Parental investments in private tuition, student test scores and educational outcomes

Konstantina Maragkou◊, Cheti Nicoletti‡§ and Birgitta Rabe§

◊ Faculty of Education, University of Cambridge, UK
‡ Department of Economics and Related Studies, University of York, UK
§ Institute for Social and Economic Research, University of Essex, UK

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Introduction

Motivation

- Education is important for student life outcomes (e.g. Heckman et al., 2006; Heckman, Humphries, Veramendi, 2018)
- There is, therefore, great interest in understanding which factors can explain educational achievement
- This is particularly true for children who come from disadvantaged backgrounds
- Remedial education can be a factor that could help reducing inequalities in children school achievements
Introduction

Research aims

In this paper we study:

- Whether private tutoring can improve students’ school performance
- Whether there is a socio-economic gradient in the probability of receiving private tutoring
- Whether there is a socio-economic gradient in the effect of tutoring on school achievements
- The ultimate aim is to understand if private tutoring helps to reduce socio-economic inequalities
Introduction

Previous Literature

- While there is some causal evidence on the effect of school remedial programs on children school achievements (Jacob and Lefgren, 2004; Lavy and Schlosser, 2005)

- Evidence on the effect of private tutoring is limited and often biased by the omission of family, school and student characteristics (Dang and Rogers 2008; Nickow, Oreopoulos, and Quan 2020)
Introduction

Contributions

1. We estimate a model for the probability of receiving tutoring and for the effect of tutoring on school achievements adopting a student fixed-effect estimation that reduces concerns about endogeneity issues.

2. We provide the first empirical evidence on whether parents’ investments in tutoring compensate or reinforce their children’s abilities.
Institutional Background

The English compulsory schooling system and private tuition

- Timeline of the English school system:

  - Stark socio-economic and geographic gaps in access to private lessons
  - Increase in private tuition from 18% in 2005 to 27% in 2019 - rising to 41% in London (Sutton Trust, 2019)
  - Similar to other international developed countries

- Private tuition in England:
Data

Datasets

- The Longitudinal Study of Young People in England (LSYPE)
  - 15,770 young individuals born between 1989-1990
  - Survey began in 2004 (age 13-14, Year 9)
  - Individuals surveyed every year until 2010 (age 19-20)
  - Final interview in 2015 (age 25)

- National Pupil Database (NPD)
  - Longitudinal administrative dataset recording all students in England
  - Information on achievement and school characteristics
Data

Analytical Sample

- Considered only Wave 1 - 3 participants (N=12,437)
- 9,524 students (77% of Wave 3 participants)
- 28,572 student-subject observations
Data

Private tuition

- Subject-level measures of tuition receipt (at age 15 or 16) as reported by main parent

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<th>Girl</th>
<th>Boy</th>
<th>Diff</th>
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<th>Non-Graduate Parent</th>
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<td>Mean/(sd)</td>
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<td>0.12 (0.32)</td>
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<td>0.06 (0.24)</td>
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Data

Exam scores

- **KS3 scores**
  - Formal, externally marked school tests taken at age 14
  - Assess performance in maths, science and English
  - Standardised form

- **KS3 to KS4 progress**
  - KS4 exams (GCSEs) are high-stake assessments taken in about 10 subjects at age 16
  - Standardised point score for maths, science and English
  - Value-added approach: KS3 to KS4 progress
Methodology

Student test scores and parental investments in private tuition

\[ Tuition_{i,s} = \alpha_i + \gamma_s + \beta_1 KS3scores_{i,s} + \delta' X'_{i,s} + \epsilon_{i,s} \]

where \( i \) denotes students, \( s \) denotes subjects and the variables are:

- \( Tuition_{i,s} \): a dummy indicator of tuition receipt (age 15 or 16)
- \( KS3scores_{i,s} \): standardised KS3 scores in subject \( s \) (age 14)
- \( X'_{i,s} \): a vector of subject-varying controls
- \( \alpha_i \): a student fixed effect
- \( \gamma_s \): a subject fixed effect
- \( \epsilon_{i,s} \): a standard error clustered at the secondary school level
## Results

Student test scores and parental investments in private tuition

### Table 2: Fixed Effects regressions on KS3 scores and private tuition

<table>
<thead>
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Robustness checks

Student test scores and parental investments in private tuition

Table 3: Robustness checks on KS3 scores and private tuition

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<td>Subject-varying controls</td>
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Methodology

Effect of tuition on KS3 to KS4 progress

\[ KS3toKS4\text{progress}_{i,s} = \alpha_i + \gamma_s + \beta_1 \text{Tuition}_{i,s} + \delta X'_{i,s} + \zeta_1 S_s + \epsilon_{i,s} \]

where \( i \) denotes students, \( s \) denotes subjects and the variables are:

- \( KS3toKS4\text{progress}_{i,s} \): KS3 to KS4 progress (standardised)
- \( \text{Tuition}_{i,s} \): a dummy indicator of tuition receipt (age 15 or 16)
- \( X'_{i,s} \): a vector of subject-varying controls
- \( S_s \): a control for school-level performance in subject \( s \) (KS3)
- \( \alpha_i \): a student fixed effect
- \( \gamma_s \): a subject fixed effect
- \( \epsilon_{i,s} \): a standard error clustered at the secondary school level
## Results

### Effect of tuition on KS3 to KS4 progress

Table 4: Fixed Effects regressions on effect of tuition on KS3 to KS4 progress

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Konstantina Maragkou (km844@cam.ac.uk)  
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July 13, 2022
Discussion and concluding remarks

- Parents use private tuition to compensate rather than to reinforce for their child’s performance.
- Investments in tutoring differ substantially by socio-economic background.
- Receiving private tutoring in a subject improves significantly test performance in that subject.
- We don’t find statistically significant differences in the effectiveness of tutoring across socio-economic backgrounds.
- This evidence ultimately suggests that tutoring increases inequalities in education by socio-economic background.