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The Impact of School Grants on Disadvantaged Students

Experimental Evidence from Romania

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Abstract

This study analyzes the impact of the Romania Secondary Education Project, which was designed to improve student retention, graduation rates and pass rates on a national end-of-high-school exam for low-achievement high schools in Romania. The program was implemented in three waves, September 2017, September 2018, and September 2020, with eligible high schools randomly assigned to each. The study exploits this staggered implementation to measure the project's causal impacts on students. The estimates indicate that the Romania Secondary Education Project had no significant impact on (i) student preferences for attending a program high school, (ii) student retention rates, (iii) high school graduation rates, (iv) enrollment in the post-high school baccalaureate exam, (v) baccalaureate exam pass rates, or (vi) baccalaureate exam scores. There was a small increase in girls' passing rates (3 percentage points). However, there was little heterogeneity in the null effects by grant size, urban-rural status, student achievement levels, town income levels, and type of curriculum taught.

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The Impact of School Grants on Disadvantaged Students: Experimental Evidence from Romania[†]

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1 Introduction

Romania has faced persistent challenges in secondary education outcomes, including high dropout rates in high school, poor performance in the end-of-high school standardized test (Baccalaureate exam), and low transition rates to tertiary education. For instance, in the early 2010s, roughly half of Romania's high school seniors did not transition to univer-sity, and the national, end-of-high-school Baccalaureate exam pass rate hovered around 50%. In response, the Government of Romania, with World Bank support, launched the Romania Secondary Education Project (ROSE) in 2016 (World Bank, forthcoming). ROSE was a nationwide program targeting approximately 80% of public high schools identified as "low-performing" or serving disadvantaged youth. The project's goal was to improve high school completion, improve student learning, and facilitate students' progression to higher education. To do so, it provided grants to high schools to implement interventions that address academic and personal factors that lead to dropout. These interventions included remedial classes, tutoring, counseling, extracurricular activities, and other support aimed at at-risk students.

Investment in school-level resources is often seen as a pathway to improving student outcomes, but global evidence on the effectiveness of such interventions is mixed. On one hand, several studies have found that increased funding and resources can positively influence educational attainment, especially when funds are directed toward evidence-based activities. For example, research in the United States has shown that sustained increases in per-pupil spending can lead to higher graduation rates and improved adult outcomes (Jackson et al., 2016). On the other hand, numerous reviews in developing country contexts have concluded that additional resources do not automatically translate into better learning or retention without complementary reforms in quality (Glewwe et al., 2011). Simply providing schools with more money may yield little impact if underlying issues—such as teaching quality, student motivation, or socioeconomic barriers—are not addressed. Glewwe et al. (2011) emphasize that resource-based interventions tend to be limited when funds are dispersed across many small activities, implemented with uneven intensity, or not directly linked to teaching and learning.

School grant programs in various countries illustrate this nuanced picture. In some cases, modest grants have been associated with improvements in inputs and student participation, but the effects on learning outcomes have often been limited. A recent experimental study in Mexico tested the impact of providing cash grants to primary schools and found no significant effects on student test scores (Romero et al., 2024), suggesting that increased funding alone was insufficient to raise achievement. Other interventions that *combine* funding with specific pedagogical improvements or accountability measures have shown more promise. Overall, the literature indicates that context and implementation details matter greatly: the success of grant-funded interventions depends on how schools utilize the funds and whether those uses effectively target the obstacles to student success.

This paper presents the results of an impact evaluation of the high school grant component of the ROSE project implemented in Romania. We exploit the staggered and randomized rollout of ROSE across three separate waves, allowing us to causally assess whether ROSE grants led to measurable improvements in key educational outcomes such as dropout rates, graduation rates, participation and performance in the Baccalaureate exam, and immediate enrollment in higher education. We also analyze heterogeneity in impacts across different student subgroups and school characteristics. Our results show that the school grants com-

ponents of ROSE had no significant impact on education outcomes. These results are true for schools in rural and urban areas, regardless of school size, grant amount, and socio-economic context.

This evaluation, one of the first randomized controlled trials in education in Romania, contributes to the literature by examining whether an infusion of resources at the high school level, coupled with locally designed remedial interventions, can improve educational outcomes in an upper-middle-income European country.

2 Institutional Background and Intervention

High schools in Romania are upper-secondary institutions that cover grades 9 to 12 and are attended by students who are typically 14 to 18 years old. According to the law, completing primary and secondary is compulsory in Romania.[1] Most students in Romania attend public high schools.[2] The Romanian education system is highly centralized, with a single curriculum and standardized salaries for teachers across all schools.

Assignment to high schools is based on an *admission score*. This score is a weighted average of the students' grades 5 to 8 GPA and their score on a national, standardized high school admission exam. Students are then assigned to tracks (general or vocational) via a mechanism that prioritizes the choices of high-scoring students. Starting with the top-scoring students, students are assigned their most preferred high school-track seat that was not previously filled by a higher-scoring student. As tracks are filled with top-scorers, fewer and fewer seats remain for the lower-scoring students. Since most high schools are oversubscribed, this system leads to a high degree of segregation of students by student scores across high schools.

At the end of high school, students can take a national test known as the *baccalaureate* (bac) exam. This bac exam is curriculum-specific and is high-stakes. Both passing the baccalaureate - by passing each individual component and receiving a baccalaureate diploma - and obtaining a high score are important. The diploma and a high score are typically admission requirements for universities. Even for non-postsecondary bound students, the baccalaureate diploma and a high score can serve as labor market signals.

2.1 The ROSE Program

The Romania Secondary Education (ROSE) Project was a World Bank-financed initiative aimed at improving educational outcomes for disadvantaged high school students in Romania. With a total investment of €200 million, the project operated from 2016 to 2024 and targeted low-performing public high schools with the objectives of reducing dropout rates, increasing the success rates on the Baccalaureate exam, and improving the transition from high school to tertiary education (Romanian Ministry of Education, 2015). ROSE targeted over 1,160 high schools in Romania, of which 874 agreed to participate. The project included three main components: (1) school-based interventions, such as remedial classes, tutoring, counseling, extracurricular activities, and minor infrastructure improvements; (2) university-level interventions, including bridge programs and learning centers for at-risk first-year students; and (3) systemic interventions such as improvement in standardized tests, and

[1] Monitorul Oficial al României (2023).

[2] Only 1.7% of Romanian high school students attended a private school in the 2017-2018 school year, according to the Romanian National Institute of Statistics.

enhancing monitoring and evaluation capacities of the Romanian Ministry of Education. Special attention was given to supporting disadvantaged groups, including students from rural areas, low-income backgrounds, and Roma communities.

The ROSE Project was implemented by Romania's Ministry of Education through the Unit for Externally Financed Projects, with technical and fiduciary support from the World Bank. The project used a decentralized approach to channel direct support to high schools identified as low performing. The ROSE school grants were designed as one-time, non-competitive allocations averaging €100,000 per high school (€159 per student), intended to be implemented over a multi-year period rather than renewed annually. Grant-financed activities included remedial education, tutoring, counseling, extracurricular programs, and minor renovations such as refurbishing labs or counseling rooms. Schools also received mentoring and technical assistance to ensure effective grant design and implementation. The implementation was phased to allow for learning and adaptation, and a robust quality assurance and monitoring system was established to guide and oversee grant execution.[3]

According to the ROSE design, each participating school was expected to receive its full grant allocation at the outset. In practice, however, disbursement occurred in tranches, conditional on expenditure reporting and approval.[4] These phased and occasionally delayed transfers likely reduced treatment intensity and may have attenuated short-term effects observed in this evaluation.

3 Research Design

3.1 Identification Strategy and Data

We exploit the staggered and randomized implementation of the ROSE project in order to identify its impacts. The ROSE project started implementation in three different rounds, with schools enrolling in the program in three different academic years. Schools in Round 1 began implementing the ROSE project in September 2017, schools in Round 2 in September 2018, and schools in Round 3 in September 2019. This means that by the end of high school in June 2020 students admitted to high school in the summer of 2016 to a Round 1 ROSE school would have been exposed to the program for three more years than students in Round 3 schools. Because schools were assigned randomly to rounds, any differences in outcomes observed at the end of school year 2019-20, four years after starting high school in 2016, should be caused by the different levels of exposure to the ROSE project. We estimate versions of the following equations:

$$Y_i = \beta_0 + \beta_{ROSE}\mathrm{I}(\mathrm{Round}_i = 1) + X_i + \epsilon_i \tag{1}$$

Here, Round_i is an indicator for the student being admitted to a school that is part of Round 1 of ROSE. We retain only students admitted to schools in ROSE Rounds 1 (treatment) and 3 (control) in our sample and measure the effects at high school graduation in

[3]The ROSE project was declared effective on January 15, 2016. Following effectiveness, the Ministry of Education, through the Unit for Externally Financed Projects (UEFP), undertook a preparatory phase that included developing the operational manuals, designing the grant selection and monitoring processes, and training school teams. The first high school grants (Batch 1) were launched in mid-2017, after this preparatory period, marking the start of school-level implementation.

[4]For instance, as of mid-2020, approximately 71 percent of the budget for Round 1 schools had been allocated and 57.6 percent disbursed.

2020, four years after the initial cohort entered high school.[5] Y_i are our student-level outcomes, such as bac passing rate, bac scores, and high school graduation. X_i's is a vector of control variables. We restrict controls to pre-intervention school characteristics and pre-ROSE outcomes, though in our baseline specification we do not use any controls. Results are qualitatively unchanged with and without controls (Appendix A.4), consistent with the randomized assignment. Standard errors are clustered at the high school level.[6] While pooling all three rounds of ROSE could increase precision in a setting with clean staggered adoption, ROSE experienced substantial deviations from the intended rollout—especially early implementation among some schools assigned to later rounds—which would make pooled estimates harder to interpret. For identification clarity, we therefore focus on the comparison between Round 1 and Round 3.

To implement the evaluation, we relied on several data sources. Administrative data from the Romanian Ministry of Education were used to calculate enrollment, retention, and high school graduation. The end-of-high-school Baccalaureate exam for 2020 (and 2019) was used to identify passing rates and test scores, as well as high school assignment and preference data. This rich longitudinal data set enabled tracking multiple educational outcomes over time, and random assignment enabled causal inference by comparing outcomes across implementation waves. Supplementary data sources included economic indicators and demographic variables linked at the city and school levels to test balance and explore the heterogeneity of impacts.

