Discussion Paper Series

IZA DP No. 18683

May 2026

Persistent Effects of Early Academic Rank on Cognitive and Noncognitive Outcomes

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ISSN: 2365-9793

IZA DP No. 18683 May 2026

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Abstract

This paper estimates the effects of early academic rank in elementary school on later cognitive and noncognitive outcomes in the context of Mexico. We use linked administrative records to compare students with similar third-grade achievement but different ordinal positions. These rank differences arise from idiosyncratic variation in the achievement distributions of elementary-school cohorts. We find that a higher third-grade rank increases performance on a high-stakes high school admission exam. Both broader school-cohort rank and classroom rank contribute to this achievement gain when estimated jointly. Higher rank leads to more selective high school choices and improves self-reported measures of self-perception, academic aspirations, classroom responsibility, learning strategies, and teamwork attitudes by the end of ninth grade. We also provide evidence that higher elementary school rank improves students' high school placement outcomes.

JEL classification

I21, I25, J24

Keywords

school-cohort rank, classroom rank, high-stakes test scores, noncognitive skills

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* We are grateful to Mexico's Secretariat of Public Education for providing the data used in this study. We also thank Francisca Antman, Celeste Carruthers, Andrew Dustan, Alfonso Flores-Lagunes, Richard Romano, Kathleen Thomas, participants at the Southern Economic Association Annual Meeting, MidSouth Education Policy Workshop, and ASHE Virtual Seminar Series for helpful comments and suggestions.

1 Introduction

Early-life environments, such as parental investment, teacher quality, and childhood peers, contribute to an individual's future educational achievement and economic opportunities (Cunha et al., 2010; Chetty et al., 2014; Carrell et al., 2018; Petek and Pope, 2023; Padilla-Romo and Peluffo, 2026). A growing body of research has shown that a student's relative ability among peers—their ordinal rank—has substantial impacts on their educational and labor market outcomes, beyond what absolute academic performance can explain (e.g., Elsner and Isphording, 2017; Murphy and Weinhardt, 2020; Yu, 2020; Delaney and Devereux, 2021; Elsner et al., 2021; Denning et al., 2023; Goulas et al., 2024; Megalokonomou and Zhang, 2024; Carneiro et al., 2025). However, we know relatively less about how ordinal rank affects the allocation of human capital through students' performance on high-stakes admission exams. Given that the outcomes of such exams are key determinants of progression toward higher (selective) education, understanding how early-life academic rank affects educational trajectories can shed light on the mechanisms behind later achievement.

In this paper, we examine how students' early ordinal rank within their elementary school cohort affects their academic performance on a high school admission exam in the Mexico City metropolitan area.[1] Intuitively, the analysis asks whether students with similar absolute achievement in third grade follow different academic trajectories depending on their ordinal rank within their elementary school cohorts. In our setting, high school seats are allocated through a centralized system based on students' ranked lists of preferred schools, their exam scores, and schools' seating capacities.[2] The unique features of our setting and data—which capture students' academic performance across multiple stages of education—allow us to study how early rank influences the transition from elementary school to high school by affecting students' school choices, exam performance, and high school placement.

[1] In our main analysis, cohorts are defined as third-grade students enrolled in the same school in the same year.

[2] Test scores are the sole measure of academic performance considered to determine admission to public high schools in the Mexico City metropolitan area.

To measure rank in elementary school, we use students' third-grade standardized test scores from ENLACE, a nationwide low-stakes standardized assessment administered annually to students in public and private schools in Mexico.[3] Using anonymized student identifiers, students' third-grade rank is linked to data from COMIPEMS, the high-stakes exam administered after the completion of ninth grade, to assign students to public high schools in the Mexico City metropolitan area. COMIPEMS data include test scores, submitted school preference lists (priorities), placement results, and context questionnaires. The questionnaires include information on students' socioeconomic status and several measures of noncognitive outcomes, including educational aspirations and learning skills. These measures allow us to explore potential mechanisms through which rank may influence academic performance. Importantly, because students submit their preference lists and the context questionnaire several months before taking the exam, the effects of rank on these outcomes (e.g., students' preference for elite high schools and aspirations to attend college) do not reflect their realized performance on the high-stakes exam.

To identify the effect of ordinal rank, we exploit idiosyncratic variation in third-grade test-score distributions across elementary school cohorts. By including school-cohort-subject fixed effects and flexible controls for third-grade test scores, the rank effect is identified from variation in students' ordinal position conditional on their own achievement. To alleviate concerns regarding potential non-random sorting into school cohorts, we further make comparisons between schools with similar distributions of student achievement.[4] Conceptually, our estimates compare students who have the same standardized third-grade test score and attend schools with similar achievement distributions, but who have different ordinal ranks due to differences in ability distributions across schools, cohorts, and subjects. We provide supportive evidence consistent with rank being as good as random after controlling

[3]ENLACE provides annual math and reading scores for students in public and private schools in Mexico. The test is administered to students in grades three to six, and the target population is all students in the country.

[4]A similar strategy is proposed by Denning et al. (2023).

for school-cohort-subject fixed effects, standardized third-grade test scores, and elementary school achievement distributions, allowing us to interpret the rank effects as causal.

The data provide two notable features that contribute to the identification of the rank effects. First, we observe the classroom identifier for each student within each elementary-school cohort, which allows us to construct both school-cohort rank and classroom rank.[5] In schools with multiple classrooms per grade, students with the same school-cohort rank can differ in classroom rank, and vice versa. We use this feature to estimate the effects of school-cohort and classroom rank, first separately and then jointly. This allows us to assess whether local classroom rank contributes to later COMIPEMS performance beyond the contribution of the broader school-cohort rank. Second, using survey data from a randomly selected subset of elementary schools in ENLACE, we examine whether third-grade rank is correlated with the quality of teachers to whom students are subsequently assigned in elementary school; we also examine whether third-grade rank is correlated with the quality of middle schools that students attend. Together, these analyses help us assess whether academic tracking is present.

We find that rank in elementary school affects academic outcomes later in life. Being in the top 5% of the school-cohort rank distribution in third grade increases high school admission exam scores by 33% of a standard deviation relative to students at the median of the distribution. This implies that the payoff to being near the top of the early rank distribution can be especially consequential for later high school placement. In addition, both school-cohort rank and classroom rank matter: if a student is at the median of the school-cohort distribution and their classroom rank is at the bottom, median, or top of the classroom rank distribution, their COMIPEMS test scores increase by 6.2%, 14.6%, and 23.1% of a standard deviation, respectively.

Moreover, early academic rank also shapes the choices and assignment outcomes that determine students' subsequent educational trajectories. Students with higher third-grade

[5]The same group of students typically stay in the same classroom group for all subjects from first to sixth grade.

rank are more likely to choose elite high schools and higher-quality high schools, where quality is measured by the cutoff test score for admission to each school. Relative to students at the median, those in the top 5% of the school-cohort rank distribution are 3.8 percentage points more likely to list an elite high school as their first choice, and the admission cutoff of their first-choice school is 9% of a standard deviation higher. Importantly, these effects are not limited to students at the very top of the distribution. Furthermore, our counterfactual analysis reveals that approximately 11% of students would have been assigned to schools listed higher on their preference lists if students' rank in elementary school rose from the 46-50th percentile to the 76-80th percentile of the rank distribution. This implies that early rank improves subsequent achievement, leading students with similar third-grade test scores to perform differently on the high-stakes admission exam and, as a result, to sort into different high schools.

We also find that higher rank improves a variety of noncognitive outcomes, including self-perceptions, educational aspirations, classroom responsibility, learning strategies, and teamwork attitudes measured in ninth grade before students take the exam. Together, these results suggest that early relative academic standing can have persistent effects on later educational trajectories.

The identifying assumption is supported by showing that once we flexibly control for third-grade achievement and school achievement distributions, rank is largely unrelated to observed household socioeconomic background, suggesting that our results are unlikely to be driven by selection. While rank is correlated with student gender, the potential bias due to this correlation is likely negligible.[6]

We contribute to the literature on rank effects in several ways.[7] Our paper builds upon

[6]The gender gap in test scores is 11% of a standard deviation, and the coefficient from regressing the female indicator on school-cohort rank using the controls in our preferred balance specification is 0.045. Thus, even if gender were omitted, the implied omitted-variable bias would be of roughly 0.5% of a standard deviation. This is very small relative to the estimated average effect of third-grade school-cohort rank on test scores (28% of a standard deviation).

