

Pay to Play? How Application Fees Influence STEM Grad School Choices in France

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Abstract

- Impact of **Application Fees** on **STEM Graduate School Applicants** in France (2015-2020)
- Regression Discontinuity Analysis
- Application Fees Lead to Fewer Exam Attempts
- **Adverse Admission Outcomes:** Males, Low SES, Lower Ability Students
- **Effect of Fee Structure:** Decentralized vs. Centralized

Motivation

- Stark disparities in access to elite colleges observed in many countries (France, U.S., etc.)
 - **Key Factors:** Financial constraints, complex admission processes, and informational gaps
 - **Financial Constraints:** Literature has focused mainly on tuition fees and financial aid, with less attention to application fees (Pallais 2015)
- ⇒ **Study Focus:** Assess how **application fees** affect the **application behavior** and **admission outcomes** of STEM graduate school applicants in France, leveraging the existence of **fee waivers** and **varying fee structures**.

Data

- 1 **Centralized Admission to Elite STEM Schools (SCEI) 2015-2020:** demographics, exam choices, exam fees, exam results, school preferences, and admission outcomes
- 2 **Need-based Scholarship Data (AGLAE) 2013-2018:** Student demographics, parental income, composite score, scholarship levels
- 3 **Previous Achievement Data (DEPP) 2010-2020:** Results of high school (*Baccalauréat*) and middle school (*DNB*) exams

Empirical Strategy

Regression discontinuity design at the fee-waiver threshold:

- **Eligibility Criteria:** Based on need-based scholarship status (parental income, number of siblings, number of siblings in higher education, and distance to the program)
- **Income thresholds pooled** by relative income-distance to the threshold

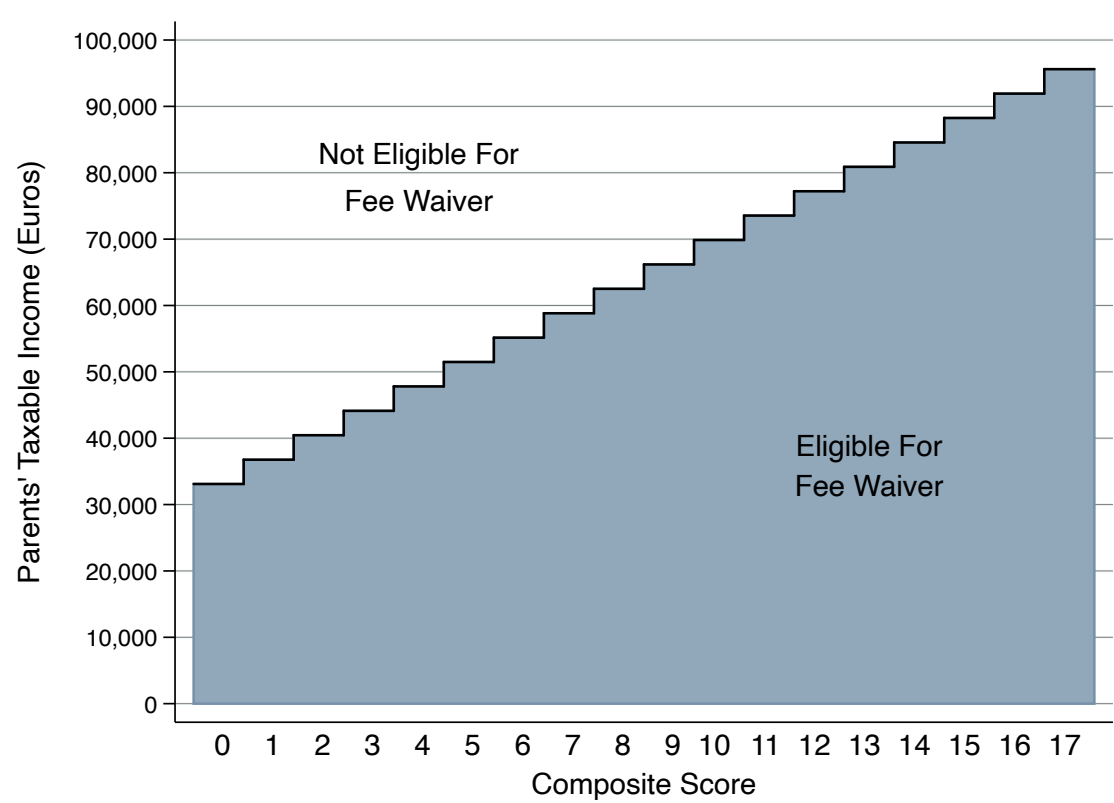


Figure 1: Income Thresholds for Fee Waiver Status

RDD Equation

$$y_i = \beta_0 + \beta_1 D_c + \beta_2 f(X_t) + \epsilon_{ct} \quad (1)$$

- **Validity Concerns:** Potential selection bias due to unchanged need-based scholarship criteria (2013-2020):
 - **Mitigation Strategy:** Pooled data from two years of application to maximize sample at the threshold → Fuzzy RDD
 - **Findings:** Decrease in density at threshold without significant discontinuity
 - **Observable characteristics:** Balanced around the threshold

Main Results

- 1 Application fees → **55 percent** reduction in **exams attempted**
- 2 Application fees → **15 percent** reduction in **admission proba.**
- 3 Larger impact on **male, low-ses, and lower-ability** students

Gender Heterogeneity

- Male students reduce more *safety* choices while female students reduce more *ambitious* choices.

