

Breaking the Barriers to Higher Education: The Long-Term Benefits of a Boarding School for Disadvantaged Students.

Luc Behaghel
PSE

Clément de Chaisemartin
Sciences Po

Marc Gurgand
PSE

Toulouse HC Conference
June 23, 2026

Background and motivation

Low social mobility in France

- Parents-children wage rank-rank correlation = 0.34, very close to US, way above Scandinavia, Canada, Italy, or Australia [Kenedi and Sirugue, 2023].
- HE access and success highly unequal
 - Enrollment 35% if parents' income in bottom 10%, 90% if top 10%, also similar to US [Bonneau and Grobon, 2024].
 - Graduation (conditional on enrollment): 55% high SES, 38% low SES [Klipfel, 2023].
- Overall, France close to the US – although universities almost free in France.

One policy response

- Following 2005 riots, conservative president Nicolas Sarkozy designed the “Espoir Banlieues” (Hope for the Suburbs) plan.
- Plan formally announced in 2008 speech.
- Numerous references to immigration and diversity; call to end the ethnic discriminations that are pervasive in French society, and improve the opportunities of “responsible” youth with immigrant background.
- One of the concrete announcements: creation of “Internats d'excellence”.

- **Internats d'excellence**: boarding schools for middle and high school students.
- Target: “deserving” students from deprived neighborhoods.
- **Better studying conditions** and substitute school to home environment.
- Intensive compensatory intervention : add. cost/student=10k euros/year ($\times 2$).

Long-term effects of Sourdun, program flagship

- Behaghel et al. [2017]: Sourdun, program flagship; increases boarders' maths test scores two years after admission. Well-being decreases, then catches up.
- Consistent with boarding school literature (China, Australia, US, UK) – some elite, some compensatory.
- Relatively modest effect in view of program cost: 0.2σ /year.
- **Does Sourdun have long-term effects on students' secondary and tertiary education? If so, for which students?**

Context, design, population, and data

Relatively good students, from modest and diverse families

- Applicants' academic ability:
 - Good students relative to their initial classmates.
 - Median students relative to French distribution.
- Underprivileged families:
 - Explicit target of the program (selection committee).
 - Almost 70% have parents unemployed, blue collar, or employee.
 - More than 40% benefit from means tested grant.
- French only language spoken at home for only 40% of them (more on this later).

A former military building, in the middle of the fields...



Smaller classes, better classroom environment...

- Class size : 20 students versus 26 for controls.
- Teachers younger but more qualified and volunteers.
- Less classroom disruption: $T-C = -0.7$ SD (e.g.: there is noise and disruption in my classroom).
- Teachers more involved: $T-C = +1.3$ SD (e.g.: my teachers care for their students).
- Boarding: control over time use (more homework time).
- Motivated and better performing peers.

The lottery, and estimation strategy

- Lotteries conducted for 2009 and 2010 admission to Sourdun.
- Waitlist randomization. Students ordered randomly, available seats offered to first students, some students decline (never takers), seats offered to next student etc.
- Population: 395 students who participated in lottery. 258 received offer: treatment group. 137 did not: control group.
- Groups balanced on baseline dimensions.
- ITT effects shown thereafter: estimation follows Chaisemartin & Behaghel (2020).
- **First-stage: = 2.07 (s.e.= 0.163): students receiving an offer spend 2.07 more years in Sourdun.**

Data: HS, Bac and HE outcomes

- We use 2008 to 2018 administrative data that contain all secondary school students in France and their outcomes.
 - 2008 applicants applied to enter in grade 8, 9, and 10 in 2009 ⇒ expected to pass the Bac in 2013 or before.
 - 2009 applicants applied to enter in grade 6 through 11 in 2010 ⇒ expected to pass the Bac in 2016 or before.
- We use 2008 to 2020 administrative data that contain enrollment into, and graduation from, (almost) all HE institutions in France.
- **Using all these data, we can construct main outcome: highest degree obtained, in high school (HS) or higher education (HE).**
- We use 2019 to 2023 administrative data on earnings (except self-employed): compute earnings the year they turn 25.

Effects on highest degree obtained and earnings

Last degree: Sourdun ↘ HS dropout, ↗ HE graduation

	Control Mean	T-C	s.e.	N
High-school dropout	0.270	-0.142	0.049	395
Ever enrolled in Higher Education (HE)	0.571	0.197	0.055	395
Ever enrolled in 2nd year of HE	0.453	0.123	0.055	395
Ever enrolled in 3rd year of HE	0.263	0.165	0.052	395
HE Graduate	0.267	0.159	0.056	395
<i>Technical or vocational HE degree</i>	0.045	-0.027	0.022	395
<i>Non-selective university, STEMEL field</i>	0.104	0.124	0.040	395
<i>Non-selective university, other field</i>	0.060	0.039	0.028	395
<i>Grande Ecole, admission after CPGE</i>	0.030	0.030	0.027	395
<i>Grande Ecole, admission after HS</i>	0.005	0.012	0.011	395
<i>Other HE degree</i>	0.024	-0.018	0.019	395
Years of schooling completed	12.294	1.034	0.304	395

Comparably large effects

Education RCTs with Higher Education graduation outcome			
<u>Interventions</u>	Control Mean	ITT Effect	Differential take-up
Sourdun	0.267	0.159	76%
Abecedarian Preschool	0.061	0.170	100%
Chicago's Noble Street Charter School	0.149	0.007	70%
North-Carolina Elite Boarding School	0.60	0.013	60%
Mass. Charter School Urban (LATE)	0.24	0.046	-
Mass. Charter School Nonurban (LATE)	0.52	0.112	-

→ Similar picture for High school completion and Higher education enrollment.