[7]The literature documents how rank affects various outcomes, including academic performance (Murphy and Weinhardt, 2020; Yu, 2020; Denning et al., 2023; Megalokonomou and Zhang, 2024; Carneiro et al., 2025), educational choices (Elsner and Isphording, 2017; Delaney and Devereux, 2021; Elsner et al., 2021; Denning

studies on the effects of rank on academic performance (Murphy and Weinhardt, 2020; Yu, 2020; Megalokonomou and Zhang, 2024; Carneiro et al., 2025) and educational choices (Elsner and Isphording, 2017; Delaney and Devereux, 2021; Elsner et al., 2021; Denning et al., 2023; Goulas et al., 2024) by providing new evidence on how rank in elementary school affects the allocation of human capital and high school choices. We also provide evidence on the importance of school-cohort and classroom rank in shaping students' later academic performance. In addition, we explore whether third-grade rank is associated with the quality of subsequently assigned teachers in elementary school and the quality of the middle schools that students attended, providing evidence on potential academic tracking. Finally, by considering the effects of rank on various noncognitive outcomes—such as classroom responsibility, learning strategies, and teamwork attitudes—we provide comprehensive evidence on mechanisms that may generate persistent rank effects. These channels may help explain higher academic achievement and carry implications for later-life outcomes.

2 Institutional Setting and Data

We focus on students in the Mexico City metropolitan area. Elementary education includes grades 1–6 (ages 6–11), while middle school education comprises grades 7–9 (ages 12–14). After completing middle school, students may apply for admission to public high schools.

In the period under analysis, enrollment in elementary school was universal. We measure elementary school achievement using ENLACE, a standardized test administered to students in public and private schools in Mexico in grades 3–6. ENLACE is a low-stakes assessment: its results provide feedback to students, teachers, and policymakers on academic achievement and the overall state of education, but they have no consequences for grade completion or promotion. The exam aims to cover all students, and participation in the Mexico City

et al., 2023; Goulas et al., 2024), self-confidence (Elsner and Isphording, 2017; Murphy and Weinhardt, 2020), mental health (Kiessling and Norris, 2023; Kim and Liu, 2023; Larivière, 2025), earnings (Denning et al., 2023), personality traits (Pagani et al., 2021), and risky behaviors (Elsner and Isphording, 2018; Comi et al., 2021).

metropolitan area is high, reaching 95% of students. ENLACE includes math, reading, and a third rotating subject. Because the exam is administered over two days, some students do not complete all questions. In addition, scores are reviewed through an automated process that detects unusual answer patterns to identify possible cheating. The ENLACE dataset flags students who answered fewer than half of the questions in a subject or whose answer patterns suggest possible cheating, and we exclude these students from the analysis. For consistency, we consider math and reading test scores.

Admission to public high schools in the Mexico City metropolitan area is determined through COMIPEMS, a centralized assignment system based on a standardized entrance examination.[8] Applicants register for the exam and submit a ranked list of preferred high schools. Following the examination, a computerized system assigns students in descending order of test performance: the highest-scoring student is assigned to the most preferred school on their list with available seats, followed sequentially by lower-scoring students until all seats are filled. The COMIPEMS exam involves high stakes because it is the sole determinant of admission to public high schools; GPA, essays, and other performance measures are not taken into account.[9]

There are nine subsystems that provide public high school education in the Mexico City metropolitan area, two of which are operated by the country's most prestigious universities and are considered elite because of their academic rigor and reputation: the National Autonomous University of Mexico and the National Polytechnic Institute.[10] To provide evidence on how rank affects students' preferences for high schools, we construct an indicator for

[8] As a reference, while enrollment in elementary school was universal, net enrollment rates in high school in 2010 were 68% in Mexico City and 44.7% in the State of Mexico (Secretaría de Educación Pública, 2025). For detailed information about Mexico City's public high school admission system, see Dustan et al. (2017), Chang and Padilla-Romo (2023), and Padilla-Romo and Peluffo (2026), among others.

[9] Because the algorithm assigns students sequentially by exam score to the highest-ranked school on their submitted list with available seats, the assignment rule is equivalent to a serial dictatorship. Thus, the mechanism gives students an incentive to submit their true preference ordering (Abdulkadiroğlu and Sönmez, 1998).

[10] In fact, students who attend high schools affiliated with the National Autonomous University of Mexico benefit from direct admission into its bachelor's degree programs, subject to minimal requirements (i.e., a minimum GPA of 7 out of 10 and graduation from high school on time).

whether a student selects a high school affiliated with the National Autonomous University of Mexico or the National Polytechnic Institute as their top choice.

Our analysis combines two samples. The first is the ENLACE sample, which includes all students in the Mexico City metropolitan area whose first third-grade ENLACE observation between 2007 and 2012 has a valid score.[11] This sample is used to construct the rank measure. The second is a linked COMIPEMS sample, used to analyze high-stakes outcomes, consisting of the subset of these students who take COMIPEMS for the first time between 2013 and 2019.[12] This group represents 66% of the ENLACE third-grade sample and includes all matched students. Because rank is constructed separately in math and reading, the analysis is conducted at the student-subject level.[13]

For each of these two subjects, we construct our rank measure using third-grade ENLACE scores. We focus on third grade because ENLACE is first administered in that grade, so it provides the earliest standardized measure of achievement during elementary school.[14] The rank measure is defined as follows:

$$R_{ijst} = \frac{r_{ijst} - 1}{N_{jst} - 1}, \qquad (1)$$

where r_{ijst} denotes the ordinal (raw) rank of student i in school j, subject s, and cohort t. The lowest-performing student has $r_{ijst} = 1$, and the highest-performing student has $r_{ijst} = N_{jst}$; N_{jst} is the number of students in school j, subject s, and cohort t.[15] The re-scaling used in this definition accounts for variation in cohort size by mapping the absolute rank into a relative measure on the unit interval ($R_{ijst} \in [0, 1]$), such that the lowest-ranked

[11] We define a valid ENLACE score as one not flagged by ENLACE for answering fewer than half of the questions in a subject or for answer patterns suggestive of possible cheating.

[12] If a student took COMIPEMS more than once, we drop subsequent attempts.

[13] As noted earlier, students take the COMIPEMS exam when they attempt to attend a public high school in the metropolitan area of Mexico City. Therefore, students who drop out of school or students who plan to attend a private high school do not take COMIPEMS. In Section 3, we show how third-grade rank affects the probability of taking the COMIPEMS exam and how we address the potential for sample selection.

[14] It is worth noting that although rank is not reported on the scorecard, students can view their own scores and the school average, while teachers and school principals have access to the scores of all students.

[15] Students with the same test score in the same school cohort have the same rank (r_{ijst}).

student in a school-cohort-subject takes value 0, the highest-ranked student takes value 1, and all intermediate ranks are proportionally spaced.[16,17]

COMIPEMS data include the admission exam score and students' ranked lists of up to 20 high schools, submitted when they register for the exam.[18] We use these data in three ways. First, we study the effects of rank on performance on the high-stakes admission exam using the composite COMIPEMS score.[19] Second, we proxy for aspirations to attend selective high schools, based on the historical admission cutoffs of the first three options listed by students;[20] and by the probability that a student lists an elite high school as their first choice. Third, we combine submitted preference lists, observed cutoffs, and realized scores to conduct a counterfactual assignment exercise. Table 1 reports summary statistics for the rank measures, COMIPEMS scores, and individual-level covariates, comparing students below and above the median of the third-grade cohort-rank distribution. Students above the median later perform substantially better on the COMIPEMS exam, while average cohort and class sizes are similar across groups. They are also more likely to be female and to have more educated mothers and more household resources, but the differences are small. In Table A.1, we show how rank is associated with these variables.

In addition, COMIPEMS data include a broad set of self-reported noncognitive outcomes from the context questionnaire administered when students register for the exam. We group these measures into four domains: self-perception, classroom responsibility (academic diligence/accountability), learning strategies, and teamwork attitudes. Questions on these topics are answered on a four-point scale from 1 to 4, indicating agreement or frequency

[16]Similar definitions are used by Elsner and Isphording (2017); Murphy and Weinhardt (2020); Denning et al. (2023); among others.

[17]In our main specification, we use the school-cohort rank defined in Equation 1. In section 4, we also present results in which rank is calculated at the classroom level. The classroom-level analog is $R_{ijcst} = (r_{ijcst} - 1)/(N_{jcst} - 1)$, where c indexes the third-grade classroom, r_{ijcst} is student i's ordinal rank in school j, classroom c, subject s, and cohort t, and N_{jcst} is the number of students in that school-cohort-classroom-subject.

[18]Both ENLACE and COMIPEMS test scores are normalized within each year to have a mean of zero and a standard deviation of one.

[19]The COMIPEMS exam includes 128 questions in math, math skills, physics, chemistry, biology, Spanish, verbal skills, history, geography, and civics and ethics.

[20]To calculate historical admission cutoffs, we average them over 2010–2019.

depending on the question. We transform most items into indicator variables equal to one if the student selects the most positive response category and zero otherwise.[21]

Self-perception items ask students to indicate their level of agreement with the following statements: I am a hard-working person, I finish everything I start, and I put great care into what I do. The indicator for each statement equals one if students answered 4 ("strongly agree"). Classroom responsibility items ask how often students miss classes, participate in class, submit tasks on time, and bring the required materials. We code missing classes as one if students answered 1 ("never") and the remaining items as one if they answered 4 ("always"). Learning strategy items ask students to rate their skill level in planning school activities, identifying the purpose of assignments given at school, identifying difficulties in reaching goals, and organizing information. Each indicator equals one if students answered 4 ("highest skill level"). Teamwork items ask how often students participate in activity planning, collaborate in strategy development, intervene to resolve conflicts, make suggestions to improve performance, and complete tasks when working in a team. Each indicator equals one if students answered 4 ("always").