Complementing the quantitative evaluation, we include information from qualitative assessments undertaken as part of the World Bank project to capture beneficiary perceptions. These assessments were based on structured surveys and focus group discussions with students, teachers, and school administrators. For students, the questionnaires covered academic motivation, participation in remedial and counseling services, and aspirations toward tertiary education. Teachers were surveyed about their perceptions of student progress, the utility of grant-funded activities, and changes in teaching practices.

3.2 Sample

In total, 874 public high schools across Romania eventually received ROSE grants, covering about 82% of all public high schools nationally. For the primary causal analysis, the evaluation focused on comparing students from schools assigned to Round 1 (treatment) and Round 3 (control) in the bac 2020. This allowed for three years of exposure versus among students in Round 1 and no exposure to the treatment among students in Round 3. A total of 165 schools were included in our sample—93 in Round 1 (treatment) and 72 in Round 3 (control). The corresponding student-level data included 41,524 individuals who reached high school graduation by 2020, with 24,778 students in the treatment group and 16,746 in the control group. This sample enabled the evaluation team to estimate the short-term impacts of the ROSE program on key academic outcomes, such as Baccalaureate exam participation and performance, while maintaining the internal validity of the randomization design.

Based on the observed variance of Bac test scores and the actual number of schools and

[5]For completeness, we also show results using the bac of 2019 capturing the effects of two years of exposure to the treatment among Round 1 schools versus zero exposure among Round 3 schools. The results are basically the same for the cohorts exposed two and three years to the ROSE school grants.

[6]Although it may be conceptually appealing to cluster at the town level, we wanted to be able to pick up any effect ROSE may have on student outcomes, so we decided not to cluster standard errors too conservatively.

students included in the analysis, the ex-post Minimum Detectable Effect (MDE) for test scores is 0.09 standard deviations (SD). For graduation rates—an outcome closely aligned with the ROSE program's theory of change—the ex-post MDE is 0.067 SD. These calculations place the study's precision well within the range of typical effect sizes documented in the education literature (McEwan, 2015), indicating that the design had sufficient power to detect small to moderate impacts.

A valid random assignment of the rollout ensured that, prior to the intervention, the groups of schools were statistically comparable in terms of key characteristics and baseline outcomes. We validate the randomization of schools across ROSE rounds. We verify that the initial randomization of schools into ROSE rounds was valid by comparing the characteristics of the schools across ROSE rounds. Under a correct randomization, we should see no differences between schools in different ROSE rounds.

The tables in section A.1.1 show that neither the average characteristics of the high schools, nor those of students initially assigned across different rounds are significantly different across rounds.[7]

3.3 Compliance

In tables in section A.2, we analyze complying schools - those implementing the ROSE program during the round that they were initially assigned to - and non-complying schools - who refused to implement ROSE or asked to be assigned to a different round than the one they were assigned to.

Table 1: ROSE Rounds

	ROSE Round (Implementation)			
	1	2	3	Refused to Participate
ROSE Round (Randomization) 1	244	8	3	44
ROSE Round (Randomization) 2	11	464	80	210
ROSE Round (Randomization) 3	0	0	63	36

Note: Schools labeled 'Refused to Participate' were eligible for ROSE but declined to implement the program. They are distinct from the approximately 18% (305 schools) of public high schools that were never eligible for ROSE

By far the most significant deviation from the initial assignment is that many schools that qualified for ROSE ultimately refused to participate. In Table 1, we show that 44 of 299 round 1 schools, 210 of 765 round 2 schools, and 36 of 99 round 3 schools that were assigned to ROSE rounds 1 to 3, respectively, refused to participate.[8]

Table 1 also shows that some schools decided to take part in a different round than the one they were assigned to. Anecdotally, this is because some schools did not feel capable of implementing the program on such short notice, while others preferred to implement ROSE earlier. In any case, only 11 of the 255 schools that agreed to participate and were assigned to

[7]This is in terms of baccalaureate (high school exit exam) grades and outcomes, economic indicators of the towns where the high schools are located, student demographics and tracks offered by high schools.

[8]Initially, there were 300 schools assigned to round 1, 769 to round 2, and 100 to round 3, but some of These had closed by the time ROSE was implemented.

round 1 decided to postpone the implementation of ROSE until Round 2, while of the 472 schools assigned to round 2, only 8 decided to implement ROSE in round 1. However, 83 of the 146 participating schools assigned to round 3 decided to take part in ROSE in an earlier round. Nonetheless, the schools assigned to rounds 1 and 2 largely decided to respect their initial allocation.

If schools that moved between rounds are systematically different from average ROSE schools, this may invalidate the randomization. Therefore, we study the characteristics of these "non-complying" schools to make sure that they are not systematically different from "complying schools" on observable characteristics. In tables of section A.2, we show the differences between complying schools - who implemented ROSE during the round that they were initially assigned to - and non-complying schools - who asked for and were allowed to change their ROSE round. We present these comparisons to describe which types of schools were more likely to comply with their assigned round, but we do not rely on them for causal identification. Identification comes from randomized assignment to the rounds. In other words, the results section presents the "intention to treat (ITT)" results (including compliers and non-compliers), and the appendix tables in section A.4.1, the "average treatment on the treated (ATT)" (including only the compliers). As an additional check, our estimates are robust to including baseline school characteristics as controls, suggesting that observable differences related to compliance are not driving the results.

4 Descriptive Patterns

We now turn to a descriptive portrait of ROSE schools via several key indicators, and their evolution throughout the ROSE programs rollout. Recall that ROSE's objectives were to (i) increase student retention, (ii) increase baccalaureate pass rates, and (iii) encourage university enrollment and decrease college dropout rates in the first year.[9]

In Figure 1, we show performance indicators of different schools in Romania across different cohorts. First, the students who attend ROSE schools have much lower admission scores (panel 1 - on a scale from 1 to 10) than non-ROSE schools, highlighting the negative selection of students affecting ROSE schools and their status as schools serving at-risk children. The admission scores of students across the three ROSE rounds are generally very similar, which again confirms that randomization was correctly put in place.

Second, high school performance indicators - such as high school graduation rates,[10] bac taking rates and pass rates and bac scores (whether we include or exclude the students who pass the bac) - are, not surprisingly, lower in ROSE schools than non-ROSE schools, which is consistent with the lower admission scores of students.

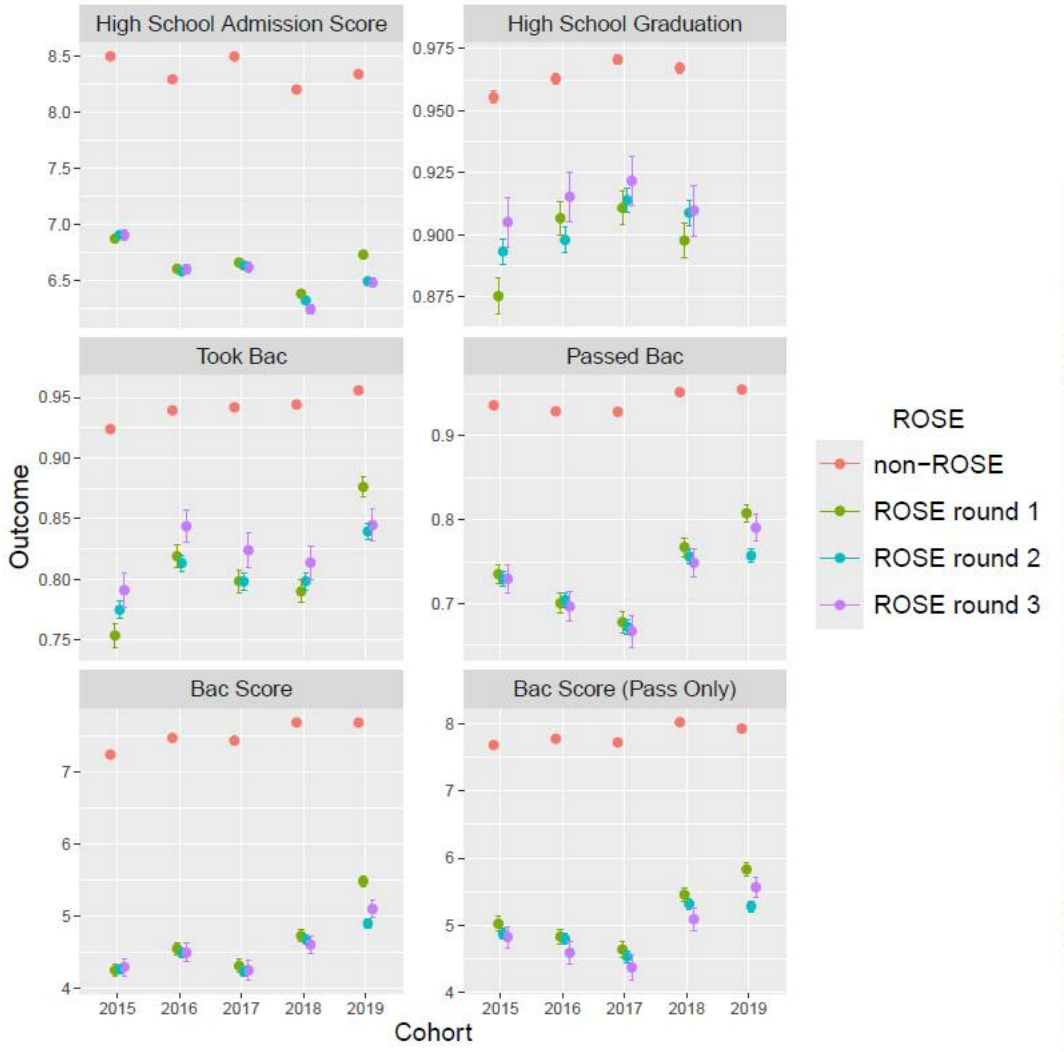
Moreover, some of these performance indicators in ROSE schools seem to improve over time. However, these improvements are very much in line with similar improvements in non-ROSE schools, which suggests that there are secular trends affecting all schools in Romania that are unrelated to the ROSE program [11] The U-shape trend in the baccalaureate pass rates and test scores reflects the year-to-year variations in the exam's difficulty.

[9]Unfortunately, we do not have the information on university enrollment. Therefore, in this evaluation, the outcome variables are restricted to high school indicators.

