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Graduating from high school: the effects of a boarding school for disadvantaged students on their secondary education

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GAINING THE *BACCALAURÉAT*: THE EFFECTS OF THE SOURDUN INTERNAT D'EXCELLENCE ON PUPILS' EDUCATION

Feedback

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The Sourdun Internat d'Excellence (boarding school of excellence) was opened in September 2009. It concentrates significant resources on lower and upper secondary pupils from poorer backgrounds and at the median of the French attainment distribution. In 2009 and 2010, the boarding school received more applications than it had places. Places were randomly allocated to the eligible pupils, leading to the formation of two perfectly comparable groups, the group attending the boarding school and a control group. This report presents the results of tracking the school careers of these pupils, now that they have all reached *baccalauréat* age. 47% of the pupils in the control group obtained the general *baccalauréat*, whereas this figure was 68% for the pupils at Sourdun. This increase of 21 percentage points is due partly to a drop in the number of pupils leaving without a qualification (this effect is observed mainly among the girls) and partly to the substitution of the technical *baccalauréat* with the general *baccalauréat* (this effect is observed mainly among the boys). The results show that it is possible to radically transform the school careers of pupils from poorer backgrounds, undermining the notion that education policy is powerless to overcome inequality. But by investing significant resources in pupils with average attainment levels, Sourdun does not answer the question of what to do for pupils with the lowest attainment levels. ■

- Attending the Sourdun Internat d'Excellence radically transforms pupils' school careers by channelling more of them towards the general *baccalauréat*, which they often gain with high marks (*avec mention*) and in the Science (S) section.
- The effect is particularly marked among pupils who entered Sourdun at lower secondary level (aged 11), whose orientation was less firmly fixed than for those who entered at upper secondary level (aged 15).
- Among boys, the general *baccalauréat* mainly substituted the technical *baccalauréat*; among girls it substituted leaving without any qualifications.
- The programme is aimed at pupils from poorer backgrounds whose attainment levels are average, but it does not answer the question of what to do for pupils with the lowest attainment levels.

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www.povertyactionlab.org

The Institut des Politiques Publiques (IPP) was developed in the context of a scientific partnership between the Paris School of Economics (PSE) and the Centre for Research in Economics and Statistics (CREST). IPP's aim is to promote quantitative analysis and evaluation of public policy using cutting-edge research methods in economics.

www.ipp.eu

The boarding schools of excellence programme, which was launched in 2009, aimed to promote the success of motivated pupils whose social or family environment would not favour the development of their potential. The boarding school regime was designed to give them better conditions in which to study, and appropriate supervision throughout the day. It can be seen as a highly intensive and proactive form of priority education, expensive, and with effects that are uncertain since it combines high-intensity education with life away from home, which pupils can find difficult. The Sourdun boarding school, situated near Provins in Seine-et-Marne, was the first to open in September 2009; it accepts lower and upper secondary pupils (*collégiens and lycéens*). Although certainly not representative of the boarding schools opened later on, now renamed *internats de la réussite* (boarding schools for success), it remains the programme's flagship school, and a showcase for the potential of this approach.

TRACKING THE EXPERIMENTAL COHORT

So that a rigorous assessment could be made of the effects of attending the Sourdun Internat d'Excellence on pupils' school performance, and also on their motivation and ambition, the 258 pupils admitted to the school in 2009 and 2010 were drawn at random from 395 applicants considered by a selection panel to conform to the required profile. They form the "test" group who attended the boarding school; the pupils who were not admitted constitute the "control" group, which is fully comparable with the boarders. Allocating places randomly ensures that the subsequent trajectory of the control group is representative of the trajectory of pupils in the test group had they not been admitted to the boarding school. The causal effect of being accepted at Sourdun can thus be measured by comparing the trajectories of both groups.

We started by putting questions to all the pupils using the same survey protocol, first one year and then two years after admission to the school. This enabled us to measure the boarding school's short-term impact. With the passing of time, these pupils have all reached *baccalauréat* age. We can therefore now measure the effect of Sourdun on the whole of their secondary school career.