Actual and simulated earnings

Panel A: Actual earnings and labor market status at age 25				
	Control Mean	T-C	s.e.	N
Actual earnings	1,117	-66	152	301

Panel B: Imputed earnings given highest degree (Labor Force Survey)				
	Control Mean	T-C	s.e.	N
Age 25, panel A sample	1,070	98	43	301
Age 25, full sample	1,076	76	41	395
Age 26-30, full sample	1,237	105	48	395
Age 31-35, full sample	1,477	165	65	395
Age 36-45, full sample	1,735	230	84	395
Age 46-55, full sample	2,024	297	103	395
Age 56-60, full sample	2,143	325	106	395
Lifetime earnings	418,082	53,474	19,568	395

Comparing majority and minority students

- Students with an immigrant background were policy makers' implicit target.
- Define minority students as students whose parents report that French is not the only language spoken at home.
- 55% of our population.
- Strongly correlated with non-French or foreign-born parent (from representative survey that has the two informations).

Larger effects for minority students

	Control Mean	T-C	s.e.	N
Minority students				
Years spent in Sourdun	0.554	2.361	0.259	193
High-school dropout	0.207	-0.132	0.059	193
Higher Education (HE) Graduate	0.282	0.183	0.082	193
<i>Technical or vocational HE degree</i>	0.062	-0.049	0.032	193
<i>Non-selective university, STEMEL</i>	0.135	0.112	0.068	193
<i>Non-selective university, other</i>	0.032	0.072	0.039	193
<i>Selective Grande Ecole</i>	0	0.077	0.026	193
Predicted monthly earnings	1460.407	187.654	75.942	193
Majority students				
Years spent in Sourdun	0.280	1.927	0.242	160
High-school dropout	0.302	-0.173	0.080	160
Higher Education (HE) Graduate	0.259	0.119	0.082	160
<i>Technical or vocational HE degree</i>	0	0.031	0.018	160
<i>Non-selective university, STEMEL</i>	0.069	0.133	0.056	160
<i>Non-selective university, other</i>	0.106	-0.020	0.051	160
<i>Selective Grande Ecole</i>	0.084	-0.044	0.051	160
Predicted monthly earnings	1454.527	98.453	97.261	160
P-value minority=majority	0.054			

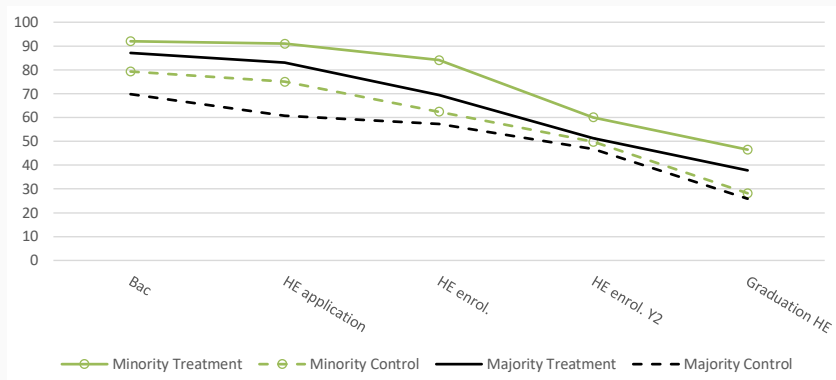
Difference not driven by a composition effect

- Minorities have some different (observed) characteristics: poorer families, lower self-esteem.
- Decomposition exercise: they do not account for the differential effects.

Aspiration-attainment paradox

- Minorities have more ambition, but do not graduate more from HE, conditional on academic skills, [Jonsson and Rudolphi, 2011] (Sweden), [Salikutluk, 2016] (Germany), [Ferrara, 2023, Guyon and Huilery, 2021] (France).
- Apparent in our data, and in the general population survey that has the same language question as us (thus exact same definition of minority/majority).

Figure 1: Minorities and majorities progression into secondary and tertiary education



Sourdun provides minority students with decisive inputs

Effects of Sourdun on minority and majority students
two years after the lottery

	Majority			Minority			Maj-Min	N
	CM	T-C	s.e.	CM	T-C	s.e.	T-stat	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Homework	0.207	0.013	0.194	-0.134	0.773	0.202	2.717	327
Maths	-0.069	0.018	0.154	0.177	0.425	0.162	1.818	332
Self-esteem	0.074	-0.288	0.244	-0.334	0.622	0.226	2.739	331

For other intermediate outputs, not significantly different, but direction is systematic (9 out of 11)

Mediation analysis

- Run a control group regression of students' imputed earnings on students' homework index, maths score, and self-esteem index.
- Compute the predicted outcome and residuals of this regression, for treatment and control group students.
- Estimate Sourdun's ITT effect on students' predicted imputed earnings and on students' residual imputed earnings.

⇒ Short term effects account for 60% of minorities earnings effect.

Related findings

- Card and Giuliano [2016] note that minority students face obstacles in the regular classroom environment such as low teacher expectations and negative peer pressure that are reduced in a high-achiever class.
- Jackson et al. [2024] finds that overall value added, both on students' cognitive and socio-emotional scores, has a larger effect on the long-run outcomes of disadvantaged students than schools' value added on cognitive scores only.

Conclusion

Boarding to better opportunities?

- Intervention appears to have transformative effects on beneficiaries' life trajectories.
- It is possible to significantly reduce inequalities of opportunities, even later in life (cf. early childhood).
- Costly but $MVPF=4.5$.
- Minorities face obstacles despite their ambition, that can be reduced with a combination of cognitive and socio-emotional support.
- Mixture of effective interventions (class size, good teachers, good peers, “no excuse” flavor): maybe an upper bound on what can be achieved through school-based inputs...

Thank you!

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