[10]We lack high school graduation data for the 2019 cohort, but observe their bac up-taking, passing rates, and grades.

[11]The positive trend in performance indicators among ROSE schools is reported in (European Commission - Eurydice, 2023). The statistics reported in Figure 1 show that, for the period 2015-2019, the same trend is observed among non-ROSE schools.

Figure 1: Descriptive Statistics: ROSE vs non-ROSE Schools (2015-2019 Cohorts)



Lastly, while ROSE Round 1 schools seem to improve more than the schools in subsequent rounds, in particular in 2019, this improvement is consistent with the higher admission scores of students admitted to the Round 1 schools. While this increase in the selectivity of Round 1 schools may be driven by the ROSE program itself, this seems unlikely, as we find no concurrent increase in admission scores for Round 2 schools relative to Round 3 schools. Thus, it is far more likely that we are simply observing the effects of an anomalous jump in admission scores for some schools, which are mirrored, 4 years later, by increases in baccalaureate performance. We analyze these descriptive claims in a causal framework in the next section. For now, we can conclude that, descriptively, there is little evidence to suggest that the ROSE program improved graduation from high school and baccalaureate performance.

5 Results

Table 2 shows the impact of ROSE grants on education outcomes without using any controls, a simple comparison between ROSE Round 1 and Round 3 schools in 2020. Up until 2020, the program had no observable impact on the bac take-up, passing, absenteeism, and

disqualification rates. That is to say, ROSE does not seem to have any impact on measurable outcomes at the end of high school. We first show that ROSE does not affect taking or passing the bac exam (columns 1 and 2 on Table 2). It also does not affect the probability of registering for the bac but being absent on the day of the exam or being disqualified from the exam while taking it.

Table 2: ROSE Effect on 2020 Bac Outcomes (Round 1 vs Round 3)

	Bac Outcome				
	Take	Passed	Failed	Absent	Disqualified
Round 1	-0.001	0	0	0.001	-0.001
p-value	0.92	1	0.98	0.92	0.35
Observations	41,524	41,524	41,524	41,524	41,524

This table shows results from a regression of 2020 bac exam outcomes on a ROSE Round 1 dummy (vs a ROSE Round 3 reference level), at the student level. Standard errors are clustered at the high school level.

ROSE also had no impact on student results on the baccalaureate exam and its components (Table 3). We measure the effects of ROSE assignment on different components of the bac exam: the Romanian component (common to all high school specializations), minority language component (taken by students studying in a minority language, such as German or Hungarian), specialization-specific mandatory components of the exam (such as history for humanities students and math for science students), elective components of the bac, and, finally, the average bac score. These outcomes are standardized.[12] We find no statistically significant effect on any of these dimensions. In the appendix, we show similar results for the 2019 bac (Tables 13 to 14): there is no measurable effect on taking the bac, passing the bac, or on bac scores.

Table 3: ROSE Effect on 2020 Bac Grades (Round 1 vs Round 3) Standardized

	Bac Grade								
	Romanian	Minority Lang	Specialization			Elective			Bac
			All	Math	History	All	Science	Humanities	
Round 1	-0.051	-0.127	0.013	-0.021	-0.128	-0.005	-0.061	0.024	-0.018
p-value	0.51	0.66	0.87	0.77	0.12	0.95	0.55	0.72	0.82
Observations	39,323	2,222	37,790	28,198	9,590	37,993	11,910	26,081	24,421

This table shows results from a regression of 2020 bac exam grades on a ROSE Round 1 dummy (vs a ROSE Round 3 reference level), at the student level. Outcomes are standarized. Standard errors are clustered at the high school level.

A potential concern with the lack of statistically significant results is that it could be the outcome of an underpowered sample. However, statistical underpower primarily affects the precision of the estimates rather than their direction or magnitude. When a study is underpowered, the resulting standard errors are larger, which reduces the probability of rejecting the null hypothesis even when modest effects exist. However, underpower does not

[12]For a non-standardized table, see Table 12, which produces similar results.

introduce bias into the estimated treatment effect, meaning that the point estimates remain unbiased representations of the average impact. To assess whether the absence of statistical significance might conceal meaningful program effects, we examined the distribution of point estimates across a wide set of specifications and functional forms, including models with and without controls, and across multiple subgroups defined by gender, grant size, and school characteristics. The resulting coefficients cluster tightly within a narrow interval between –0.13 SD and +0.04 SD. This consistent pattern of small and near-zero estimates, observed across specifications and outcome measures, provides strong evidence that the true average impact of ROSE on students' academic outcomes is close to zero, rather than being an artifact of insufficient statistical power.

5.1 Heterogenous effects

The null effects presented so far could hide heterogeneity. For example, it could be that some categories of students benefit from ROSE, while others do not and simply looking at the aggregate numbers makes it impossible to disentangle this. Moreover, it could be that the small differences in baseline characteristics between Round 1 and Round 3 schools make it difficult to observe the effect of the intervention.

Thus, we first add additional controls to our analysis. In section A.4 when controlling for baseline characteristics, we do not observe statistically significant improvements on the baccalaureate outcomes or grades. All control variables included in the robustness specifications are measured prior to ROSE implementation and therefore cannot be affected by the program. The reduction in the magnitude of some point estimates when controls are added reflects the strong predictive power of baseline school characteristics for subsequent outcomes, rather than sensitivity to specification choice. Importantly, the qualitative conclusions remain unchanged: across all specifications, ROSE has no statistically significant impact on the outcomes considered. Excluding non-complying schools also does not make much of a difference, as seen in section A.4.1. Lastly, in section A.4.2, we explore heterogeneity in treatment effects. We find some evidence that girls responded slightly more strongly to the treatment than boys. Otherwise, we find no effect of grant size, track types, or rural-urban status of students or development levels of the towns on the treatment effect.

We also look at how the intervention has affected the number of bac takers. The average bac outcomes could have stayed constant because more marginal students could have been encouraged to register and write the bac. This is especially prevalent in Romania, where schools are sensitive to their bac pass rate statistics and sometimes actively dissuade students from registering.

However, this is not what we find in the data. For the 2020 bac, Table 25 shows that the same number of students wrote the bac in the Round 1 and the Round 3 schools. This finding holds even after adding various controls and including and excluding compilers. We also look at the 2019 bac in Table 26, taken by students admitted to high school in 2015. We are able to match student admission records from 2015 to the bac records in 2019. This allows us to compare the number of students entering high schools to the ultimate number of bac takers four years later. Again, there is no evidence, when controlling for the number of entering students in 2015, that more students wrote or passed the BAC in 2019.

We next look at how ROSE schools rank in student preferences during the high school admission process. In Romania, students write a high school admission exam and submit ranked lists of preferences over high schools. Higher preferences for ROSE schools would

indicate that these schools became more desirable as a result of the ROSE program. More generally, if student preferences change after the implementation of ROSE, this could have implications for the types of students admitted to ROSE schools and possibly explain the previous null results. However, we find little evidence that ROSE schools are more attractive to students. After ROSE was implemented, students are less likely to list a ROSE school or track in their preference lists, and when they do, they list it at a slightly lower ranking than pre-ROSE. This holds both if we compare ROSE to non-ROSE schools (Table 27) and ROSE Round 1 to Round 3 schools using the timing of the ROSE roll-out (Table 28).

Lastly, we show that the retention rate of students was not improved by the ROSE program. Table 29 shows that the retention from grades 9 to 12 is not higher after ROSE was implemented in ROSE Round 1 schools. We show that the same applies to disadvantaged students, who score in the bottom quartile (nationally) on the admission exam (Table 30).

5.2 Qualitative Assessment

The evaluation did not collect systematic, school-by-school quantitative measures of implementation fidelity (e.g., hours of tutoring delivered or student participation rates by activity). However, we draw on qualitative surveys, focus groups, and administrative monitoring reports produced as part of project supervision. The qualitative assessments were designed to document implementation experiences and beneficiary perceptions in participating schools, rather than to support causal comparisons across ROSE rounds. As such, the qualitative sample did not include a systematically selected control group of schools.

Structured surveys and focus group discussions conducted under the ROSE Project with students, teachers, and school administrators document positive perceptions of the program's effects. Beneficiaries frequently reported improvements in student motivation, self-confidence, and engagement, as well as enhanced teacher–student relationships and more supportive school environments. Teachers emphasized that remedial and counseling sessions fostered more individualized instruction and helped reduce absenteeism, while students valued the academic guidance, counseling, and exposure to university settings offered through bridge programs and extracurricular activities. School directors highlighted that the flexibility of the grants improved institutional management capacity and encouraged collaboration among teaching staff.

These qualitative findings indicate that ROSE generated meaningful intermediate outcomes—particularly in terms of student motivation, participation, and socio-emotional development—that complement the quantitative results focused on final academic indicators. Although not directly reflected in test scores or graduation rates, beneficiaries perceived the interventions as transformative in fostering engagement and inclusion, even amid the implementation challenges and disruptions caused by the COVID-19 pandemic. Incorporating these qualitative insights provides a broader understanding of program effectiveness and helps contextualize the quantitative results.

6 Why are the grants not having an impact?

The lack of significant improvement in student outcomes from the ROSE high school grants raises important questions about implementation and how to better design interventions to achieve desired gains. Several factors may explain why this well-resourced program did not produce expected impacts, at least in the short-term.

1. Implementation Challenges: Field reports indicated that a subset of schools, particularly in Round 1 *struggled with implementation*. Some early-wave schools faced delays in rolling out activities, and a few later-wave schools began activities ahead of schedule. Such deviations from the intended rollout could dilute the measured treatment effects. Additionally, administrative burdens and varying school capacities meant not all schools fully utilized their grants or implemented interventions with the same intensity. Stronger implementation support and adherence to program timelines could be crucial in future interventions.

2. Use of Funds and Intervention Efficacy: The impact of a school grant program depends on *how schools use the funds*. In ROSE, schools had the flexibility to design activities (tutoring, counseling, extracurriculars, etc.). It's possible that many chosen activities, while helpful for student engagement, did not directly tackle the main barriers to improving graduation or exam performance. For instance, if funds were spent on general school materials or sporadic extra classes, these might not have been sufficient to significantly boost exam results or prevent dropouts among the most at-risk students. This underlines the need to ensure that funded interventions are evidence-based and closely linked to desired outcomes.

