.7, 16.05]$ ("Donut"), and columns (3) and (6) estimates excluding students with Bac grades in $[15.7, 16.05]$ and including control variables (gender, age, SES, Bac track, and high school cohort). See Table A10's notes for an example of how to read the estimates. Statistical significance is computed based on the relevant p-value and ***, **, and * indicate significance at 1, 5, and 10%, respectively.

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