To do this we used pupil attainment data held by the Directorate for Assessment, Planning and Performance (DEPP) at the Ministry of Education, which collects the results of every pupil educated on French territory in the various secondary examinations (*baccalauréat*, CAP-BEP, etc.), enabling us to track all the test and control pupils under the initial protocol.

With hindsight, we now know that the pupils admitted to Sourdun spent on average 2.3 years at Sourdun during their secondary education, out of a possible 3.9 years¹. The first figure is smaller than the second

for two main reasons. First, 13.4% of the pupils offered places at Sourdun in the random allocation process changed their minds and decided not to register there. Second, some pupils registered in the first year at Sourdun did not re-register the next year, either because they had been excluded during the year, or because they changed schools during the summer. However, most of the pupils who registered for the second year completed their education at Sourdun. Our comparison of the test and control pupils captures the mean effect of these different trajectories: the effect of spending on average 2.3 years in secondary education at Sourdun rather than at another establishment.

A MAJOR EFFORT FOR PUPILS FROM POORER BACKGROUNDS WITH AVERAGE ATTAINMENT LEVELS

The pupils who entered Sourdun in 2009 and 2010 are mostly from poorer backgrounds: just under half of them are *boursiers* (on means-tested scholarships), which is double the national average; one third are from single-parent families, and more than half speak a language other than French at home. In terms of educational attainment, these are fairly good pupils compared to their classmates at the schools they came from, but their attainment is middling compared to the national average. The program we are assessing is therefore aimed at pupils from poorer backgrounds with average attainment levels.

Questionnaires completed by the test and control pupils show that the test pupils enjoy better conditions of study than the control pupils. Classes are smaller at Sourdun (19 pupils compared to 24 in the control group). Pupils at Sourdun are three times less likely to say that their classmates do not listen to the teacher. The teachers at Sourdun were chosen on the basis of their profile, and their support for this educational project. They are younger and better qualified than the teachers at the control schools. Teaching relatively small, homogeneous classes means that they can make more effort with teaching: for example, two times more pupils at Sourdun than control pupils said that their teachers kept explaining until everyone had understood.

"Pupils are three times less likely to say that their classmates do not listen to the teacher".

Finally, boarding schools enable pupils to be supervised in a certain way, which is reflected in differences in the way they spend their free time outside lessons.

The pupils at Sourdun spend two hours more a week on their homework than the control pupils, spend five hours longer doing supervised study, and spend three times less time in front of the television.

(1) "The "possible number of years at Sourdun" depends on the year of entry. A pupil entering Sourdun in "Seconde" (aged 15) can spend three years of their secondary education there (assuming they do not repeat a year), while a pupil entering in "Sixième" (aged 11) can spend seven years there."

The smaller class sizes for the boarding school pupils and the fact that they are supervised day and night explain why, according to our calculations, expenditure per pupil at Sourduin is approximately twice that at the control pupils' schools.

SHORT-TERM EFFECTS ON EDUCATIONAL PROGRESS

By conducting surveys among the pupils one year and two years after the random allocation of places, we quantified the boarding school's impact on the pupils' skills in French and mathematics, and on non-cognitive aspects (see "*Internats d'excellence: les enseignements de Sourduin*", Feedback No. 1, April 2013, J-PAL-IPP). Although after a year we did not see any difference in educational attainment between the two groups, after two years the pupils in the test group achieved significantly higher results in the mathematics test. These results suggest that the better study conditions at Sourduin only have an effect once the pupils have got over the "shock" of adapting to the boarding school. After a year, the level of well-being at the school, measured using questions from the PISA survey, was lower among the test pupils than among the control pupils. After two years, the pupils seem to have got over this shock of adaptation: the levels of well-being are similar in both groups and the pupils in the test group are more motivated by their studies.