3. Duration of Support: Although ROSE was a large investment, its impact might be modest in the short term, but we cannot rule out a significant impact in the medium to long term. Research suggests that interventions often need to be sustained in the long term to yield measurable effects. ROSE grants were time-bound and may not have been enough to fundamentally change student trajectories, especially if students required more sustained support. Studying large-scale school capital investments in the United States, (Biasi et al., 2025) find that learning gains are highly heterogeneous and typically emerge only after several years of sustained exposure, with short-run effects close to zero even for investments that generate sizable long-term benefits. The evaluation presented here captures the effects of the first two years of treatment exposure. It could have been the case that the impact during those initial years was zero due to the lack of experience of schools in making good use of the school grant. Future programs might increase the intensity of support for the most vulnerable students or extend the duration of assistance to amplify impact.

4. Broader Systemic Issues: ROSE targeted symptoms of deeper educational challenges. The minimal impacts may indicate that addressing problems like dropout and low tertiary enrollment requires broader systemic changes—such as curriculum reform, improved teaching quality, early childhood education, or addressing socioeconomic barriers—beyond what a high school grant program alone can achieve. In fact, ROSE included systemic components (curriculum updates, teacher training) outside this evaluation's scope; these broader reforms and their interaction with school grants might influence outcomes over a longer term.

7 Conclusion

The impact evaluation of the ROSE school grant program provides a rare and valuable example of using rigorous experimental methods to assess the effectiveness of large-scale education reforms in an upper-middle-income country. While the randomized controlled

trial revealed no statistically significant impacts of the ROSE grants on key educational outcomes—including dropout, graduation, and Baccalaureate exam participation or performance—this result should not be interpreted as a failure of the program's implementation or design. Rather, it highlights the complexity of improving learning outcomes for disadvantaged students and the importance of evaluating not just whether resources are provided, but how they are used.

The absence of detectable effects is consistent with a growing literature showing that increases in school resources do not automatically translate into improvements in learning outcomes unless they directly affect instructional practices. ROSE grants were intentionally flexible, allowing schools to finance a wide range of activities—such as tutoring, counseling, extracurricular programs, and minor infrastructure improvements—which may improve student engagement or well-being without necessarily producing short-term gains in test scores or graduation outcomes. In addition, phased and delayed disbursement reduced effective treatment intensity, particularly for later-entry schools. Finally, many educational interventions require sustained exposure to generate measurable learning gains, suggesting that short- to medium-term effects may be limited even when programs are well implemented.

Importantly, the absence of measurable test-score gains does not negate the program's value as perceived by stakeholders. Qualitative assessments reveal that students, teachers, and school administrators broadly viewed the ROSE-funded activities as beneficial. School directors reported greater autonomy and increased institutional capacity as a result of managing the grants. Teachers appreciated the focus on at-risk students, and students participating in tutoring, counseling, and extracurricular activities expressed improved motivation and stronger connections to their schools. These subjective outcomes—though difficult to quantify—can lay the groundwork for longer-term improvements in learning and life trajectories.

Moreover, the evaluation underscores the benefit of embedding impact evaluation within large-scale policy efforts. Without this rigorous assessment, the program's effects would have remained uncertain, and learning opportunities would have been lost. The ROSE evaluation helps identify not only what worked but also what can be improved. Future iterations might focus on more targeted, evidence-based uses of school funds, enhance implementation support, and extend the duration or intensity of interventions.

While the headline results are null, the broader contribution of the ROSE program and its evaluation is in generating actionable evidence for policy makers. It represents an important step toward a more data-driven, adaptive approach to education reform—one that learns from each iteration to support disadvantaged students in Romania and beyond better.

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A Appendix

A.1 Balance Checks

A.1.1 High School Level

Table 4: Balance Check: High School Level

		Mean			p-value		
		Round 1	Round 2	Round 3	1 vs 2	1 vs 3	2 vs 3
Demographics	Proportion Rural	0.41	0.41	0.48	0.98	0.09*	0.07*
	Proportion Female	0.49	0.49	0.49	0.61	0.93	0.72
% Schools Offering Different Tracks	Technical	0.58	0.57	0.6	0.82	0.9	0.73
	Services	0.44	0.41	0.43	0.4	0.99	0.74
	Other	0.56	0.59	0.57	0.4	0.99	0.74
	Vocational	0.19	0.24	0.18	0.15	0.91	0.27
	Technology	0.77	0.72	0.77	0.11	1	0.41
	Theory	0.59	0.61	0.52	0.73	0.22	0.1
	Humanities	0.35	0.36	0.24	0.86	0.07*	0.03**
	Science	0.55	0.56	0.49	0.81	0.42	0.27
% Schools with Students Writing Different Bac Exam Component	Romanian Exam: Science Version	0.88	0.86	0.91	0.16	0.14	0.01**
	Romanian Exam: Humanities Version	0.12	0.14	0.09	0.16	0.14	0.01**
	Minority Language	0.1	0.06	0.08	0.02**	0.42	0.46
	Specialization Exam: Math	0.8	0.76	0.83	0.04**	0.44	0.04**
	Specialization Exam: History	0.2	0.24	0.17	0.04**	0.44	0.04**
	Elective Exam: Science	0.44	0.43	0.44	0.45	0.95	0.7
	Elective Exam: Humanities	0.56	0.57	0.56	0.45	0.95	0.7
	Foreign Language: English	0.86	0.85	0.84	0.43	0.27	0.46
	Foreign Language: Other	0.14	0.15	0.16	0.43	0.27	0.46
Bac Grades	Grade Romanian	5.72	5.83	5.69	0.09*	0.79	0.2
	Grade Minority Language	6.6	6.83	6.56	0.19	0.91	0.41
	Grade Specialization Exam	5.52	5.55	5.43	0.72	0.56	0.4
	Elective Exam Grade	6.09	6.14	6.09	0.52	0.96	0.72
	Bac Grade	6.96	6.99	6.94	0.48	0.67	0.37
Bac Outcomes	Bac Outcome: Promoted	0.44	0.46	0.45	0.3	0.91	0.6
	Bac Outcome: Failed	0.43	0.41	0.42	0.26	0.93	0.55
	Bac Outcome: Absent	0.12	0.12	0.13	0.86	0.92	0.81
	Bac Outcome: Disqualified	0	0	0	0.14	0.13	0.8
Economic Indicators	GNI per Capita	12,422.35	11,859.34	11,129.70	0.42	0.21	0.40
	GDP per Capita	22,443.56	21,415.71	20,102.20	0.42	0.20	0.40
	Income Tax	68,412,326.06	63,421,056.95	64,196,900.50	0.71	0.85	0.97
	Development Level: Higher	0.42	0.46	0.42	0.36	1.00	0.60
	Development Level: Upper Middle	0.39	0.3	0.31	0.01***	0.22	0.9
	Development Level: Lower Middle	0.15	0.19	0.20	0.12	0.26	0.88
	Development Level: Low	0.04	0.05	0.06	0.56	0.57	0.87
Cohort Size	High School-Specialziation	21.43	21.32	20.91	0.83	0.53	0.58
	High School	114.56	112.04	107.88	0.56	0.36	0.53
	Observations	299	764	99			

*p<0.1; **p<0.05; ***p<0.01 indicate the significance level at which two quantities are statistically different.
This table shows a balance check of schools in the three ROSE rounds, using data from 2015-2016 bac exams and other socioeconomic and demographic data. Mean school characteristics are presented for each round, as well as p-values from pairwise sample t-tests (for continuous values) and two-proportion z-tests (for proportions) to check if the mean school characteristics are equal across different rounds.

A.1.2 Student Level

Table 5: Balance Check: Student Level

		Mean			p-value		
		Round 1	Round 2	Round 3	1 vs 2	1 vs 3	2 vs 3
Demographics	Proportion Rural	0.35	0.36	0.35	0.91	0.97	0.97
	Proportion Female	0.5	0.5	0.51	0.93	0.64	0.6
Type of Track	Day	0.93	0.94	0.95	0.48	0.27	0.48
	Night	0.04	0.04	0.03	0.94	0.42	0.41
	Part-Time	0.03	0.02	0.02	0.25	0.31	0.88
Track	Humanities	0.16	0.15	0.11	0.92	0.08*	0.07*
	Science	0.24	0.22	0.23	0.54	0.85	0.86
	Technical	0.27	0.26	0.25	0.72	0.69	0.84
	Services	0.19	0.19	0.25	0.95	0.31	0.27
	Other	0.15	0.18	0.17	0.16	0.6	0.83
	Vocational	0.06	0.09	0.05	0.01***	0.77	0.04**
	Technology	0.55	0.53	0.61	0.56	0.3	0.13
	Theory	0.39	0.38	0.34	0.68	0.33	0.43
Bac Exam Components	Romanian Exam: Science Version	0.84	0.83	0.89	0.54	0.11	0.03**
	Romanian Exam: Humanities Version	0.16	0.17	0.11	0.54	0.11	0.03**
	Minority Language	0.06	0.04	0.04	0.19	0.41	0.98
	Specialization Exam: Math	0.79	0.77	0.85	0.33	0.08*	0.01**
	Specialization Exam: History	0.21	0.23	0.15	0.33	0.08*	0.01**
	Elective Exam: Science	0.43	0.41	0.41	0.48	0.68	0.96
	Elective Exam: Humanities	0.57	0.59	0.59	0.48	0.68	0.96
	Foreign Language: English	0.86	0.86	0.85	0.9	0.35	0.35
	Foreign Language: Other	0.14	0.14	0.15	0.9	0.35	0.35
Bac Grades	Grade Romanian	5.98	6.07	6.04	0.19	0.62	0.84
	Grade Minority Language	7	7.06	7.18	0.66	0.58	0.72
	Grade Specialization Exam	5.83	5.89	5.92	0.56	0.63	0.86
	Elective Exam Grade	6.4	6.43	6.44	0.74	0.85	1
	Bac Grade	7.21	7.26	7.25	0.21	0.64	0.84
Bac Outcomes	Bac Outcome: Promoted	0.5	0.51	0.52	0.47	0.48	0.75
	Bac Outcome: Failed	0.4	0.38	0.38	0.34	0.48	0.85
	Bac Outcome: Absent	0.1	0.1	0.1	0.7	0.84	0.63
	Bac Outcome: Disqualified	0.01	0	0	0.18	0.04**	0.21
Economic Indicators	GNI per Capita	13,646	13,302	13,015	0.72	0.64	0.79
	GDP per Capita	24,604	23,990	23,485	0.72	0.65	0.8
	Income Tax	95,084,244	81,541,874	111,118,359	0.53	0.73	0.5
	Development Level: Higher	0.46	0.52	0.51	0.15	0.46	0.92
	Development Level: Upper Middle	0.42	0.32	0.32	0.02**	0.17	0.99
	Development Level: Lower Middle	0.11	0.14	0.13	0.27	0.64	0.82
	Development Level: Low	0.01	0.02	0.03	0.19	0.15	0.31
	Small Grant	0.18	0.21	0.19	0.26	0.87	0.58
	Medium Grant	0.49	0.45	0.48	0.38	0.96	0.61
	Large Grant	0.33	0.34	0.33	0.87	0.96	0.88
	Observations	68,050	170,417	21,145			

*p<0.1; **p<0.05; ***p<0.01 indicate the significance level at which two quantities are statistically different.
This table shows a balance check of the student samples in the three ROSE rounds, using data from 2015-2016 bac exams and other socioeconomic and demographic data. Mean student characteristics are presented for each round, as well as p-values from regressions of the form: $\text{outcome}_i = \beta \text{ROSE\_round} + \epsilon_i$, where i is an index of students. Standard errors are clustered at the high school level.