Because the availability of the questionnaire modules varies over time, the analysis sample differs across noncognitive outcomes.[22] We report summary statistics for these measures in Table 2. Students above the median of the third-grade cohort-rank distribution report more positive self-perceptions, stronger classroom responsibility, better learning strategies, and stronger teamwork attitudes. They are also more likely to list an elite high school as their first choice, to target schools with higher historical admission cutoffs, and to express aspirations to attend college.

To provide evidence on how school-cohort rank affects the characteristics and quality of the middle schools that students attend, we rely on information from the 2010 *Estadísticas*

[21] One exception is for missing classes, for which the indicator equals one if the student reports "never" (category 1).

[22] Self-perception items are available for COMIPEMS cohorts 2013–2019 (excluding 2015); both classroom responsibility items and learning strategy items are available for 2016–2019; teamwork items are available for 2015–2019, except "completing tasks," which is available for 2016–2019.

911 data on the total number of teachers, female teachers, and teachers enrolled in *Carrera Magisterial*.[23] The share of teachers in *Carrera Magisterial* serves as a proxy for teacher quality because the program was explicitly designed to select, reward, and retain higher-performing teachers.[24] We also use the 2010 ENLACE average math and reading scores for middle school (grades 7–9). We use 2010 data to avoid endogeneity concerns, as 2010 is prior to the first third-grade cohort in our data entering middle school. We complement these data with teacher-level information from the ENLACE teacher context survey, which allows us to examine the possibility of academic tracking during grade-to-grade transitions in elementary school. This survey covers a random subsample of students in the analysis sample and provides information on teachers' gender, educational attainment, teaching experience, and enrollment in the *Carrera Magisterial* program for teachers in grades 3 through 6.[25]

Finally, to proxy for students' socioeconomic status, we use data from the Ministry of Education on the share of students in each school who are beneficiaries of Progresa, a conditional cash transfer program targeted at low-income individuals.[26]

3 Empirical Strategy

To identify the effects of early academic rank on later outcomes, we leverage variation in third-grade test-score distributions across elementary school cohorts. In particular, we compare students with the same test score relative to their cohort mean, who are at different points in the rank distribution, while flexibly controlling for prior achievement and the

[23]Estadísticas 911 is an administrative dataset with annual school-level information.

[24]*Carrera Magisterial* rewarded teachers with performance-based pay, creating a career ladder (levels A–E), each providing a permanent salary increase. See Santibáñez (2006) for a detailed description of the program and its effects on elementary and middle school students' learning outcomes.

[25]We observe teachers' characteristics for 3.3% of students in third grade, 3.2% in fourth grade, 1.6% in fifth grade, and 1.3% in sixth grade.

[26]See Parker and Todd (2017) for more details about the program.

broader school achievement distribution.[27] We estimate the following model:

$$Y_{ijt} = \alpha_{jst} + C_{is} + \delta R_{ijst} + \theta_{v\mu\sigma} + \gamma TS_{ijst} + \epsilon_{ijt}, \tag{2}$$

where Y_{ijt} denotes an outcome for student i enrolled in third grade in school j in year t, including COMIPEMS test scores and noncognitive outcomes; α_{jst} are elementary school-cohort-subject fixed effects;[28] C_{is} are fixed effects for the centile of student $i's$ third-grade test score in subject s, considering the national test-score distribution in each subject; R_{ijst} is the third-grade school-cohort rank of student i in school j subject s in year t as defined in Equation (1); $\theta_{v\mu\sigma}$ are fixed effects for ventiles (20 equally sized groups) of the student's national achievement in each cohort-subject interacted with 16 indicators that characterize the elementary school distribution (i.e., quartiles of the mean and the standard deviation of the student's national achievement in each school subject);[29] TS_{ijst} is the third-grade standardized test score of student i in school j subject s in year t; ϵ_{ijt} is an error term, which we allow to be correlated within elementary schools.[30] The coefficient of interest is δ, which measures the effect of being the highest-ranked student in the school-cohort relative to the lowest-ranked student. In addition, our preferred specification incorporates additional individual-level controls. These include a female indicator, mother's education (some high school or higher), and indicators for the availability of a telephone, refrigerator, microwave, internet, or cable TV at home.[31]

[27] Given that school cohorts differ in the variance and the higher-order moments (e.g., skewness, kurtosis) of their ability distributions, a student with an identical test score may occupy a different relative (ordinal) position within each cohort. This approach is well-established in the literature on rank effects, for example, see Murphy and Weinhardt (2020).

[28] Figure A.1 shows the relationship between school-cohort rank and the residualized third-grade test scores after taking into account school-cohort-subject fixed effects. Within each test score decile, third-grade rank varies substantially.

[29] Controlling for $\theta_{v\mu\sigma}$ fixed effects allows us to make comparisons between schools with similar achievement distributions.

[30] In Section 7, we show that in this flexible specification, rank is conditionally unrelated to socioeconomic background.

[31] Mother's education is missing for 4.3% of the sample. To keep all observations, we impute missing values using the probability corresponding to the share of mothers with some high school education in the middle school cohort or in the whole cohort when the middle school cohort information is not available. Whether or not maternal education is imputed is not correlated with school-cohort rank ($p - value = 0.255$).

An important feature of the data is that COMIPEMS outcomes are observed only for students who choose to take the public high school admission exam. In Table 3, we test whether rank is correlated with the likelihood of taking COMIPEMS, considering school-cohort rank (Panel A) and classroom rank (Panel B), where the latter is defined within the classroom to which students are assigned in third grade.[32] Unlike in settings where classmates change from year to year, elementary school students in Mexico typically remain with largely the same group of classmates throughout subsequent grades. In both panels of Table 3, we find that higher elementary school rank is correlated with a higher probability of taking the high school admission exam. In addition to rank, Figure A.2 shows that students who were enrolled in private elementary schools, in schools with a large share of Progresa beneficiaries (our proxy for socioeconomic status), in schools located in rural areas, or who are male are less likely to take COMIPEMS.[33] To address this potential non-random selection, in our specifications we weight observations by the inverse of the predicted probability of being in the sample (Wooldridge, 2007). We construct these weights using the estimated probability of taking COMIPEMS as a function of the covariates shown in Figure A.2, including school-cohort rank, the standardized third-grade test scores, indicators for female students, private schools, schools in rural areas, and the share of Progresa beneficiaries.

4 The Effect of Rank on High-Stakes Exams

Panel A of Table 4 presents the average effect of third-grade school-cohort rank on COMIPEMS test scores. Column 1 shows the baseline specification, and Column 2 reports our preferred specification, which additionally includes individual controls. The estimates in both columns indicate a positive and statistically significant effect of early school rank on high-stakes test

[32] Over 75% of students are enrolled in a cohort with more than one classroom, where the same group of students typically stays together from first through sixth grade. The average student in our main analysis sample is enrolled in a classroom with roughly 26 students and a cohort with 65 students.

[33] As discussed in Padilla-Romo and Peluffo (2026), this pattern is likely to reflect the fact that students in the upper tail of the income distribution (and those who are already enrolled in educational institutions in the private sector) are more likely to aim to attend private high schools and that students in the lower tail of the income distribution are more likely to drop out.

scores measured six years later. In Panel A, moving from the bottom to the top of the school-cohort rank distribution in third grade leads to an increase of 28% of a standard deviation in performance on the high school admission test.[34] Panel B shows the effects using classroom rank instead of school-cohort rank. Relative to the school-cohort-rank estimates, the coefficients exhibit a similar pattern but are slightly smaller in magnitude. Specifically, achieving a top rank in the classroom in third grade leads to an increase of 21% of a standard deviation in COMIPEMS test scores.

We explore nonlinearities in the effects of rank on COMIPEMS test scores by estimating a modified version of our main regression that allows the effect of rank to vary across ventiles of the cohort-rank distribution.[35] Figure 1 shows these estimates, relative to students near the median of the distribution (between the 46th and 50th percentiles). We find that the effects are negative and nearly flat for students ranked below the median, and they become positive and grow progressively larger for students ranked above the median. The small negative estimates below the median indicate that lower-ranked students score slightly below otherwise comparable median-ranked students, while the large positive estimates in the upper tail show that the main gains are concentrated among high-ranked students. Moving from the median to the highest ventile of the school-cohort-rank distribution increases test scores by approximately 33% of a standard deviation. The classroom-rank estimates are very similar, although smaller in magnitude.

[34] A 0.28 standard deviation increase in test scores corresponds to a 9.4 percentage point increase in the COMIPEMS test score distribution. For comparison, moving from the 50th to the 75th percentile of the cohort-rank distribution at age 9 (grade 3) increases high-stakes test scores at age 15 (grade 9) by 2.6 percentage points. Similar changes in rank measured at age 11 increased low-stakes test scores at age 14 by 1.9 percentage points of the national distribution in England (Murphy and Weinhardt, 2020), while in Texas, changes in rank measured at age 9 (grade 3) increased test scores at age 14 (grade 8) by 2.5 percentage points (Denning et al., 2023). In Ecuador, a comparable improvement in classroom rank in grades 1 and 2 increases test scores by about 2.9 percentage points four years later (Carneiro et al., 2025).