MARKED EFFECTS ON OBTAINING THE BACCALAURÉAT IN THE LONGER TERM

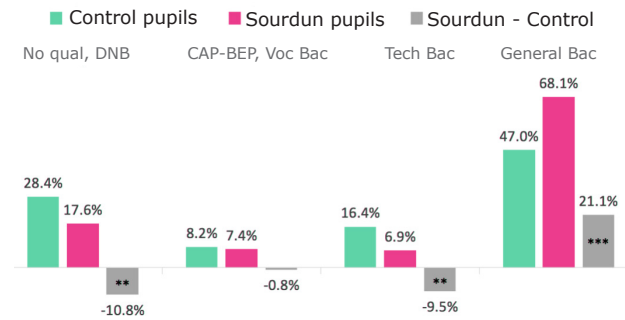
Here we are concerned with the effect of Sourduin on the qualification obtained by pupils at the end of their secondary education. Figure 1 below shows that attending Sourduin has a marked effect on this qualification. Firstly, although the pupils' educational attainment was average when they applied to the boarding school, the percentage of pupils leaving secondary school without any qualification at all or with only a school certificate (*diplôme national du brevet* or DNB) is quite high among the control pupils, at 28.4%. This percentage

"Here we are concerned with the effect of Sourduin on the qualification obtained by pupils at the end of their secondary education."

is more than 10 points lower among pupils admitted to Sourduin, at 17.6%. On the other hand, the percentage of pupils obtaining a CAP-BEP or a vocational *baccalauréat* is low and is very similar in both the test group and the control group, at around 8%. The percentage of pupils obtaining a technical *baccalauréat* is 9.5 points lower at Sourduin than in the control group. Finally, the percentage of pupils obtaining a

general *baccalauréat* is 21.1 points higher in the test group than in the control group, at 68.1%, a difference that is statistically very significant. Comparing this with the percentage of pupils in the control group who obtain a general *baccalauréat*, it can be seen that being admitted to Sourduin increases pupils' chances of obtaining the general *baccalauréat* by 45%.

Figure 1 - Effects of admission to Sourduin on the secondary qualification obtained



Sources : data of the authors and MENESR DEPP, pupils' educational attainment data. The asterisks indicate the degree of statistical significance of the difference between the Sourduin pupils and the control pupils (***: 99%, **: 95%).

Pupils admitted to Sourduin tend more often to leave school with a general *baccalauréat*: for half of them, this is due to the fact that they gained a *baccalauréat* rather than leaving school without qualifications, and for half, the general *baccalauréat* replaced the technical *baccalauréat*.

Being admitted to Sourduin also has strong effects on other variables of interest, as shown by Table 1. The proportion of pupils who obtain the general *baccalauréat* without repeating a year is 18.5 points higher in the test group, which is a relative increase of 44% compared to the control group. The proportion of pupils obtaining the general *baccalauréat* with high marks (*avec mention*) is 15.2 points higher in the test group, which is a relative increase of 64%. This is an important observation: it suggests that the benefit for pupils of attending Sourduin is not solely linked to different choices of orientation at the school, but that their educational attainment levels are higher when they sit the *baccalauréat*. Finally, the proportion of pupils obtaining the *baccalauréat* in sciences, traditionally seen as the most selective, is 11.2 points higher in the test group, which is a relative increase of 45%.

Table 1 - Effects of being admitted to Sourdun on the conditions of obtaining the baccalauréat

	Proportion among control pupils	Sourdun - control
Obtaining general bac without repeating a year	42,5%	+18,5%***
Obtaining general bac "avec mention"	23,9%	+15,2%***
Obtaining S bac	24,6%	+11,2%**

Sources : data of the authors and MENESR DEPP, pupils' educational attainment data. The asterisks indicate the degree of statistical significance of the difference between the Sourdun pupils and the control pupils (***: 99%, **: 95%).

HETEROGENEOUS EFFECTS

The effects shown below are average effects for the whole cohort. But the benefits of the boarding school can differ for different types of pupil. Are the effects of Sourdun the same for both girls and boys? Do they differ according to year of application and initial educational attainment level?

Figure 2a and Figure 2b represent the same data as Figure 1 but separate out girls and boys. If they are not educated at Sourdun (i.e. they are in the control group), girls and boys have very different trajectories: the general *baccalauréat* is much more dominant among the girls (58.1%) and the share of girls taking the CAP-BEP, vocational *baccalauréat* and technical *baccalauréat* is very small; among the boys, the technical *baccalauréat* is much more common than the general *baccalauréat* (31.7% compared to 22%) and the vocational qualifications are much more popular. The proportion leaving without any qualifications or with a school certificate (DNB) is comparable, though slightly higher among the boys.