A.2 Complier Analysis

A.2.1 High School Level

Table 6: ROSE Round 1: Compliers vs Non-compliers

		Mean		p-value
		Compliers	Non-compliers	
Demographics	Proportion Rural	0.41	0.41	0.9
	Proportion Female	0.49	0.48	0.65
Type of School	Vocational	0.17	0.29	0.07*
	Technology	0.77	0.78	1
	Theory	0.61	0.49	0.12
% Schools Offering Different Tracks	Humanities	0.36	0.31	0.61
	Science	0.57	0.47	0.27
	Technical	0.58	0.58	1
	Services	0.47	0.31	0.04**
	Other	0.05	0.11	0.22
% Schools with Students Writing Different Bac Exam Component	Romanian Exam: Science Version	0.88	0.88	0.91
	Romanian Exam: Humanities Version	0.12	0.12	0.91
	Minority Language	0.09	0.19	0.05**
	Specialization Exam: Math	0.81	0.77	0.36
	Specialization Exam: History	0.19	0.23	0.36
	Elective Exam: Science	0.42	0.53	0.05*
	Elective Exam: Humanities	0.58	0.47	0.05*
	Foreign Language: English	0.85	0.91	0***
	Foreign Language: Other	0.15	0.09	0***
Bac Grades	Grade Romanian	5.76	5.54	0.2
	Grade Minority Language	6.72	6.37	0.33
	Grade Specialization Exam	5.58	5.26	0.17
	Elective Exam Grade	6.17	5.72	0.07*
	Bac Grade	6.97	6.94	0.76
Bac Outcomes	Bac Outcome: Promoted	0.45	0.41	0.3
	Bac Outcome: Failed	0.42	0.44	0.71
	Bac Outcome: Absent	0.12	0.16	0.12
	Bac Outcome: Disqualified	0.01	0	0.01***
Economic Indicators	GNI per Capita	12,118	13,771	0.26
	GDP per Capita	21,890	24,898	0.25
	Income Tax	65,227,921	82,539,502	0.6
	Development Level: Higher	0.4	0.55	0.06*
	Development Level: Upper Middle	0.41	0.31	0.24
	Development Level: Lower Middle	0.15	0.13	0.8
	Development Level: Low	0.05	0.02	0.59
	Small Grant	0.32	0.35	0.88
	Medium Grant	0.48	0.51	0.85
	Large Grant	0.19	0.15	0.53
Cohort Size	Average High School-Specialization Cohort Size	38.31	38.66	0.92
	Average High School Cohort Size	119.34	93.07	0.01***
	Observations	244	55	

*p<0.1; **p<0.05; ***p<0.01 indicate the significance level at which two quantities are statistically different.
This table shows a comparison of compliers (schools selected for ROSE via the randomization which actually received funds in the planned year) vs non-compliers (schools selected for ROSE via the randomization which did not receive funds, or received them in a different round) for ROSE round 1. Mean school characteristics are presented for compliers vs non-compliers, as well as p-values from pairwise sample t-tests (for continuous values) and two-proportion z-tests (for proportions) to check if the mean school characteristics are equal across different rounds.

Table 7: ROSE Round 2: Compliers vs Non-compliers

		Mean		p-value
		Compliers	Non-compliers	
Demographics	Proportion Rural	0.41	0.41	0.83
	Proportion Female	0.47	0.51	0.01***
Type of School	Vocational	0.22	0.27	0.14
	Technology	0.77	0.65	0***
	Theory	0.62	0.58	0.34
% Schools Offering Different Tracks	Humanities	0.36	0.35	0.84
	Science	0.58	0.52	0.1*
	Technical	0.62	0.5	0***
	Services	0.46	0.33	0***
	Other	0.08	0.11	0.18
% Schools with Students Writing Different Bac Exam Component	Romanian Exam: Science Version	0.87	0.85	0.24
	Romanian Exam: Humanities Version	0.13	0.15	0.24
	Minority Language	0.06	0.07	0.61
	Specialization Exam: Math	0.78	0.73	0.06*
	Specialization Exam: History	0.22	0.27	0.06*
	Elective Exam: Science	0.43	0.42	0.68
	Elective Exam: Humanities	0.57	0.58	0.68
	Foreign Language: English	0.86	0.84	0.11
	Foreign Language: Other	0.14	0.16	0.11
Bac Grades	Grade Romanian	5.77	5.93	0.03**
	Grade Minority Language	6.69	7.04	0.09*
	Grade Specialization Exam	5.53	5.59	0.55
	Elective Exam Grade	6.12	6.18	0.54
	Bac Grade	6.95	7.05	0.02**
Bac Outcomes	Bac Outcome: Promoted	0.45	0.49	0.03**
	Bac Outcome: Failed	0.43	0.39	0.01***
	Bac Outcome: Absent	0.12	0.12	0.67
	Bac Outcome: Disqualified	0	0	0.18
Economic Indicators	GNI per Capita	11,469	12,462	0.13
	GDP per Capita	20,706	22,513	0.13
	Income Tax	53,845,130	78,231,823	0.08*
	Development Level: Higher	0.43	0.5	0.1*
	Development Level: Upper Middle	0.34	0.24	0.01***
	Development Level: Lower Middle	0.18	0.2	0.5
	Development Level: Low	0.05	0.06	0.69
	Small Grant	0.33	0.39	0.08*
	Medium Grant	0.44	0.47	0.47
	Large Grant	0.23	0.14	0***
Cohort Size	Average High School-Specialziation Cohort Size	20.57	22.78	0***
	Average High School Cohort Size	117.96	102.94	0***
	Observations	464	300	

*p<0.1; **p<0.05; ***p<0.01 indicate the significance level at which two quantities are statistically different. This table shows a comparison of compliers (schools selected for ROSE via the randomization which actually received funds in the planned year) vs non-compliers (schools selected for ROSE via the randomization which did not receive funds, or received them in a different round) for ROSE round 2. Mean school characteristics are presented for compliers vs non-compliers, as well as p-values from pairwise sample t-tests (for continuous values) and two-proportion z-tests (for proportions) to check if the mean school characteristics are equal across different rounds.

Table 8: ROSE Round 3: Compliers vs Non-compliers

		Mean		p-value
		Compliers	Non-compliers	
Demographics	Proportion Rural	0.47	0.51	0.6
	Proportion Female	0.49	0.5	0.85
Type of School	Vocational	0.19	0.17	0.98
	Technology	0.75	0.81	0.67
	Theory	0.52	0.5	0.98
% Schools Offering Different Tracks	Humanities	0.29	0.17	0.28
	Science	0.51	0.47	0.89
	Technical	0.6	0.58	1
	Services	0.44	0.42	0.95
	Other	0.1	0.17	0.47
% Schools with Students Writing Different Bac Exam Component	Romanian Exam: Science Version	0.9	0.94	0.25
	Romanian Exam: Humanities Version	0.1	0.06	0.25
	Minority Language	0.09	0.06	0.57
	Specialization Exam: Math	0.82	0.84	0.77
	Specialization Exam: History	0.18	0.16	0.77
	Elective Exam: Science	0.43	0.46	0.64
	Elective Exam: Humanities	0.57	0.54	0.64
	Foreign Language: English	0.85	0.82	0.53
	Foreign Language: Other	0.15	0.18	0.53
Bac Grades	Grade Romanian	5.69	5.68	0.97
	Grade Minority Language	6.86	6.1	0.33
	Grade Specialization Exam	5.48	5.34	0.62
	Elective Exam Grade	6.13	6.03	0.73
Bac Outcomes	Bac Grade	6.96	6.9	0.6
	Bac Outcome: Promoted	0.46	0.43	0.67
	Bac Outcome: Failed	0.43	0.41	0.65
	Bac Outcome: Absent	0.11	0.15	0.1
	Bac Outcome: Disqualified	0	0	0.18
Economic Indicators	GNI per Capita	10,877	11,570	0.7
	GDP per Capita	19,648	20,896	0.7
	Income Tax	59,060,844	73,184,998	0.73
	Development Level: Higher	0.41	0.44	0.92
	Development Level: Upper Middle	0.33	0.28	0.73
	Development Level: Lower Middle	0.22	0.17	0.69
	Development Level: Low	0.03	0.11	0.25
	Small Grant	0.24	0.47	0.03**
	Medium Grant	0.59	0.44	0.25
	Large Grant	0.17	0.08	0.34
Cohort Size	Average High School-Specialziation Cohort Size	22.33	17.89	0***
	Average High School Cohort Size	123.06	81.15	0***
	Observations	63	36	

*p<0.1; **p<0.05; ***p<0.01 indicate the significance level at which two quantities are statistically different. This table shows a comparison of compliers (schools selected for ROSE via the randomization which actually received funds in the planned year) vs non-compliers (schools selected for ROSE via the randomization which did not receive funds, or received them in a different round) for ROSE round 3. Mean school characteristics are presented for compliers vs non-compliers, as well as p-values from pairwise sample t-tests (for continuous values) and two-proportion z-tests (for proportions) to check if the mean school characteristics are equal across different rounds.

