

# 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

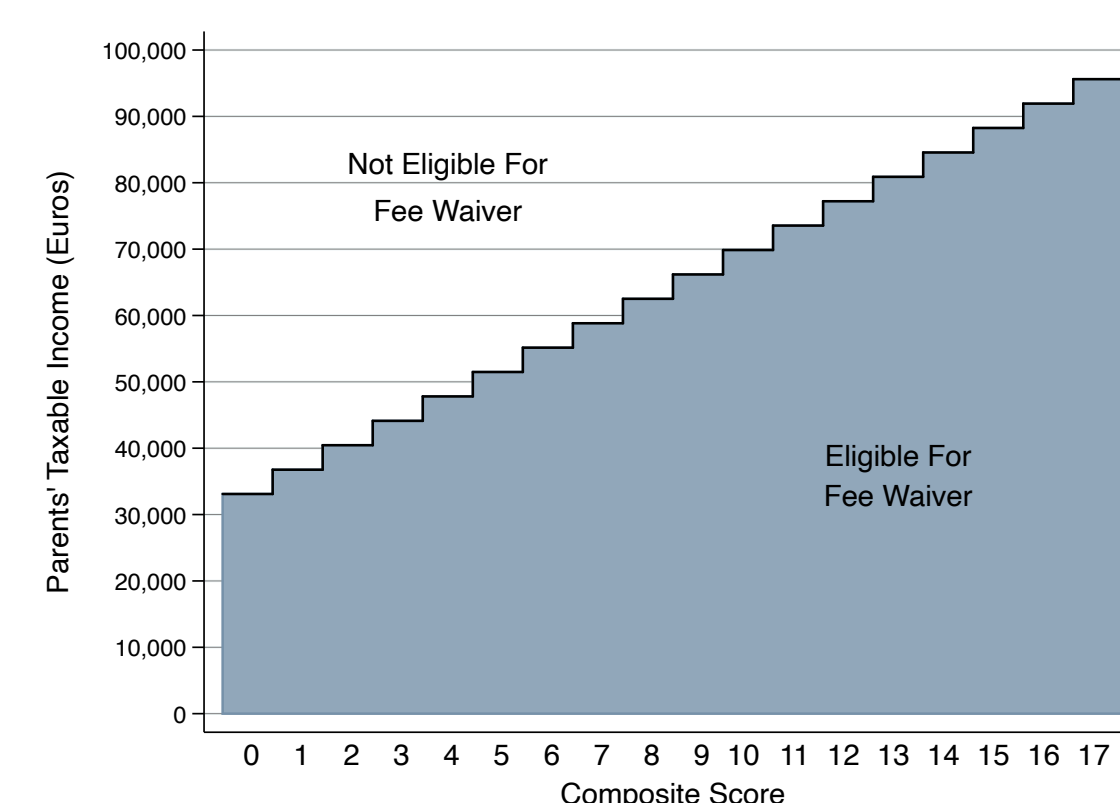


Figure 1: Income Thresholds for Fee Waiver Status

## 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

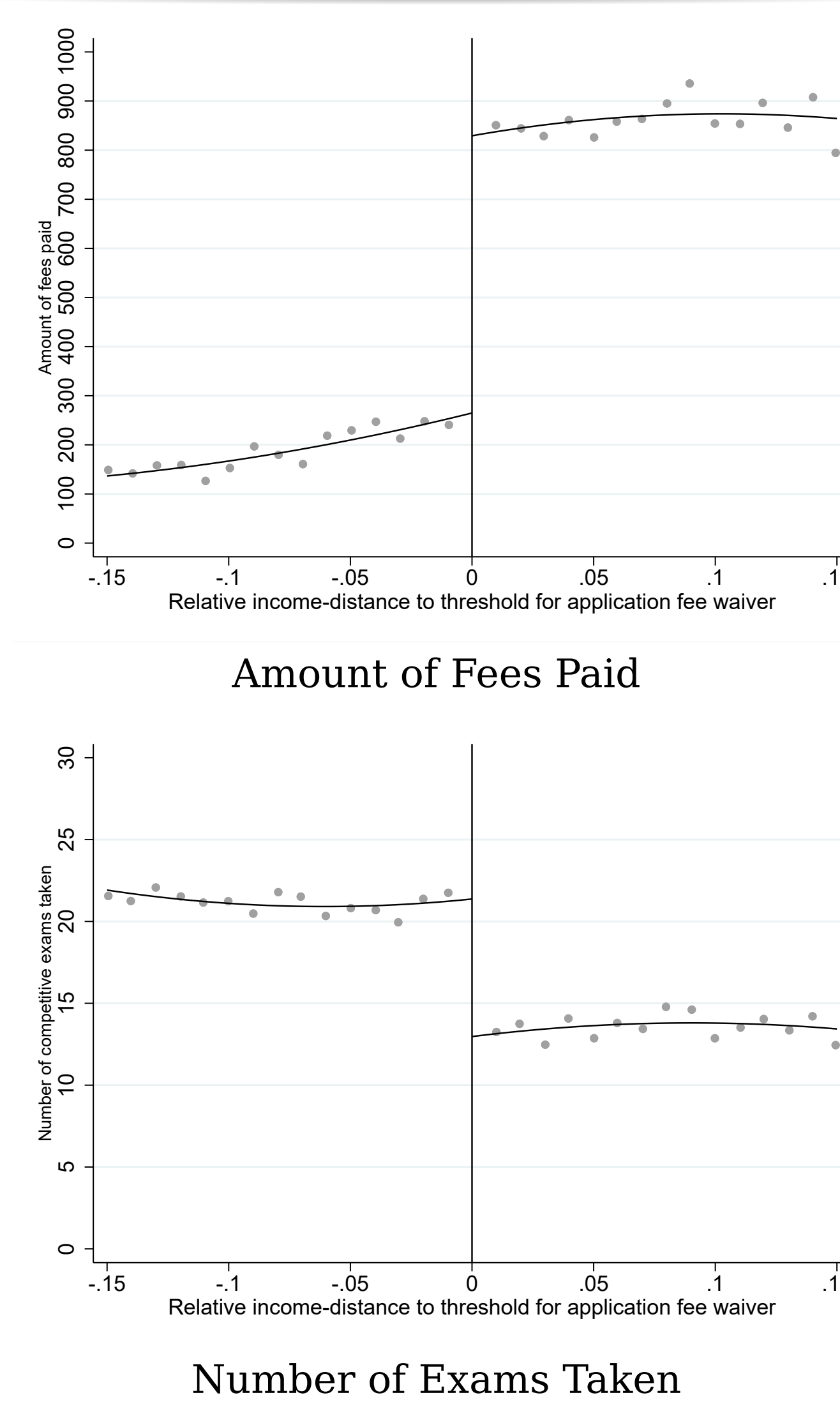


Figure 2: Fees Paid and Exams Taken at the Fee Waiver Threshold