Sourdun channels more girls and boys into taking the general *baccalauréat*². In the test group, the percentage of girls obtaining a general *baccalauréat* rises to 75%, mainly due to a 15% reduction in the number of girls leaving without a qualification.

"Sourdun channels more girls and boys into taking the general baccalauréat".

Among the boys, a completely different mechanism is at work: nearly 50% of the boys in the test group obtain a general *baccalauréat*, but this reorientation is mainly due to its substitution for the technical *baccalauréat*; there is little effect on the proportion without a qualification.

Figure 2 : Effects of admission to Sourdun on the secondary qualification obtained, among girls and boys

Figure 2A: Girls

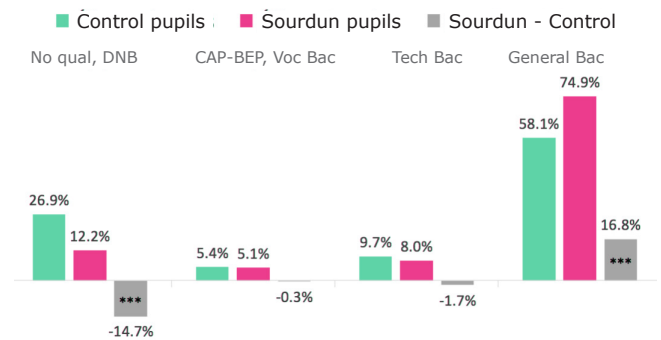
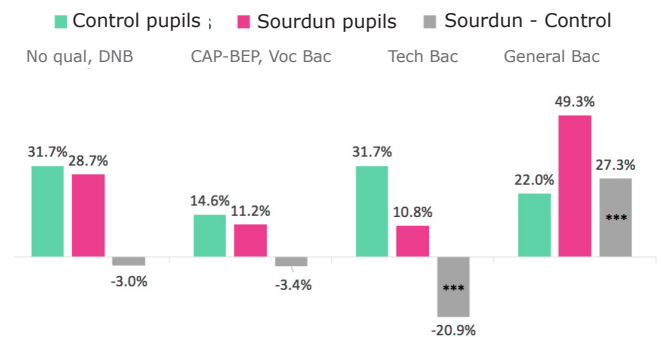


Figure 2B: Boys



Sources : data of the authors and MENESR DEPP, pupils' educational attainment data. The asterisks indicate the degree of statistical significance of the difference between the Sourdun pupils and the control pupils (***: 99%).

Some pupils applied to enter Sourdun at lower secondary (*collège*) level, and others at upper secondary (*lycée*) level. Table 2 below shows the effect of admission to Sourdun on the secondary qualification obtained, separating out these two groups. The effects of attending Sourdun seem to be slightly stronger among those who started at lower secondary level. For example, attending Sourdun reduces by 16.1 points the proportion of lower secondary pupils who leave school without a qualification, whereas this reduction is only 9.6 points among upper secondary pupils. Similarly, attending Sourdun increases the likelihood of obtaining a general *baccalauréat* by 25.2 points among lower secondary pupils, compared to 18.1 points among upper secondary pupils. However, these differences between the effects of Sourdun on lower and upper secondary pupils are not statistically significant. Clearer differences emerge if we look at the conditions of obtaining the *baccalauréat*.

For example, among lower secondary pupils, attending Sourdun increases by 26.4 points the proportion of pupils obtaining a general *baccalauréat* with a high grade (*avec mention*), whereas this increase is only 6.2 points among upper secondary pupils; the difference between these two effects is statistically significant.

(2) The effect is slightly greater among the boys than the girls, but this difference is not significant. However, the increase in the percentage of pupils obtaining the S *baccalauréat* is due almost entirely to the boys.