A.2.2 Student Level

Table 9: ROSE Round 1: Compliers vs Non-compliers

		Mean		p-value
		Compliers	Non-compliers	
Demographics	Proportion Rural	0.36	0.28	0.125
	Proportion Female	0.49	0.52	0.297
Type of School	Vocational	0.05	0.08	0.284
	Technology	0.57	0.45	0.189
	Theory	0.38	0.47	0.312
Track	Humanities	0.15	0.19	0.354
	Science	0.23	0.28	0.338
	Technical	0.28	0.18	0.037**
	Services	0.19	0.21	0.782
	Other	0.15	0.14	0.794
Bac Exam Component	Romanian Exam: Science Version	0.85	0.81	0.349
	Romanian Exam: Humanities Version	0.15	0.19	0.349
	Minority Language	0.05	0.13	0.077*
	Specialization Exam: Math	0.8	0.73	0.157
	Specialization Exam: History	0.2	0.27	0.157
	Elective Exam: Science	0.43	0.4	0.597
	Elective Exam: Humanities	0.57	0.6	0.597
	Foreign Language: English	0.85	0.9	0.007***
	Foreign Language: Other	0.15	0.1	0.007***
Bac Grades	Grade Romanian	5.94	6.15	0.244
	Grade Minority Language	6.84	7.32	0.054*
	Grade Specialization Exam	5.79	6.11	0.239
	Elective Exam Grade	6.36	6.66	0.21
	Bac Grade	7.18	7.37	0.084*
Bac Outcomes	Bac Outcome: Promoted	0.49	0.56	0.149
	Bac Outcome: Failed	0.41	0.34	0.088*
	Bac Outcome: Absent	0.1	0.1	0.912
	Bac Outcome: Disqualified	0.01	0	0.013**
Economic Indicators	GNI per Capita	13,432	14,881	0.49
	GDP per Capita	24,220	26,824	0.491
	Income Tax	91,177,517	117,625,269	0.626
	Development Level: Higher	0.43	0.61	0.065*
	Development Level: Upper Middle	0.45	0.25	0.018**
	Development Level: Lower Middle	0.11	0.13	0.741
	Development Level: Low	0.01	0	0.184
	Small Grant	0.17	0.25	0.256
	Medium Grant	0.5	0.43	0.526
	Large Grant	0.34	0.32	0.872
	Observations	57,998	10,052	

*p<0.1; **p<0.05; ***p<0.01 indicate the significance level at which two quantities are statistically different.

This table shows a comparison of compliers (students in schools selected for ROSE via the randomization which actually received funds in the planned year) vs non-compliers (students in schools selected for ROSE via the randomization which did not receive funds, or received them in a different round) for ROSE round 1. Mean student characteristics are presented for each round, as well as p-values from regressions of the form: $\text{outcome}_i = \beta \text{ROSE\_round} + \epsilon_i$, where i is an index of students. Standard errors are clustered at the high school level.

Table 10: ROSE Round 2: Compliers vs Non-compliers

		Mean		p-value
		Compliers	Non-compliers	
Demographics	Proportion Rural	0.37	0.34	0.262
	Proportion Female	0.48	0.52	0.001***
Type of School	Vocational	0.08	0.11	0.114
	Technology	0.58	0.44	0***
	Theory	0.34	0.45	0.002***
Track	Humanities	0.13	0.19	0.003***
	Science	0.2	0.26	0.014**
	Technical	0.29	0.2	0.001***
	Services	0.21	0.15	0.058*
	Other	0.16	0.2	0.17
Bac Exam Component	Romanian Exam: Science Version	0.86	0.79	0.003***
	Romanian Exam: Humanities Version	0.14	0.21	0.003***
	Minority Language	0.04	0.05	0.295
	Specialization Exam: Math	0.8	0.72	0.001***
	Specialization Exam: History	0.2	0.28	0.001***
	Elective Exam: Science	0.43	0.38	0.09*
	Elective Exam: Humanities	0.57	0.62	0.09*
	Foreign Language: English	0.86	0.85	0.299
	Foreign Language: Other	0.14	0.15	0.299
Bac Grades	Grade Romanian	5.94	6.29	0***
	Grade Minority Language	6.84	7.35	0.004***
	Grade Specialization Exam	5.76	6.11	0.002***
	Elective Exam Grade	6.3	6.67	0.001***
	Bac Grade	7.17	7.4	0***
Bac Outcomes	Bac Outcome: Promoted	0.48	0.57	0***
	Bac Outcome: Failed	0.4	0.34	0***
	Bac Outcome: Absent	0.11	0.09	0.005***
	Bac Outcome: Disqualified	0	0	0.279
Economic Indicators	GNI per Capita	12,748	14,278	0.055*
	GDP per Capita	22,992	25,752	0.055*
	Income Tax	69,341,426	103,061,241	0.115
	Development Level: Higher	0.49	0.58	0.038**
	Development Level: Upper Middle	0.36	0.26	0.021**
	Development Level: Lower Middle	0.14	0.14	0.963
	Development Level: Low	0.02	0.02	0.748
	Small Grant	0.19	0.25	0.05**
	Medium Grant	0.42	0.5	0.096*
	Large Grant	0.39	0.25	0.003***
	Observations	108,757	61,660	

*p<0.1; **p<0.05; ***p<0.01 indicate the significance level at which two quantities are statistically different.

This table shows a comparison of compliers (students in schools selected for ROSE via the randomization which actually received funds in the planned year) vs non-compliers (students in schools selected for ROSE via the randomization which did not receive funds, or received them in a different round) for ROSE round 2. Mean student characteristics are presented for each round, as well as p-values from regressions of the form: $\text{outcome}_i = \beta \text{ROSE\_round} + \epsilon_i$, where i is an index of students. Standard errors are clustered at the high school level.

Table 11: ROSE Round 3: Compliers vs Non-compliers

		Mean		p-value
		Compliers	Non-compliers	
Demographics	Proportion Rural	0.34	0.38	0.705
	Proportion Female	0.5	0.53	0.268
Type of School	Vocational	0.05	0.05	0.967
	Technology	0.58	0.69	0.338
	Theory	0.37	0.27	0.327
Track	Humanities	0.12	0.08	0.385
	Science	0.25	0.19	0.363
	Technical	0.26	0.22	0.598
	Services	0.23	0.27	0.707
	Other	0.14	0.24	0.19
Bac Exam Component	Romanian Exam: Science Version	0.88	0.92	0.337
	Romanian Exam: Humanities Version	0.12	0.08	0.337
	Minority Language	0.04	0.05	0.778
	Specialization Exam: Math	0.84	0.87	0.507
	Specialization Exam: History	0.16	0.13	0.507
	Elective Exam: Science	0.4	0.42	0.815
	Elective Exam: Humanities	0.6	0.58	0.815
	Foreign Language: English	0.84	0.85	0.769
	Foreign Language: Other	0.16	0.15	0.769
Bac Grades	Grade Romanian	5.99	6.18	0.493
	Grade Minority Language	7.03	7.49	0.425
	Grade Specialization Exam	5.89	5.99	0.793
	Elective Exam Grade	6.4	6.54	0.686
	Bac Grade	7.19	7.38	0.294
Bac Outcomes	Bac Outcome: Promoted	0.52	0.53	0.843
	Bac Outcome: Failed	0.39	0.34	0.443
	Bac Outcome: Absent	0.09	0.12	0.277
	Bac Outcome: Disqualified	0	0	0.195
Economic Indicators	GNI per Capita	12,728	13,781	0.576
	GDP per Capita	22,974	24,849	0.579
	Income Tax	120,760,118	85,377,436	0.616
	Development Level: Higher	0.46	0.65	0.132
	Development Level: Upper Middle	0.37	0.2	0.109
	Development Level: Lower Middle	0.15	0.08	0.274
	Development Level: Low	0.02	0.07	0.216
	Small Grant	0.13	0.33	0.054*
	Medium Grant	0.51	0.4	0.395
	Large Grant	0.35	0.27	0.605
	Observations	15,383	5,762	

*p<0.1; **p<0.05; ***p<0.01 indicate the significance level at which two quantities are statistically different.

This table shows a comparison of compliers (students in schools selected for ROSE via the randomization which actually received funds in the planned year) vs non-compliers (students in schools selected for ROSE via the randomization which did not receive funds, or received them in a different round) for ROSE round 3. Mean student characteristics are presented for each round, as well as p-values from regressions of the form: $\text{outcome}_i = \beta \text{ROSE\_round} + \epsilon_i$, where i is an index of students. Standard errors are clustered at the high school level.

A.3 Impact Evaluation

A.3.1 No Controls

Table 12: ROSE Effect on 2020 Bac Grades (Round 1 vs Round 3): Non-Standardized

	Bac Grade								
	Romanian	Minority Lang	Specialization			Elective			Bac
			All	Math	History	All	Science	Humanities	
Round 1	-0.10	-0.19	0.03	-0.05	-0.31	-0.01	-0.13	0.05	-0.02
p-value	0.51	0.66	0.87	0.77	0.12	0.95	0.55	0.72	0.82
Observations	39,323	2,222	37,790	28,198	9,590	37,993	11,910	26,081	24,421

This table shows results from a regression of 2020 bac exam grades on a ROSE Round 1 dummy (vs a ROSE Round 3 reference level), at the student level. Standard errors are clustered at the high school level.

A.3.2 2019 Outcomes

Table 13: ROSE Effect on 2019 Bac Grades (Round 1 vs Round 3)

	Bac Grade								
	Romanian	Minority Lang	Specialization			Elective			Bac
			All	Math	History	All	Science	Humanities	
Round 1	-0.134	-0.283	-0.037	-0.058	-0.329**	-0.091	-0.202	-0.03	-0.04
p-value	0.3	0.44	0.82	0.72	0.03	0.53	0.4	0.81	0.66
Observations	33,221	2,134	32,395	23,574	8,819	32,535	9,654	22,879	22,436

This table shows results from a regression of 2019 bac exam grades on a ROSE Round 1 dummy (vs a ROSE Round 3 reference level), at the student level. Standard errors are clustered at the high school level.