[35] We estimate the following specification:

$$Y_{ijt} = \alpha_{jst} + C_{is} + \sum_{q \neq 10} \delta_q V^q_{ijst} + \theta_{v\mu\sigma} + \gamma TS_{ijst} + \epsilon_{ijt}, \tag{3}$$

where V^q_{ijst} are indicators for ventiles of the rank (R_{ijst}). The omitted category is the median ventile ($q = 10$), corresponding to students between the 46th and 50th percentiles of the rank distribution. All estimates are relative to students at the median of the distribution.

A natural next question is whether the average effect of third-grade school-cohort rank masks meaningful heterogeneity across students and school environments. Gender differences may emerge if male and female students respond differently to competition, peer comparison, or high-stakes testing environments. Panel (a) of Figure 2 shows that point estimates for male students tend to be slightly larger, but gender differences are small and not statistically significant.[36] In addition, rank effects on COMIPEMS test scores may be heterogeneous across subjects (math vs. reading), as math and reading rely on different cognitive skills. However, in Panel (b) of Figure 2, we find similar estimates across subjects.[37]

Furthermore, students' perceptions of the importance of ordinal rank in elementary school may differ depending on the socioeconomic characteristics of their family and of the school in which they are enrolled. For example, early relative standing may matter more when students have fewer compensating resources or fewer alternative signals about their academic ability. In Panel (c), we estimate the effect by mother's educational level (some high school or higher vs. middle school or lower), and in Panel (d), by the share of students receiving the conditional cash transfer program Progresa. We find that students from more disadvantaged economic backgrounds are more positively affected by higher rank and less negatively affected by lower rank.[38]

Another aspect of the school environment that may lead to heterogeneous rank effects is achievement dispersion. Intuitively, rank effects may be larger in schools with greater achievement dispersion in third-grade test scores because relative position is likely to be more salient when differences in performance are more visible. In more dispersed cohorts, high-ranked students may receive a clearer signal about their relative academic strength.

[36] The empirical literature on whether rank effects are systematically larger for boys is mixed. For example, among the studies that define rank in elementary school and use test scores as an outcome, Murphy and Weinhardt (2020) find a larger effect for male students in England, whereas Denning et al. (2023) and Carneiro et al. (2025) find no evidence of gender differences in the effect of rank in Texas and Ecuador, respectively.

[37] Carneiro et al. (2025) find that the estimated rank effect appears concentrated in math rather than in language in the context of Ecuador. In contrast, Murphy and Weinhardt (2020) find similar effects across subjects (English, science, and maths) on test scores in England.

[38] These findings are consistent with Murphy and Weinhardt (2020) and Denning et al. (2023), who also find stronger rank effects for lower-income students.

Teachers and parents may also be more likely to recognize these differences, reinforcing students' beliefs and academic investments. To examine this possibility, we estimate rank effects separately for schools in the lowest and highest quartiles of the standard deviation of the test score distribution. Consistent with the hypothesis that higher salience leads to larger effects, Panel (e) of Figure 2 shows substantially larger rank effects in schools with higher test-score dispersion.

Lastly, we examine heterogeneity by cohort size. While smaller cohorts may make peer performance easier to observe, enabling students to more accurately assess their relative rank, being top performers in a larger cohort may provide a stronger signal to students themselves and to teachers. Panel (f) of Figure 2 shows that rank effects are larger for cohorts in the top quartile of the size distribution, suggesting that rank is more consequential in larger cohorts.

4.1 The Importance of School-Cohort and Classroom Ranks

Our main analysis defines rank relative to all third-grade students in the same elementary-school cohort. However, since students interact more frequently with their classmates, rank may also operate through a more local comparison group, defined at the classroom level.

Conditional on the set of students enrolled in a school cohort, a student's school-cohort rank is fixed. This implies that a potential reallocation of students across classrooms would not change their position in the school-cohort distribution. Classroom rank, in contrast, depends on the peers assigned to the same classroom. The same student could be placed near the top, middle, or bottom of the classroom distribution depending on classroom composition. Thus, classroom rank captures a more local reference group, but one that may also be affected by the assignment of students across classrooms.

Table 5 examines the relevance of classroom rank beyond the potential effects of school-cohort rank. Column 1 reproduces our preferred school-cohort-rank specification using the full sample. Columns 2–5 restrict the sample to school cohorts with at least two third-grade classrooms, to avoid including school cohorts with only one classroom where school-cohort rank and classroom rank coincide by construction. Column 2 presents the cohort-rank specification using school-by-cohort-by-subject fixed effects, as in our main specification in Column 1. The estimated effect is very similar to the baseline estimate in Column 1. Column 3 includes school-by-cohort-by-classroom-by-subject fixed effects. These fixed effects control for characteristics common to students in the same classroom, including teacher assignment, classroom resources, classroom-level peer environments, and other classroom-specific inputs. The cohort-rank coefficient is robust to controlling for classroom-level characteristics.

In columns 4 and 5 of Table 5, we consider the role of classroom rank. Column 4 replaces third-grade school-cohort rank with third-grade classroom rank and estimates the effect of a student's position within the classroom peer group, including school-by-cohort-by-classroom-by-subject fixed effects.[39] The data provide enough variation to estimate both school-cohort and classroom rank effects in the same specification.[40] We report the estimated results for this specification in Column 5. We find that both the school-cohort rank and the classroom rank contribute to later high-stakes exam performance. For example, the academic gains for a student at the median of the school-cohort distribution depend on the relative rank within their classroom. If this student is at the bottom, median, or top of the classroom rank distribution, their COMIPEMS test scores increase by 6.2%, 14.6%, or 23.1% of a standard deviation, respectively.[41] Similarly, the academic gains for students at the median of the classroom rank distribution depend on their school-cohort rank. If the student is at the 25th, 50th, or 75th percentile of the school-cohort rank distribution, their test scores increase by 11.5%, 14.6%, or 17.7% of a standard deviation, respectively.[42]

[39]This is the same specification as in Table 4, Panel B, Column 2, but restricted to school cohorts with at least two third-grade classrooms.

[40]Figure A.3 shows the relationship between school-cohort and classroom rank.

[41]These numbers are calculated using the estimated coefficients in Column 5 of Table 5. That is, $0.1237(0.5) + 0.1688(0) = 0.062$, $0.1237(0.5) + 0.1688(0.5) = 0.146$, and $0.1237(0.5) + 0.1688(1) = 0.231$, respectively.

[42]The implied effects are calculated as follows: $0.1237(0.25) + 0.1688(0.5) = 0.115$, $0.1237(0.5) + 0.1688(0.5) = 0.146$, and $0.1237(0.75) + 0.1688(0.5) = 0.177$, respectively.

4.2 Counterfactual Analysis

To quantify the importance of rank for school assignment, we conduct a simple counterfactual exercise. In the data, we observe each student's realized placement as well as the cutoff score of each high school (i.e., the test score of the last student admitted to the school). In addition, we observe the list of up to 20 high schools (in order of preference) that each student submitted before taking the high school admission exam.

Using our estimated coefficients in Figure 1, we construct counterfactual COMIPEMS scores for students at the 46-50th percentile of the third-grade cohort-rank distribution, assuming they had instead been at the 76-80th percentile. We then compare these counterfactual scores with the admission cutoffs of the schools on each student's priority list.[43] This exercise indicates that about 11% of students at the 46-50th percentile would have been assigned to a higher-ranked high school on their priority list if they had been at the 76-80th percentile.[44] These results highlight the importance of third-grade school-cohort rank for shaping students' educational trajectories beyond elementary school, since changes in test scores are large enough to affect the quality of the high schools students attend.[45]

5 How Does Rank Affect Noncognitive Outcomes?

5.1 Students' Confidence and Academic Ambition

Relative academic position in elementary school may shape students' beliefs about their own ability and the selectivity of the schools they target. To examine these channels, we use the context questionnaires and the school preference lists students submit before taking

[43] Since COMIPEMS scores are integers, if a predicted counterfactual score has a decimal part, we round it up to the next integer with probability equal to the decimal fraction.

[44] There are 141,480 students at the 46-50th percentile of the distribution, and 15,996 of them would have been assigned to better schools if their rank had placed them at the 76-80th percentile.

[45] Early academic rank is associated with higher placements on students' priority lists, even when students respond to improved academic rank by choosing higher-quality high schools as their top choices, as shown in Section 5.1.

the admission exam.[46] First, we estimate the effects of third-grade school-cohort rank on students' self-perceptions using the questions about whether students believe that they work hard, finish everything they start, and do things attentively. Next, we estimate effects on school preferences and academic aspirations, considering the probability of choosing an elite high school as the first option on the priority list;[47] the quality of the first-choice school, measured by its admission cutoff score; and the probability of reporting a desire to attend college.