	Range of Selectivity (Men)	Range of Selectivity (Women)	Minimum Selectivity (Men)	Minimum Selectivity (Women)	Maximum Selectivity (Men)	Maximum Selectivity (Women)
Baseline	12.12	10.65	71.34	73.17	83.46	83.82
RD estimate	-3.35*** (0.82)	-1.13 (1.02)	2.38** (1.09)	-0.36 (1.20)	-0.74 (0.75)	-1.49** (0.70)

Table 2: Gender Heterogeneity in Selectivity of Exam Attempted

Application Behaviour

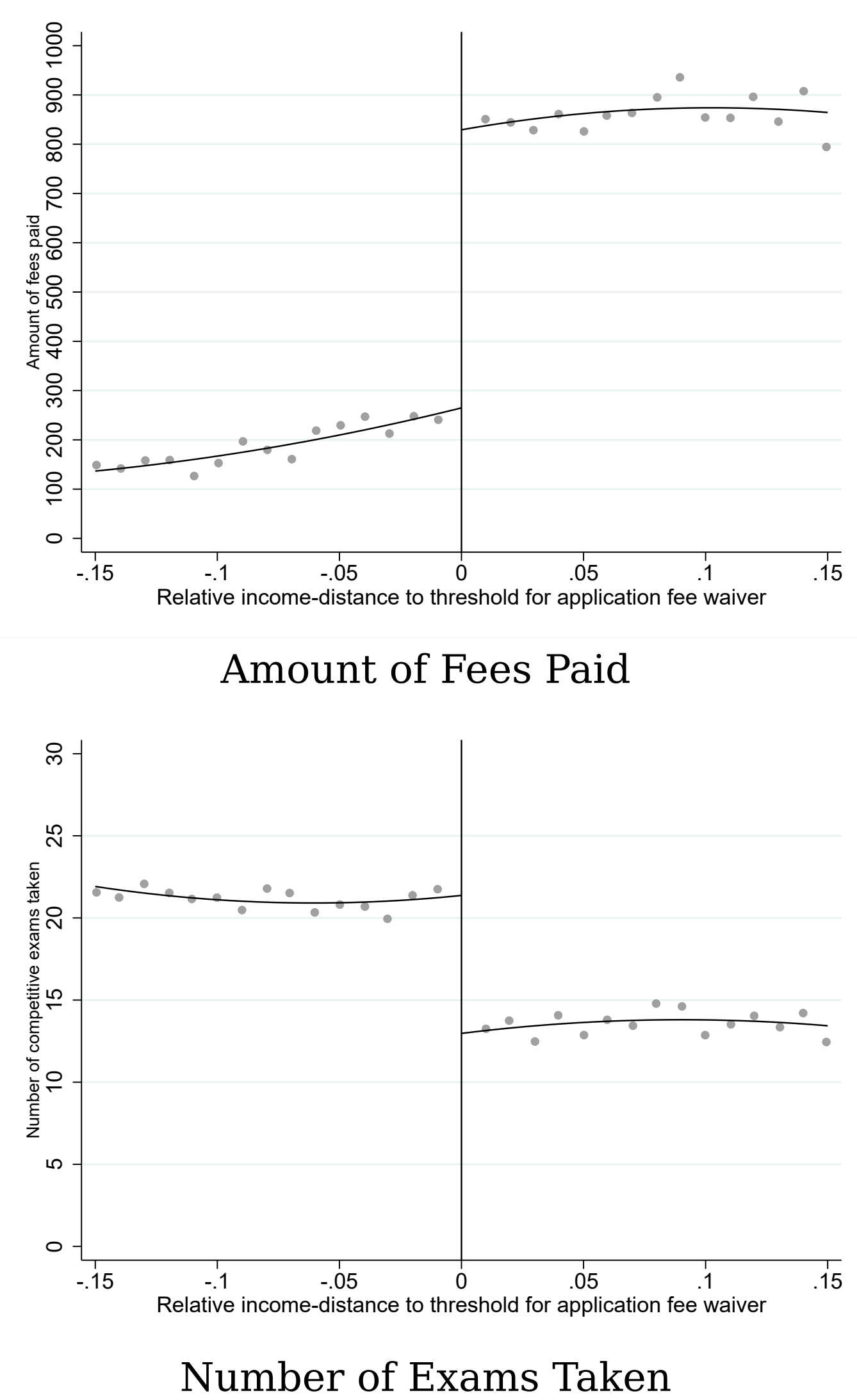


Figure 2: Fees Paid and Exams Taken at the Fee Waiver Threshold

Admission Outcome

	Receive Admission Offer (1st round)	Receive Admission Offer (Last round)	Accept Admission Offer
Baseline	0.78	0.79	0.61
RD estimate	-0.114** (0.054)	-0.113** (0.051)	-0.119** (0.057)
Obs. in RD	3,531	3,686	4,140
Total obs.	11,945	11,945	11,945