Table 14: ROSE Effect on 2019 Bac Grades (Round 1 vs Round 3): Extensive Margin

	Bac Outcome				
	Take	Passed	Failed	Absent	Disqualified
Round 1	-0.02	-0.022	0.006	0.016	0
p-value	0.5	0.51	0.81	0.17	0.35
Observations	35,449	35,449	35,449	35,449	35,449

This table shows results from a regression of 2019 bac exam outcomes on a ROSE Round 1 dummy (vs a ROSE Round 3 reference level), at the student level. Standard errors are clustered at the high school level.

Table 15: ROSE Effect on 2019 Bac Grades (Round 1 vs Round 3) Standardized

	Bac Grade								
	Romanian	Minority Lang	Specialization			Elective			Bac
			All	Math	History	All	Science	Humanities	
Round 1	-0.077	-0.187	-0.021	-0.032	-0.137**	-0.049	-0.104	-0.02	-0.04
p-value	0.26	0.44	0.75	0.64	0.03	0.47	0.34	0.74	0.58
Observations	33,221	2,134	32,395	23,574	8,819	32,535	9,654	22,879	22,436

This table shows results from a regression of 2019 bac exam outcomes on a ROSE Round 1 dummy (vs a ROSE Round 3 reference level), at the student level. Standard errors are clustered at the high school level.

A.3.3 With Controls

A.4 All Schools

Table 16: ROSE Effect on 2020 Bac Grades (Round 1 vs Round 3)

	Bac Grade								
	Romanian	Minority Lang	Specialization			Elective			Bac
			All	Math	History	All	Science	Humanities	
Round 1	-0.018	0.031	0.04	0.033	-0.015	0.012	-0.137	0.111	-0.008
p-value	0.73	0.88	0.59	0.7	0.9	0.84	0.16	0.11	0.84
Proportion Rural	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Proportion Female	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Track FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
% Minority Language	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
% Bac Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
% Bac Fail	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Development Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bac Average: Romanian	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bac Average: Math/Hist	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bac Average: Elective	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bac Average	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Grant Size	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	39,281	2,201	37,749	28,161	9,573	37,951	11,878	26,055	24,395

This table shows results from a regression of 2020 bac exam grades on a ROSE Round 3 dummy (vs a ROSE Round 1 reference level) and controls. Controls are measured at the high school level at baseline (2014 and 2015 bac sessions). Standard errors are clustered at the high school level.

Table 17: ROSE Effect on 2020 Bac Outcomes (Round 1 vs Round 3)

	Bac Outcome			
	Passed	Failed	Absent	Disqualified
Round 1	0.014	-0.011	-0.002	-0.001
p-value	0.29	0.3	0.79	0.19
Proportion Rural	Yes	Yes	Yes	Yes
Proportion Female	Yes	Yes	Yes	Yes
Track FE	Yes	Yes	Yes	Yes
% Minority Language	Yes	Yes	Yes	Yes
% Bac Pass	Yes	Yes	Yes	Yes
% Bac Fail	Yes	Yes	Yes	Yes
Development Level	Yes	Yes	Yes	Yes
Bac Average: Romanian	Yes	Yes	Yes	Yes
Bac Average: Math/Hist	Yes	Yes	Yes	Yes
Bac Average: Elective	Yes	Yes	Yes	Yes
Bac Average	Yes	Yes	Yes	Yes
Grant Size	Yes	Yes	Yes	Yes
Observations	41,467	41,467	41,467	41,467

This table shows results from a regression of 2020 bac exam grades on a ROSE Round 3 dummy (vs a ROSE Round 1 reference level) and controls. Controls are measured at the high school level at baseline (2014 and 2015 bac sessions). Standard errors are clustered at the high school level.

A.4.1 Compliers Only

Table 18: ROSE Effect on 2020 Bac Grades (Round 1 vs Round 3)

	Bac Grade								
	Romanian	Minority Lang	Specialization			Elective			Bac
			All	Math	History	All	Science	Humanities	
Round 1	0.025	0.301	0.095	0.095	-0.014	0.048	-0.144	0.175**	0.014
p-value	0.66	0.21	0.25	0.31	0.93	0.52	0.22	0.04	0.73
Proportion Rural	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Proportion Female	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Track FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
% Minority Language	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
% Bac Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
% Bac Fail	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Development Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bac Average: Romanian	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bac Average: Math/Hist	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bac Average: Elective	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bac Average	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Grant Size	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	32,890	1,480	31,573	23,773	7,785	31,751	10,302	21,431	19,972

This table shows results from a regression of 2020 bac exam grades on a ROSE Round 3 dummy (vs a ROSE Round 1 reference level) and controls. Controls are measured at the high school level at baseline (2014 and 2015 bac sessions). Standard errors are clustered at the high school level. Non-complying schools are excluded.

Table 19: ROSE Effect on 2020 Bac Outcomes (Round 1 vs Round 3)

	Bac Outcome			
	Passed	Failed	Absent	Disqualified
Round 1	0.024	-0.022*	-0.001	-0.001
p-value	0.14	0.07	0.91	0.48
Proportion Rural	Yes	Yes	Yes	Yes
Proportion Female	Yes	Yes	Yes	Yes
Track FE	Yes	Yes	Yes	Yes
% Minority Language	Yes	Yes	Yes	Yes
% Bac Pass	Yes	Yes	Yes	Yes
% Bac Fail	Yes	Yes	Yes	Yes
Development Level	Yes	Yes	Yes	Yes
Bac Average: Romanian	Yes	Yes	Yes	Yes
Bac Average: Math/Hist	Yes	Yes	Yes	Yes
Bac Average: Elective	Yes	Yes	Yes	Yes
Bac Average	Yes	Yes	Yes	Yes
Grant Size	Yes	Yes	Yes	Yes
Observations	34,658	34,658	34,658	34,658

This table shows results from a regression of 2020 bac exam grades on a ROSE Round 3 dummy (vs a ROSE Round 1 reference level) and controls. Controls are measured at the high school level at baseline (2014 and 2015 bac sessions). Standard errors are clustered at the high school level. Non-complying schools are excluded.

A.4.2 Heterogeneity

Table 20: ROSE Effect on 2020 Bac Outcomes (Round 1 vs Round 3) by Rural-Urban Status

	Bac Outcome			
	Passed	Failed	Absent	Disqualified
Round 1	0.025	-0.017	-0.005	-0.002
p-value	0.21	0.3	0.65	0.13
Urban	0.03*	-0.03**	0	0
p-value	0.08	0.04	0.73	0.23
Round 1 x Urban	-0.01	0	0	0
p-value	0.64	0.79	0.82	0.19
Urban FE	Yes	Yes	Yes	Yes
Proportion Rural	Yes	Yes	Yes	Yes
Proportion Female	Yes	Yes	Yes	Yes
Track FE	Yes	Yes	Yes	Yes
% Minority Language	Yes	Yes	Yes	Yes
% Bac Pass	Yes	Yes	Yes	Yes
% Bac Fail	Yes	Yes	Yes	Yes
Development Level	Yes	Yes	Yes	Yes
Bac Average: Romanian	Yes	Yes	Yes	Yes
Bac Average: Math/Hist	Yes	Yes	Yes	Yes
Bac Average: Elective	Yes	Yes	Yes	Yes
Bac Average	Yes	Yes	Yes	Yes
Grant Size	Yes	Yes	Yes	Yes
Observations	41,353	41,353	41,353	41,353

This table shows results from a regression of 2020 bac exam outcomes on a ROSE Round 3 dummy (vs a ROSE Round 1 reference level) and controls. Controls are measured at the high school level at baseline (2014 and 2015 bac sessions). The regression is: $\text{outcome}_i = \alpha_X X_i + \beta \text{Round1} \times \text{Gender} + \epsilon_i$, where X are controls, Round1 is an indicator variable for students in ROSE Round 1 schools and Urban is the school's urban status. The reference levels are ROSE Round 3 schools and rural high schools. Standard errors are clustered at the high school level.

Table 21: ROSE Effect on 2020 Bac Outcomes (Round 1 vs Round 3) by Grant Size

	Bac Outcome			
	Passed	Failed	Absent	Disqualified
Round 1	0.021	-0.009	-0.01	-0.002
p-value	0.4	0.71	0.54	0.16
Medium Grant	0.01	0.02	-0.02	0
p-value	0.81	0.49	0.2	0.23
Large Grant	0.01	0	-0.01	0
p-value	0.82	0.99	0.76	0.42
Round 1 x Medium Grant	0	-0.02	0.02	0
p-value	0.96	0.49	0.29	0.43
Round 1 x Large Grant	0	0.01	-0.01	0
p-value	0.93	0.68	0.59	0.56
Grant Size	Yes	Yes	Yes	Yes
Proportion Rural	Yes	Yes	Yes	Yes
Proportion Female	Yes	Yes	Yes	Yes
Track FE	Yes	Yes	Yes	Yes
% Minority Language	Yes	Yes	Yes	Yes
% Bac Pass	Yes	Yes	Yes	Yes
% Bac Fail	Yes	Yes	Yes	Yes
Development Level	Yes	Yes	Yes	Yes
Bac Average: Romanian	Yes	Yes	Yes	Yes
Bac Average: Math/Hist	Yes	Yes	Yes	Yes
Bac Average: Elective	Yes	Yes	Yes	Yes
Bac Average	Yes	Yes	Yes	Yes
Grant Size	Yes	Yes	Yes	Yes
Observations	41,353	41,353	41,353	41,353

This table shows results from a regression of 2020 bac exam outcomes on a ROSE Round 3 dummy (vs a ROSE Round 1 reference level) and controls. Controls are measured at the high school level at baseline (2014 and 2015 bac sessions). The regression is: $\text{outcome}_i = \alpha_X X_i + \beta \text{Round1} \times \text{Grant Size} + \epsilon_i$, where X are controls, Round1 is an indicator variable for students in ROSE Round 1 schools and Grant Size is the school's grant size. The reference levels are ROSE Round 3 schools and small grant sizes. Standard errors are clustered at the high school level.