## 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

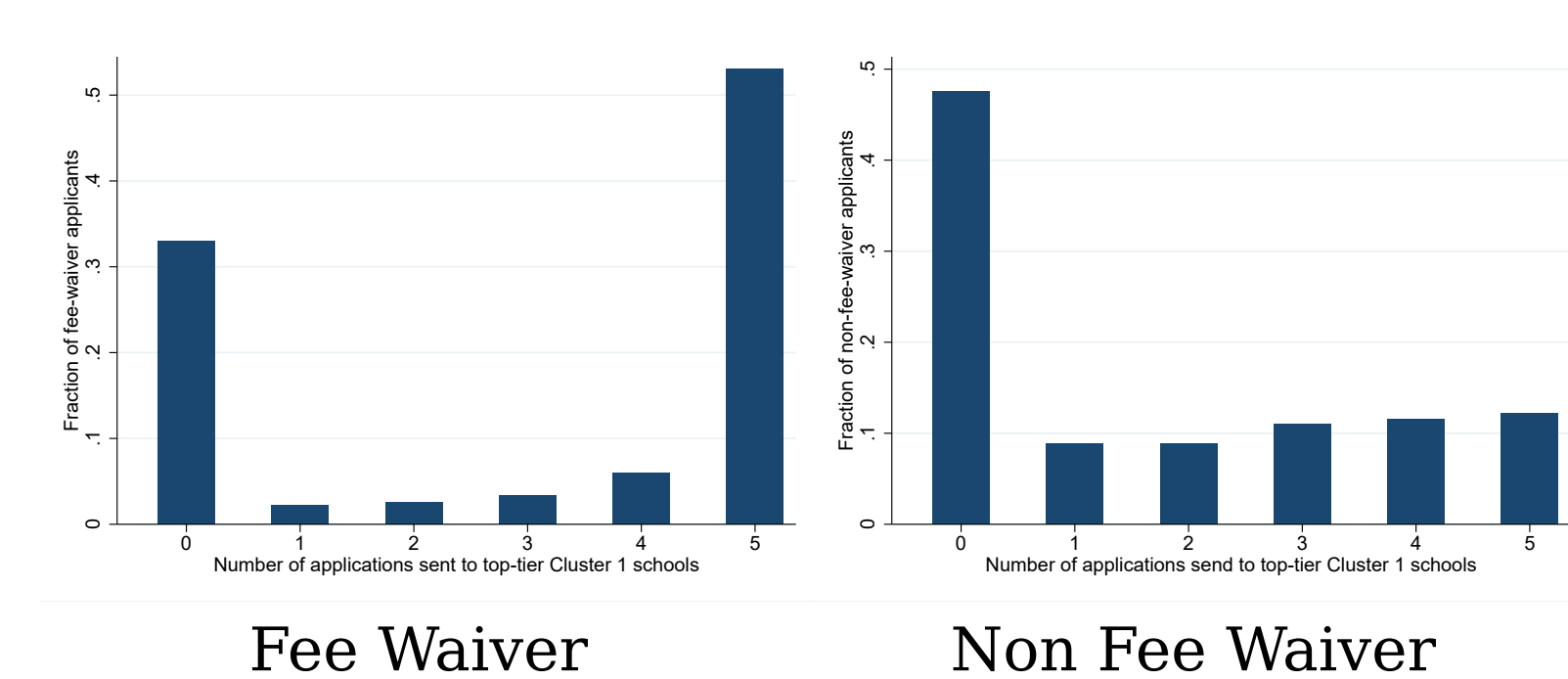


Figure 3: Number of Top-Tier School Applications With Decentralized Fees

## 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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