Figure 3 shows the effects of third-grade school-cohort rank on self-perceptions measured in ninth grade. Students in the upper part of the rank distribution in elementary school are approximately 2.6 to 3.4 percentage points more likely than students at the median ventile to report that they work hard, finish what they start, and do things attentively.[48] As in our earlier results for COMIPEMS scores, the estimates are close to zero below the median, and become positive above it.

Figure 4 shows a similar pattern for school preferences and academic aspirations. Moving from the median to the top of the school-cohort rank distribution increases the probability of choosing an elite high school by 3.8 percentage points, raises the cutoff score of the first-choice school by 9% of a standard deviation, and increases the likelihood of indicating an intention to attend college by 2.4 percentage points. These results suggest that early rank affects not only later achievement but also students' self-confidence and academic ambition, as reflected in their school preferences and longer-term aspirations.[49]

[46]Since the questionnaires and the lists are completed before taking the exam, realized COMIPEMS scores cannot affect school preferences and choices.

[47]That is, a high school affiliated with the National Autonomous University of Mexico or the National Polytechnic Institute.

[48]Our findings are consistent with Murphy and Weinhardt (2020), who document effects of primary-school rank on later confidence and subject choice, and with Pagani et al. (2021), who show that rank affects conscientiousness through perceived ability and academic motivation.

[49]We find the same patterns in Figure A.4 when considering the cutoffs of the second and third choices of high schools on students' priority lists (panels (a) and (b), respectively) and the probability of reporting their intention to attend graduate school (Panel (c)).

5.2 Classroom Responsibilities, Learning Strategies, and Teamwork Attitudes

Rank in early life may also shape students' day-to-day study habits and interpersonal skills. To evaluate this possibility, we examine the effect of school-cohort rank on three groups of outcomes measured in the ninth-grade questionnaire: classroom responsibilities, learning strategies, and teamwork attitudes.

Figure 5 shows that a higher school-cohort rank leads to stronger school-related responsibility. Students at the highest ventile of the rank distribution in third grade are approximately 2.7 to 5.2 percentage points more likely than students at the median ventile to report that they never miss classes, always participate in class, and submit tasks on time. The estimates for bringing the required materials to class are close to zero and not statistically significant at conventional levels.

Figure 6 shows that a higher school-cohort rank leads to stronger learning strategies. Relative to students at the median of the school-cohort rank distribution in elementary school, students at the top of the distribution are 2.5 to 3.6 percentage points more likely to report high ability to plan school activities, identify the purpose of assignments, identify difficulties in reaching goals, and organize information. These patterns point to beliefs and day-to-day study habits as potential mechanisms through which a higher rank in elementary school can translate into higher performance on the high school admission exam.[50]

Figure 7 presents analogous results for teamwork attitudes. Relative to students at the median ventile, students with higher early school-cohort rank are approximately 3.6 to 4.5 percentage points more likely to report participating in activity planning, collaborating in strategy development, intervening to resolve conflicts, making suggestions to improve group performance, and completing tasks. This broader pattern complements the achievement

[50] These results are consistent with Pagani et al. (2021), who find positive effects of rank on conscientiousness, and with Carneiro et al. (2025), who show that higher classroom rank improves executive function.

results in Section 4 and suggests that a higher rank may improve later outcomes through both academic performance and behaviors valued in collaborative environments.

6 Early Rank and Academic Tracking

One possible explanation for the persistent effects of early rank is that students are re-sorted into different learning environments after third grade. Such re-sorting may occur within elementary school, if higher-ranked students in a cohort are subsequently exposed to different teachers, or at the transition to middle school, if higher-ranked students are more likely to enroll in higher-quality schools. To shed light on these channels, we examine whether school-cohort rank in third grade is associated with differential exposure to teachers in later elementary grades, which would be consistent with within-school tracking. We also examine whether rank in third grade is associated with the quality of the middle school that students attend.[51]

We first provide evidence on whether rank affects grade-to-grade transitions within elementary school. Table 6 reports the relationship between third-grade school-cohort rank and teachers' observable characteristics in fourth through sixth grade, including teacher gender, age, educational attainment, experience, and enrollment in the *Carrera Magisterial* program.[52] We find no evidence that students with a higher rank in third grade are systematically assigned to teachers with different observable characteristics in later elementary school grades. The estimates are small and not statistically significant across the dimensions we observe, suggesting that within-elementary-school tracking is unlikely, at least along these margins.

We next examine whether rank affects the likelihood of attending a higher-quality middle

[51] These channels are related to the broader literature on ordinal rank, tracking, and teacher quality (Duflo et al., 2011; Murphy and Weinhardt, 2020; Denning et al., 2023; Petek and Pope, 2023).

[52] Recall that teacher characteristics by grade are observed only for a subsample of students in our main analysis. Figure A.5 presents the estimated effects on COMIPEMS test scores for these subsamples alongside the overall sample. Although the estimates for the subsamples are less precise, they are similar in magnitude to those for the full sample.

school. Figure 8, panels (a)-(d), shows the effect of third-grade school-cohort rank on baseline middle-school math and reading test scores (measured before students in our sample enroll in these schools), the share of female teachers, and the share of teachers in *Carrera Magisterial*, an incentive program for teachers that we consider a proxy for teacher quality because entry and promotion in the program depended in part on performance-based criteria. The estimated effects suggest modest sorting into slightly academically stronger middle schools. Students with higher third-grade school-cohort rank later attend middle schools with higher baseline ENLACE math and reading scores and with a higher share of teachers in *Carrera Magisterial*, while the share of female teachers is unrelated to rank.

Taken together, this evidence suggests that early school-cohort rank does not appear to operate through observable teacher sorting within elementary school, but it leads to later sorting into marginally better middle schools. Because the COMIPEMS exam is taken after the completion of ninth grade, this later school environment is a plausible channel through which early rank affects performance on the high school admission exam.

7 Robustness

A potential concern for identification is the possibility of non-random sorting of students into school cohorts. To evaluate this possibility, Table A.1 tests whether rank predicts observable individual characteristics under increasingly flexible control sets. Panel A includes school-by-cohort-by-subject fixed effects and standardized third-grade test scores. Panel B adds centiles of third-grade test scores fixed effects and fixed effects for the interactions between ventiles of individual achievement and the school's achievement distribution, allowing comparisons across schools with similar achievement profiles. Panel C reports the same specification as Panel B, using classroom rank rather than school-cohort rank.

In the baseline specification shown in Panel A, school-cohort rank exhibits a positive and significant correlation with a female indicator and different measures of socioeconomic status, suggesting the possibility of residual selection. The coefficients, however, are small. Once we flexibly control for third-grade achievement and school achievement distributions, considered in our preferred specification in Panel B, the associations between school-cohort rank and observed household socioeconomic variables become even smaller and statistically indistinguishable from zero. Panel C shows that the same conclusion largely holds when rank is defined within the classroom. The one remaining imbalance concerns gender: higher rank is positively correlated with being female. This pattern is unlikely to generate spurious positive effects on COMIPEMS scores. Our preferred specifications control for gender; moreover, even if gender were omitted, the imbalance would attenuate the rank estimate, because (on average) female students score lower on the COMIPEMS exam. Table A.2 further examines this issue by allowing the entire set of fixed effects, achievement, and socioeconomic status controls to vary by gender; the estimated rank coefficients are essentially unchanged. Additionally, we examine the relationship between school-cohort rank and individual characteristics separately by gender using our preferred specification. In Table A.3, we find that the sample is balanced in terms of measures of socioeconomic status for both female and male students. The sub-samples by gender remain balanced in terms of these characteristics when using classroom rank, as shown in Table A.4.

While the ENLACE exam in third grade is the first standardized test students take in elementary school, it is possible that students perceived as having higher ability are assigned to higher-quality teachers. We explore this possibility by estimating the effects of third-grade rank on third-grade teacher characteristics. In Table A.5, we find no evidence of a meaningful relationship between rank and the contemporaneous teacher quality. This suggests that high-performing students are unlikely to be matched with higher-quality teachers in third grade.

Finally, we examine whether the main result in Figure 1 is robust to an alternative specification. Focusing on school-cohort rank, Figure A.6 compares estimates from our preferred specification with estimates from a specification that includes only school-cohort-subject fixed effects, third-grade test scores, and individual controls. The estimates are similar across the two specifications. If anything, the preferred specification yields smaller rank effects.

8 Conclusion

We provide evidence on how a student's rank in elementary school affects high school admission test scores in the Mexico City metropolitan area, where test scores are the sole measure of academic performance used to determine admission to public high schools. The rank effect is identified by comparing students who have the same third-grade test scores relative to their cohort mean but have different ordinal ranks due to the cohort-specific differences in ability distributions across elementary school cohorts.