Table 22: ROSE Effect on 2020 Bac Outcomes (Round 1 vs Round 3) by Gender

	Bac Outcome			
	Passed	Failed	Absent	Disqualified
Round 1	0.029**	-0.024**	-0.004	-0.001
p-value	0.04	0.04	0.63	0.28
Male	-0.02	0	0.02**	0*
p-value	0.1	0.83	0.01	0.05
Round 1 x Male	-0.02	0.02	0	0
p-value	0.13	0.14	0.94	0.7
Female FE	Yes	Yes	Yes	Yes
Proportion Rural	Yes	Yes	Yes	Yes
Proportion Female	Yes	Yes	Yes	Yes
Track FE	Yes	Yes	Yes	Yes
% Minority Language	Yes	Yes	Yes	Yes
% Bac Pass	Yes	Yes	Yes	Yes
% Bac Fail	Yes	Yes	Yes	Yes
Development Level	Yes	Yes	Yes	Yes
Bac Average: Romanian	Yes	Yes	Yes	Yes
Bac Average: Math/Hist	Yes	Yes	Yes	Yes
Bac Average: Elective	Yes	Yes	Yes	Yes
Bac Average	Yes	Yes	Yes	Yes
Grant Size	Yes	Yes	Yes	Yes
Observations	41,353	41,353	41,353	41,353

This table shows results from a regression of 2020 bac exam outcomes on a ROSE Round 3 dummy (vs a ROSE Round 1 reference level) and controls. Controls are measured at the high school level at baseline (2014 and 2015 bac sessions). The regression is: $\text{outcome}_i = \alpha_X X_i + \beta \text{Round1} \times \text{Gender} + \epsilon_i$, where X are controls, Round1 is an indicator variable for students in ROSE Round 1 schools and Gender is the student's gender. The reference levels are ROSE Round 3 schools and females. Standard errors are clustered at the high school level.

Table 23: ROSE Effect on 2020 Bac Outcomes (Round 1 vs Round 3) by Town Development Level

	Bac Outcome			
	Passed	Failed	Absent	Disqualified
Round 1	-0.009	-0.006	0.018	-0.003
p-value	0.8	0.84	0.5	0.13
Upper Middle Income	-0.02	0.02	0.01	0
p-value	0.5	0.49	0.82	0.58
Higher Income	0.05	-0.03	-0.02	0
p-value	0.2	0.37	0.49	0.19
Round 1 x Upper Middle Income	0.08*	-0.05	-0.04	0
p-value	0.05	0.15	0.23	0.39
Round 1 x Higher Income	0	0.02	-0.02	0
p-value	0.97	0.63	0.48	0.23
Proportion Rural	Yes	Yes	Yes	Yes
Proportion Female	Yes	Yes	Yes	Yes
Track FE	Yes	Yes	Yes	Yes
% Minority Language	Yes	Yes	Yes	Yes
% Bac Pass	Yes	Yes	Yes	Yes
% Bac Fail	Yes	Yes	Yes	Yes
Development Level	Yes	Yes	Yes	Yes
Bac Average: Romanian	Yes	Yes	Yes	Yes
Bac Average: Math/Hist	Yes	Yes	Yes	Yes
Bac Average: Elective	Yes	Yes	Yes	Yes
Bac Average	Yes	Yes	Yes	Yes
Grant Size	Yes	Yes	Yes	Yes
Observations	41,354	41,354	41,354	41,354

This table shows results from a regression of 2020 bac exam outcomes on a ROSE Round 3 dummy (vs a ROSE Round 1 reference level) and controls. Controls are measured at the high school level at baseline (2014 and 2015 bac sessions). The regression is: $\text{outcome}_i = \alpha_X X_i + \beta \text{Round1} \times \text{Development} + \epsilon_i$, where X are controls, Round1 is an indicator variable for students in ROSE Round 1 schools and Development is the development level of the town. The reference levels are ROSE Round 3 schools and Low development level. Standard errors are clustered at the high school level.

Table 24: ROSE Effect on 2020 Bac Outcomes (Round 1 vs Round 3) by Track Type

	Bac Outcome			
	Passed	Failed	Absent	Disqualified
Round 1	0.017	-0.008	-0.006	-0.002*
p-value	0.37	0.6	0.54	0.07
Theory	0.43***	-0.3***	-0.12***	-0.01***
p-value	0	0	0	0
Vocational	0.32***	-0.2***	-0.11***	-0.01***
p-value	0	0	0	0
Round 1 x Theory	0.01	-0.01	0.01	0**
p-value	0.83	0.55	0.68	0.03
Round 1 x Vocational	0.01	-0.01	0	0
p-value	0.83	0.71	0.86	0.24
Track Type FE	Yes	Yes	Yes	Yes
Proportion Rural	Yes	Yes	Yes	Yes
Proportion Female	Yes	Yes	Yes	Yes
Track FE	Yes	Yes	Yes	Yes
% Minority Language	Yes	Yes	Yes	Yes
% Bac Pass	Yes	Yes	Yes	Yes
% Bac Fail	Yes	Yes	Yes	Yes
Development Level	Yes	Yes	Yes	Yes
Bac Average: Romanian	Yes	Yes	Yes	Yes
Bac Average: Math/Hist	Yes	Yes	Yes	Yes
Bac Average: Elective	Yes	Yes	Yes	Yes
Bac Average	Yes	Yes	Yes	Yes
Grant Size	Yes	Yes	Yes	Yes
Observations	41,353	41,353	41,353	41,353

This table shows results from a regression of 2020 bac exam outcomes on a ROSE Round 3 dummy (vs a ROSE Round 1 reference level) and controls. Controls are measured at the high school level at baseline (2014 and 2015 bac sessions). The regression is: $\text{outcome}_i = \alpha_X X_i + \beta \text{Round1} \times \text{Track} + \epsilon_i$, where X are controls, Round1 is an indicator variable for students in ROSE Round 1 schools and Track is the type of track the student attends: Technological, Vocational, or Theoretical. The reference levels are ROSE Round 3 schools and Technological tracks. Standard errors are clustered at the high school level.

A.4.3 Number of Students Writing Bac

Table 25: ROSE Effect on the Number of 2020 Bac Writers

	Bac Writers		
Round 1	3.2	1.2	1.8
p-value	0.5	0.5	0.4
Development Level	No	Yes	Yes
Grant Size	No	Yes	Yes
Compliers Only	No	No	Yes
Observations	380	377	304

This table shows results from a regression of the number of 2020 bac takers in ROSE Round 1 high schools vs ROSE Round 3 high schools. The regression is at the high school level.

Table 26: ROSE Effect on the Number of 2019 Bac Writers

	Bac Writers			Bac Passers		
Round 1	3.1	1.3	1.3	0.0	-0.0	1.3
p-value	(0.5)	(0.5)	(0.6)	(1.0)	(0.3)	(0.6)
Development Level	No	Yes	Yes	No	Yes	Yes
N Students Admitted	No	Yes	Yes	No	Yes	Yes
Grant Size	No	Yes	Yes	No	Yes	Yes
Compliers Only	No	No	Yes	No	No	Yes
Observations	377	375	301	377	375	301

This table shows results from a regression of the number of 2019 bac takers in ROSE Round 1 high schools vs ROSE Round 3 high schools. The regression is at the high school level. We use matched 2019 bac data and 2015 admission data and control for the number of admitted students.

A.4.4 Effect on Preference Ranking of Students

Table 27: Student Preferences

	Students Applying	Times School Listed	School Ranking	School Ranking (below median)
ROSE	-5.074***	-9.145***	-0.089***	0.007
	(0.982)	(2.491)	(0.007)	(0.006)
ROSE x post	-0.437	-2.121**	-0.007***	-0.008**
	(0.414)	(0.961)	(0.003)	(0.003)
Year FE	Yes	Yes	Yes	Yes
Town FE	Yes	Yes	Yes	Yes
N	140,537	140,537	139,993	82,103
R^2	0.430	0.338	0.068	0.031

This table shows results using student preference rankings when applying to high schools. It compares ROSE and non-ROSE schools before and after the implementation of ROSE. The outcome variables are: number of students applying (column 1), number of times tracks within a school appear in student preference rankings (column 2), school ranking in student preferences, where school rankings are normalized to a number between 0 and 1, where 0 is a student's first choice and 1 is a student's last choice (column 3) and school ranking for students who had a below-median admission score (nationally) the year they applied.

Table 28: Student Preferences

	Students Applying	Times School Listed	School Ranking	School Ranking (bottom quartile)
Treatment	-2.580	-7.500	-0.021*	-0.025*
	(2.846)	(6.701)	(0.012)	(0.014)
Year FE	Yes	Yes	Yes	Yes
Town FE	Yes	Yes	Yes	Yes
N	17,070	17,070	17,008	12,365
R^2	0.430	0.337	0.135	0.146

This table shows results using student preference rankings when applying to high schools. This specification compares ROSE Round 1 (treated) and Round 3 (control) schools after 2017. The outcome variables are: number of students applying (column 1), number of times tracks within a school appear in student preference rankings (column 2), school ranking in student preferences, where school rankings are normalized to a number between 0 and 1, where 0 is a student's first choice and 1 is a student's last choice (column 3) and school ranking for students who had a bottom-quartile admission score (nationally) the year they applied to high school.

A.4.5 Effects on Student Retention Rates

Table 29: Student Retention Rates

	Grade 9	Grade 10	Grade 11	Grade 12
Treatment	-0.016	-0.012	-0.001	-0.026*
	(0.016)	(0.007)	(0.016)	(0.015)
Year FE	Yes	Yes	Yes	Yes
Town FE	Yes	Yes	Yes	Yes
Observations	31,804	31,413	20,296	9,459
R^2	0.026	0.018	0.022	0.042

This table shows the effects of ROSE on grade passing rates.

Table 30: Student Retention Rates: Low-Achievers

	Grade 9	Grade 10	Grade 11	Grade 12
Treatment	-0.024	-0.009	-0.003	-0.046**
	(0.026)	(0.011)	(0.021)	(0.022)
Year FE	Yes	Yes	Yes	Yes
Town FE	Yes	Yes	Yes	Yes
N	14,096	12,956	8,079	3,415
R^2	0.025	0.023	0.026	0.069

This table shows the effects of ROSE on grade passing rates for students with admission scores below the 25th percentile nationally. We compare students in ROSE round 1 schools (treated) to those in ROSE Round 3 schools (controls) between the 2016-2017 and 2018-2019 school years for grades 9 to 11. This ensures that the control students had 0 years of exposure to ROSE. For grade 12 students, we have no data for Rose Round 3 cohorts with 0 exposure to ROSE. Indeed, ROSE students in grade 12 in 2019-2020, the earliest grade 12 cohort we have access to, all have some exposure to ROSE. Therefore, we use all 2019-2020 to 2021-2022 grade 12 students and rely on differential exposure to ROSE. The outcome in each column is whether students Passed the grade and were promoted to the next grade.