Table 2 : Effects of admission to Sourdun on the secondary qualification obtained, according to educational stage of entry

Panel A: Pupils applying at lower secondary level

	Proportion among control pupils	Sourdun - control
No qualifications or DNB	33,3 %	-16,1 %**
CAP-BEP or Voc Bac	15,9 %	-4,6 %
Tech bac	19,0 %	-4,4 %
General bac	31,7 %	+25,2 %***

Panel B: Pupils applying at upper secondary level

	Proportion among control pupils	Sourdun - control
No qualifications or DNB	23,9 %	-9,6 %*
CAP-BEP or Voc Bac	1,4 %	+3,5 %*
Tech bac	14,1 %	-11,9 %**
General bac	60,6 %	+18,1 %***

Sources : data of the authors and MENESR DEPP, pupils' educational attainment data. The asterisks indicate the degree of statistical significance of the difference between the Sourdun pupils and the control pupils (***: 99%, **: 95%; *: 90%).

At the time of applying, lower secondary pupils have not yet chosen their orientation, whereas upper secondary pupils have already decided to enter the general and technical *baccalauréat* stream, the only option offered at Sourdun. That undoubtedly explains why, in the control group, 15.9% of pupils who had applied at lower secondary level obtain a vocational qualification, compared to only 1.4% among the upper secondary pupils. Conversely, 31.7% of the lower secondary pupils in the control group obtain the general *baccalauréat*, compared to 60.6% of upper

secondary pupils. Overall, the more marked effects of Sourdun among lower secondary pupils may be explained by the fact that the orientation of these pupils is less firmly fixed when they start attending the boarding school.

Finally, the effects of Sourdun on secondary qualifications are not very different for the pupils with the highest educational attainment when they applied (those in the top third of our sample) and among the average or lower attainment pupils (those in the middle and bottom thirds). For example, Sourdun increases by 25.3 points the percentage of initially average or low attainment pupils who obtain the general *baccalauréat*, whereas the effect is 16.9 points for the pupils with the highest attainment; the difference between these two effects is not statistically significant. These results contrast with the short-term effects: two years after the random allocation of places, the effect of Sourdun on the mathematics skills of the pupils was very high among the pupils with high attainment levels, and much lower (and not significant) for pupils with low or average attainment (Behagel, De Chaisemartin, & Gurgand, 2017). One possible interpretation is that the average and low attainment pupils took longer to get over the "shock" of adapting to the boarding school, but that their attainment level subsequently increased too. Another possible interpretation is that Sourdun did not really improve the educational attainment of these pupils, but it increased their motivation to study, which is also an important factor for obtaining the general *baccalauréat*, or it simply tended to guide them more towards taking the general *baccalauréat*.

LESSONS TO BE LEARNED AND FOLLOW-UP OF THE STUDY

The results show that it is possible, using a targeted system that concentrates educational efforts and resources, to radically transform the school careers of pupils from poorer backgrounds, undermining the notion that education policy is powerless to overcome inequality. But this policy also makes a choice: to focus significant resources on motivated pupils of average educational attainment. It therefore does not answer the question of what should be done for pupils with lower attainment levels or who are less motivated in a context where, in contrast to Sourdun, the additional resources available for priority education at lower and upper secondary level are limited.

Moreover, although these results are encouraging, secondary qualifications are just one step. Sourdun aims to reduce the intergenerational transmission of social inequality. It is therefore crucial to determine its effects on higher education and employment among the pupils by extending our study through long-term

"It is possible (...) to radically transform the school careers of pupils from poorer backgrounds"

monitoring. For instance, **Figure 2a** suggests that Sourdun might have no positive effect at all on the boys' employment prospects. In the control group, a large proportion of the boys obtained a technical *baccalauréat*, which could lead on to further study for a BTS or at an IUT, both highly valued in the employment market. More of the boys at Sourdun obtained a general *baccalauréat* and could then go on to study at university, with employment prospects that vary considerably according to their route of study. To find out more, the test and control groups need to be monitored in the coming years, using administrative data, as they go through higher education and into the employment market.

In addition, this study only covers the Sourdun Internat d'Excellence. There are pitfalls to extrapolating its impact to other boarding schools, because the way they are run can vary widely from one institution to another. If a broader analysis of this policy is required, quantitative studies of other boarding schools would also be necessary to complete our work.

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