We find that rank in elementary school affects academic performance, school choices, and various noncognitive skills, measured at the end of ninth grade. Specifically, higher school-cohort rank increases test scores, and when estimated jointly, both broader school-cohort rank and classroom rank contribute to this achievement gain. Moreover, higher third-grade school-cohort rank leads to stronger self-perception and academic aspirations, stronger school-related responsibilities, better learning skills, and positive attitudes toward teamwork. The effects tend to be concentrated in the upper part of the rank distribution, suggesting that being near the top of one's early peer group can generate especially large returns on both cognitive and noncognitive skills.

Because rank affects students' performance on the high school admission exam, we quantify the extent to which high school placement is affected by rank. We show that about 11% of students at the median of the rank distribution would have been assigned to more-preferred high schools if they had a higher rank (76-80th percentile) in elementary school.

The effect of early academic rank is large enough to influence students' educational trajectories and to foster traits associated with higher productivity, both of which may improve their long-term labor market outcomes.

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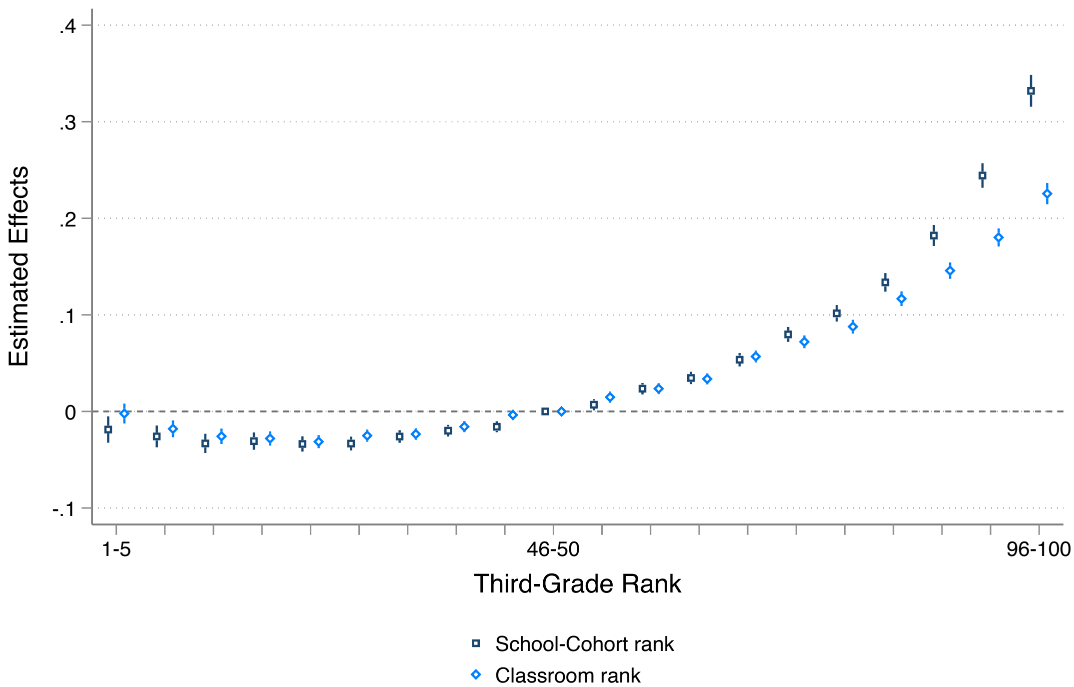
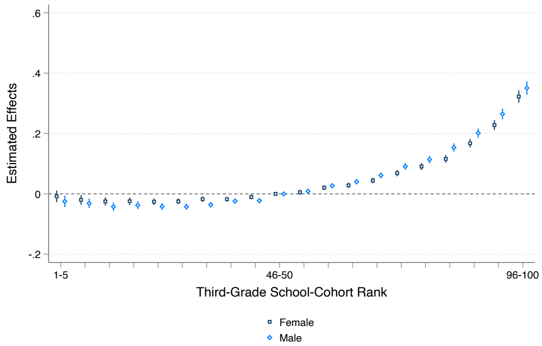
Figure 1: Estimated Effects of Rank on COMIPEMS Test Scores: School-Cohort vs. Classroom Rank



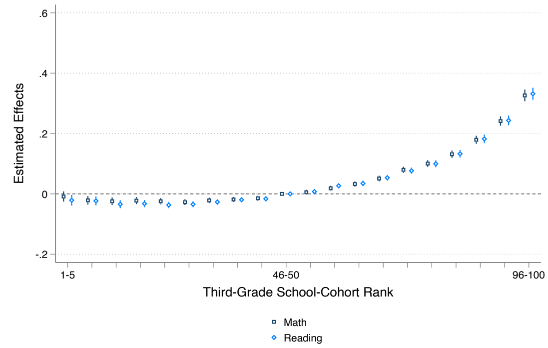
Notes: This figure shows the estimated coefficients and their 95% confidence intervals from estimation of Equation 3. The school-cohort-rank specification includes elementary school-cohort-subject fixed effects, and the classroom-rank specification includes elementary school-cohort-classroom-subject fixed effects. The school-cohort-rank and classroom-rank specifications are estimated separately. Within each specification, the plotted coefficients come from one regression that includes third-grade test scores, ventiles of student achievement interacted with 16 indicators for the elementary school distribution (quartiles of mean × quartiles of standard deviation of student achievement) fixed effects, centile fixed effects for third-grade test scores, individual controls, and is weighted by the inverse of the probability that the student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. The 46-50th percentile is the omitted group. Standard errors are clustered at the elementary school level.

Figure 2: Heterogeneous Effects of School-Cohort Rank on COMIPEMS Test Scores

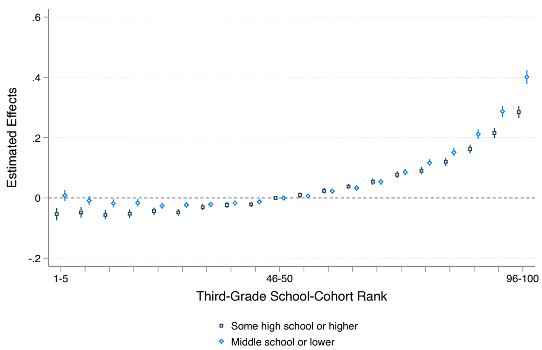
(a) By gender



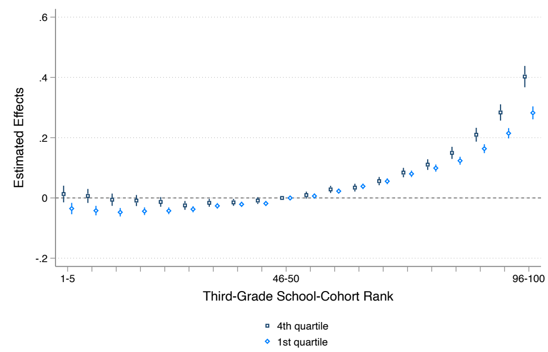
(b) By subject



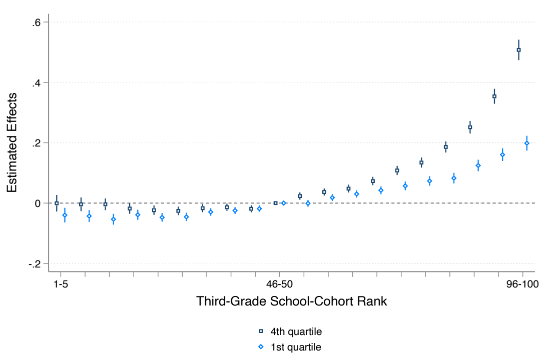
(c) By mother's educational level



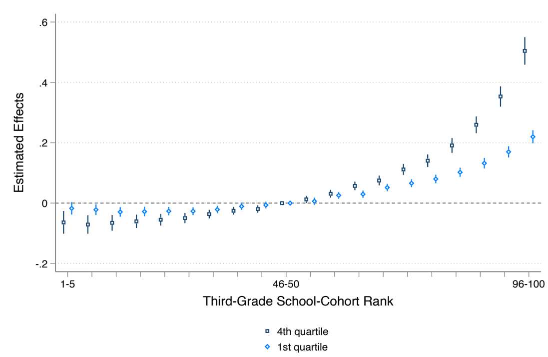
(d) By share of Progresa beneficiaries



(e) By SD of test score distribution



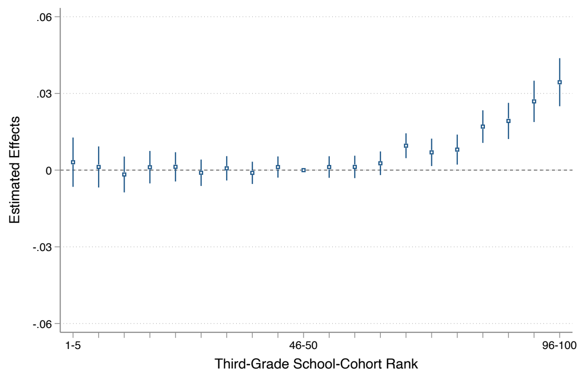
(f) By cohort size



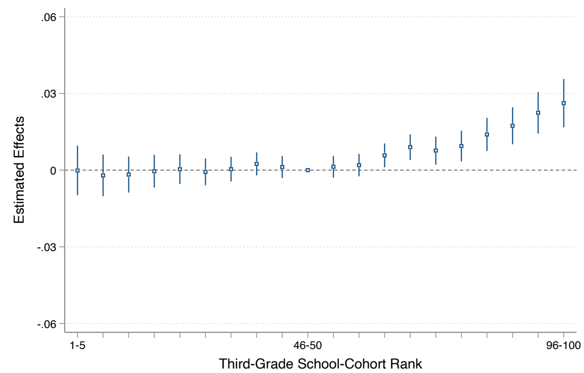
Notes: This figure shows the estimated coefficients and their 95% confidence intervals from estimation of Equation 3. For each panel and subgroup, estimates are obtained from separate regressions. All coefficients in each subgroup come from a single regression that includes elementary school-cohort-subject fixed effects, third-grade test scores, ventiles of student achievement interacted with 16 indicators for the elementary school distribution (quartiles of mean $\times$ quartiles of standard deviation of student achievement) fixed effects, centile fixed effects for third-grade test scores, individual controls, and is weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. The 46–50th percentile is the omitted group. Standard errors are clustered at the elementary school level.