Table 1: Probability of Receiving an Admission Offer

Centralized vs. Decentralized Fees

Application Fees	Decentralized	Centralized
Baseline	0.55	0.84
RD estimate	-0.242*** (0.079)	-0.073 (0.069)

Table 3: Probability of Applying to the Most Selective School

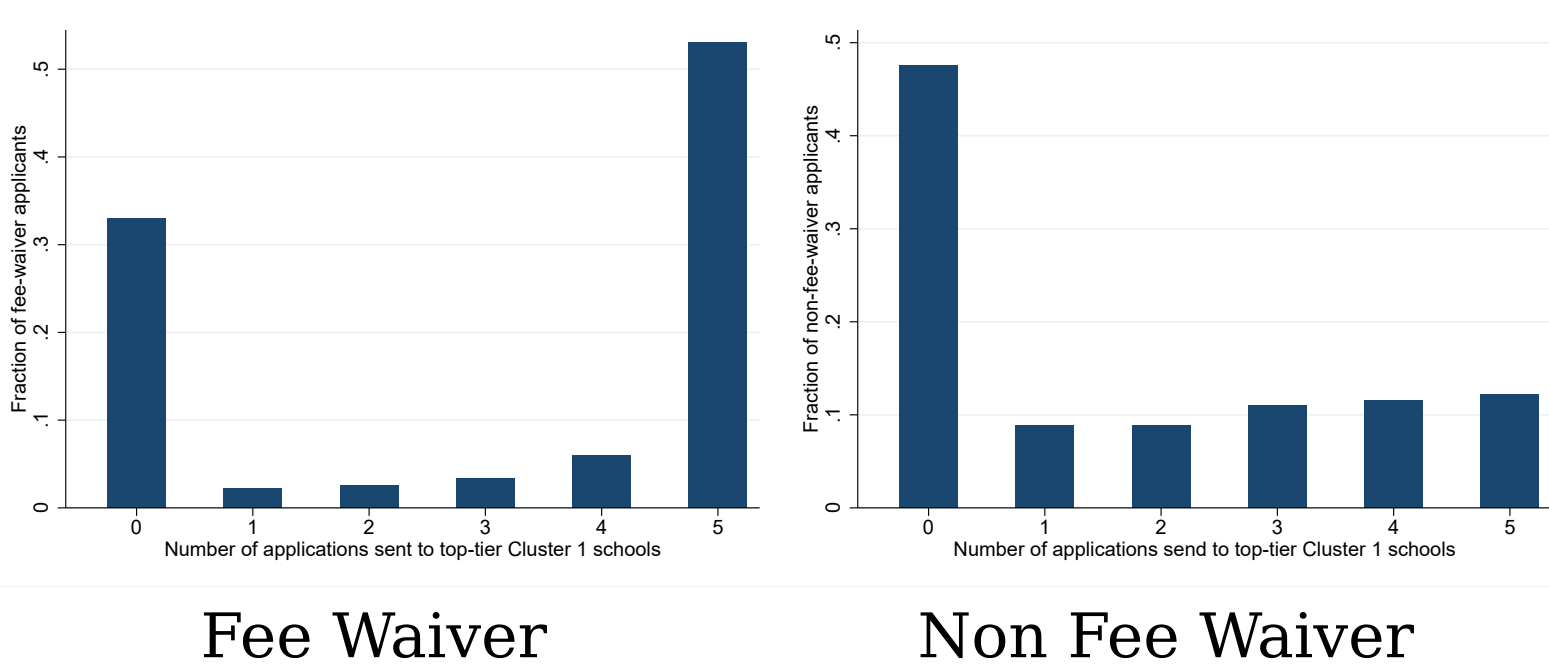


Figure 3: Number of Top-Tier School Applications With Decentralized Fees

Key Findings

- Fee-paying individuals apply to fewer schools, **reducing admission probability**
- **Admission quality unaffected** upon receiving an offer
- **Decentralized fee structure** has more adverse impact

Policy Recommendations

- 1 More **gradual exemption scheme** for fee waivers
- 2 Promote **common application fees**
- 3 Advise students to have a **“safe” choice**

References

Pallais, Amanda. 2015. “Small differences that matter: Mistakes in applying to college.” *Journal of Labor Economics* 33 (2): 493–520.

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