Figure 3: Estimated Effects of School-Cohort Rank on Self-Perception

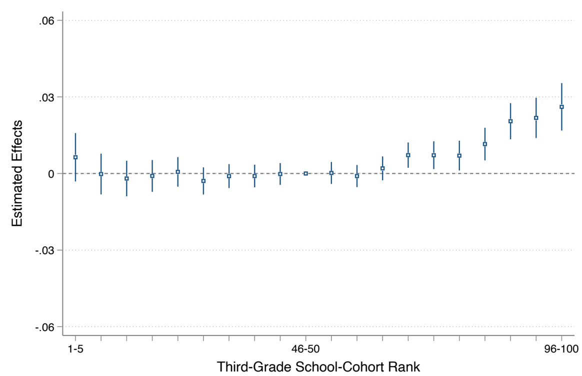
(a) I am a hard-working person



(b) I finish everything I start



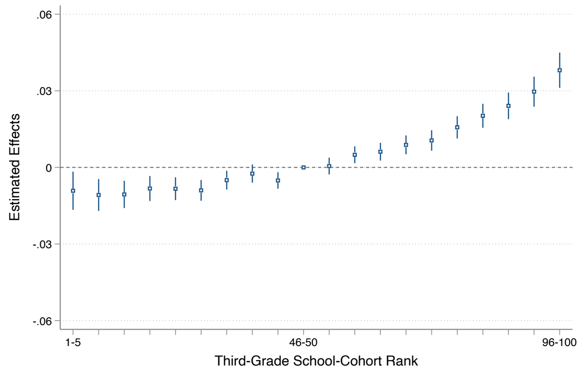
(c) I put great care into what I do



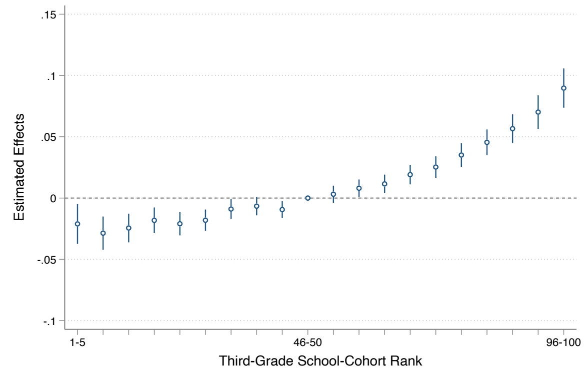
Notes: This figure shows the estimated coefficients and their 95% confidence intervals from estimation of Equation 3. Each panel reports coefficients from a single regression that includes school-cohort-subject fixed effects, third-grade test scores, ventiles of student achievement interacted with 16 indicators for the elementary school distribution (quartiles of mean $\times$ quartiles of standard deviation of student achievement) fixed effects, centile fixed effects for third-grade test scores, individual controls, and is weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. The 46–50th percentile is the omitted group. Standard errors are clustered at the elementary school level.

Figure 4: Estimated Effects of School-Cohort Rank on Academic Ambition

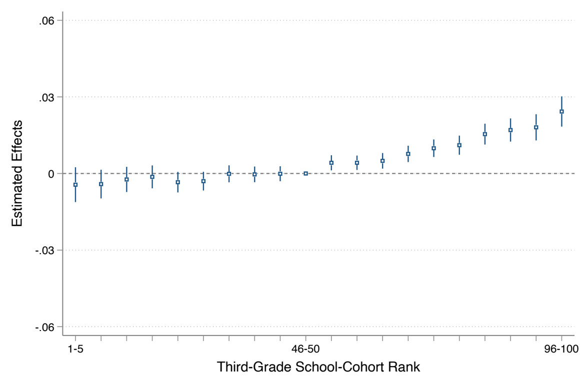
(a) Preference for elite high schools



(b) Average cutoff: Option 1



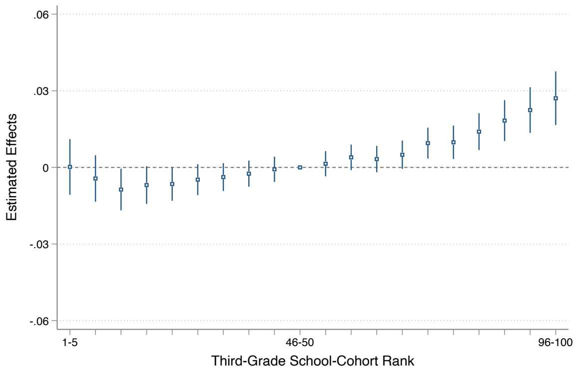
(c) Aspirations to attend college



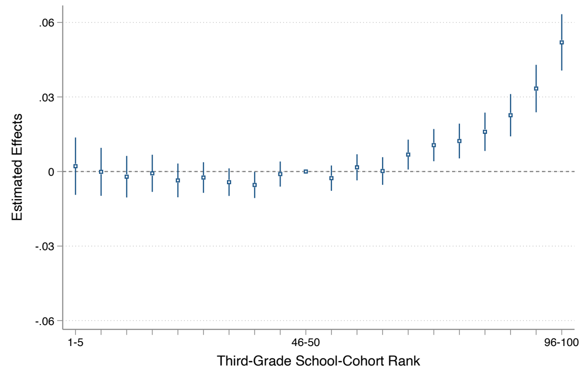
Notes: This figure shows the estimated coefficients and their 95% confidence intervals from estimation of Equation 3. Each panel reports coefficients from a single regression that includes school-cohort-subject fixed effects, third-grade test scores, ventiles of student achievement interacted with 16 indicators for the elementary school distribution (quartiles of mean × quartiles of standard deviation of student achievement) fixed effects, centile fixed effects for third-grade test scores, individual controls, and is weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. The 46–50th percentile is the omitted group. Standard errors are clustered at the elementary school level.

Figure 5: Estimated Effects of School-Cohort Rank on Classroom Responsibility

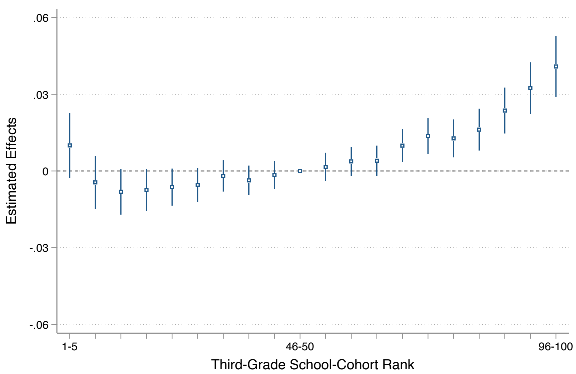
(a) I never miss classes



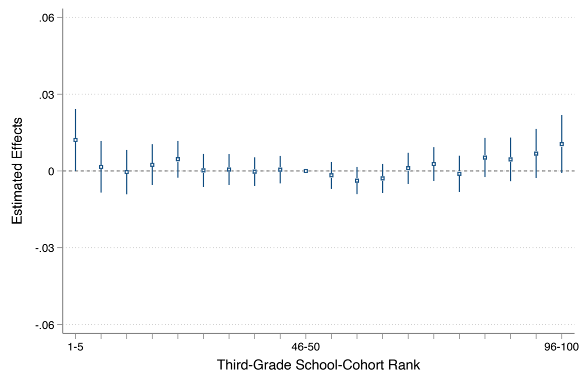
(b) I always participate in class



(c) I always submit tasks on time

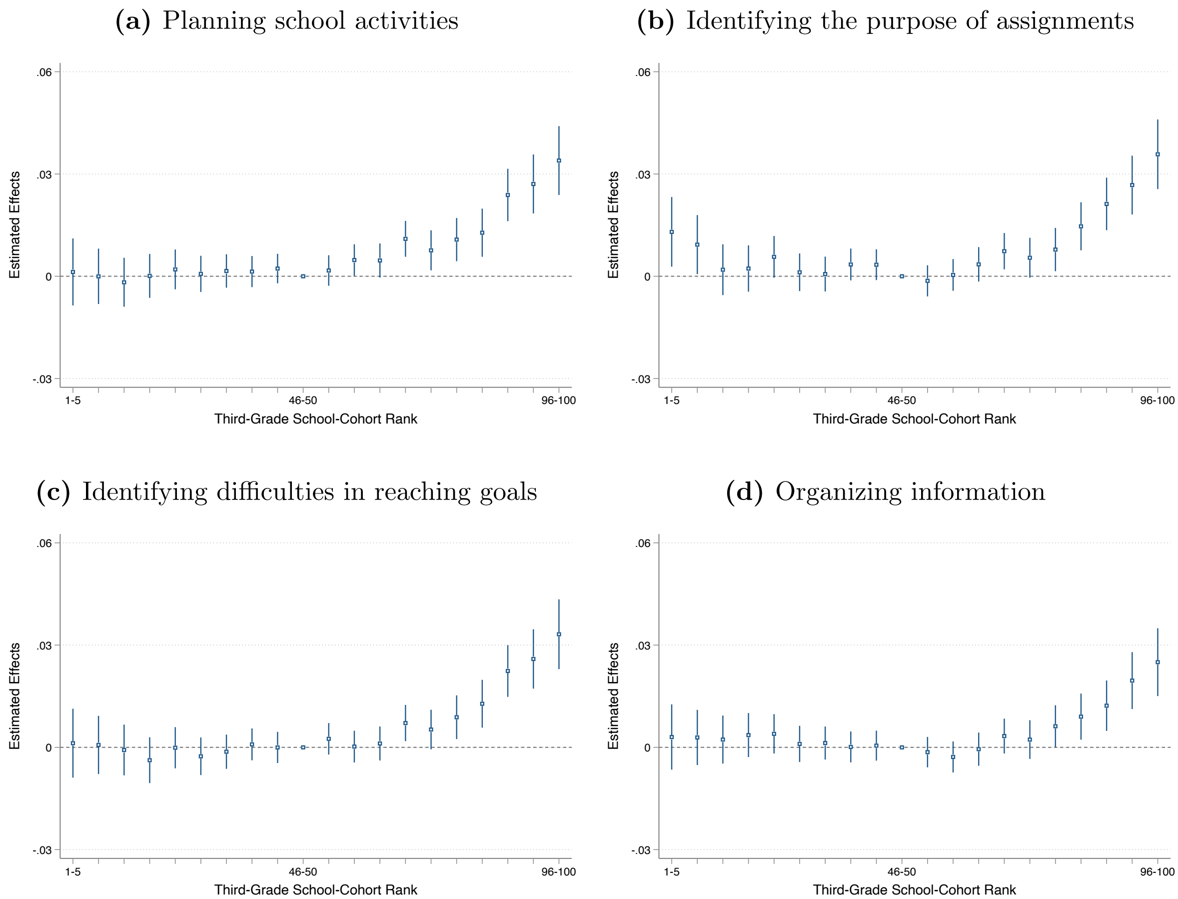


(d) I always bring the required materials



Notes: This figure shows the estimated coefficients and their 95% confidence intervals from estimation of Equation 3. Each panel reports coefficients from a single regression that includes school-cohort-subject fixed effects, third-grade test scores, ventiles of student achievement interacted with 16 indicators for the elementary school distribution (quartiles of mean $\times$ quartiles of standard deviation of student achievement) fixed effects, centile fixed effects for third-grade test scores, individual controls, and is weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. The 46–50th percentile is the omitted group. Standard errors are clustered at the elementary school level.

Figure 6: Estimated Effects of School-Cohort Rank on Learning Strategies



(a) Planning school activities

(b) Identifying the purpose of assignments

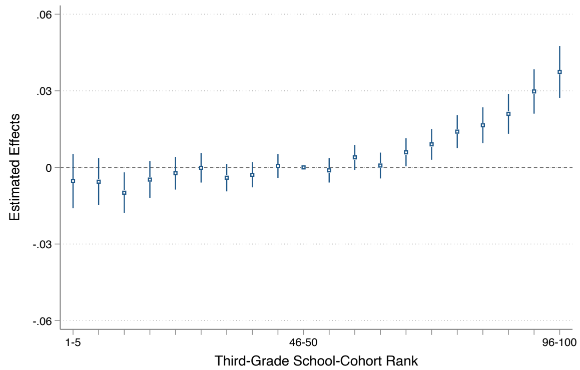
(c) Identifying difficulties in reaching goals

(d) Organizing information

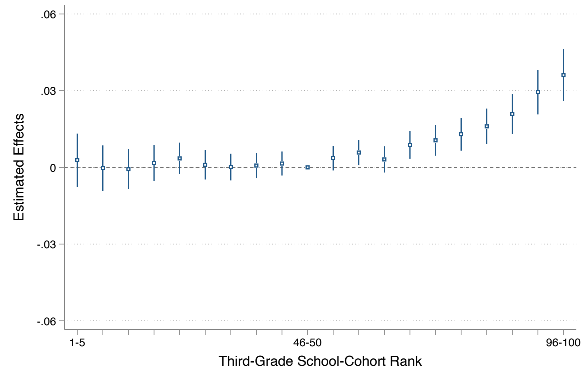
Notes: This figure shows the estimated coefficients and their 95% confidence intervals from estimation of Equation 3. Each panel reports coefficients from a single regression that includes school-cohort-subject fixed effects, third-grade test scores, ventiles of student achievement interacted with 16 indicators for the elementary school distribution (quartiles of mean $\times$ quartiles of standard deviation of student achievement) fixed effects, centile fixed effects for third-grade test scores, individual controls, and is weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. The 46–50th percentile is the omitted group. Standard errors are clustered at the elementary school level.

Figure 7: Estimated Effects of School-Cohort Rank on Attitudes in Teamwork

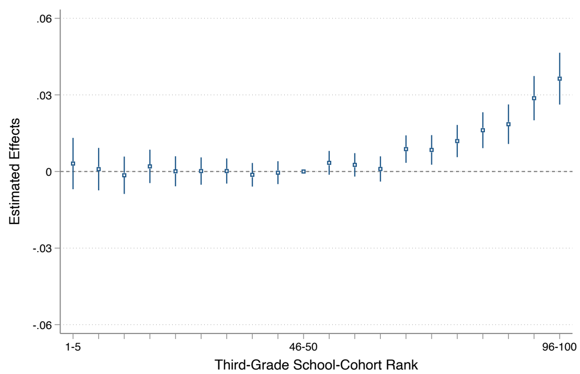
(a) Always participate in activity planning



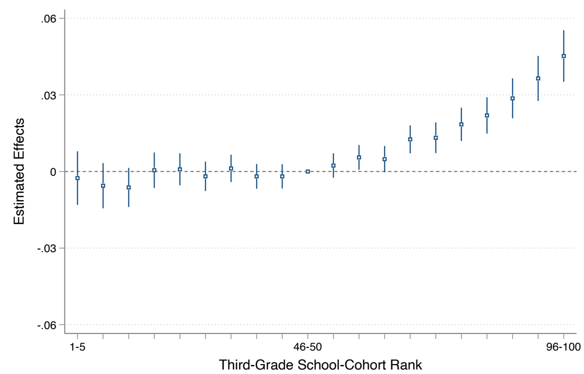
(b) Always collaborate in strategy development



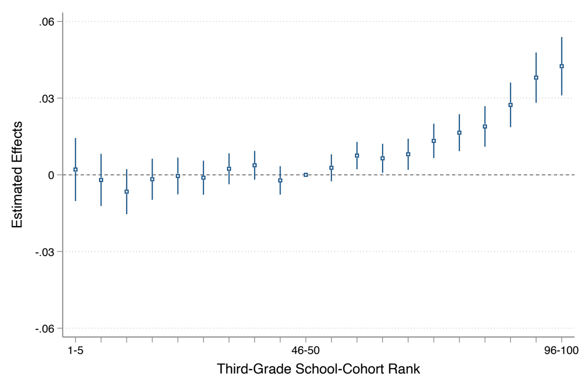
(c) Always intervene to resolve conflicts



(d) Always suggest to improve performance



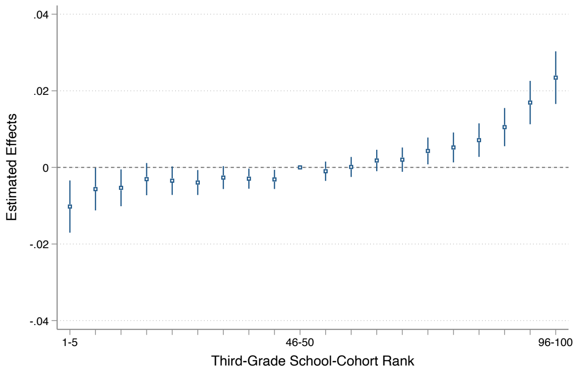
(e) Always complete tasks



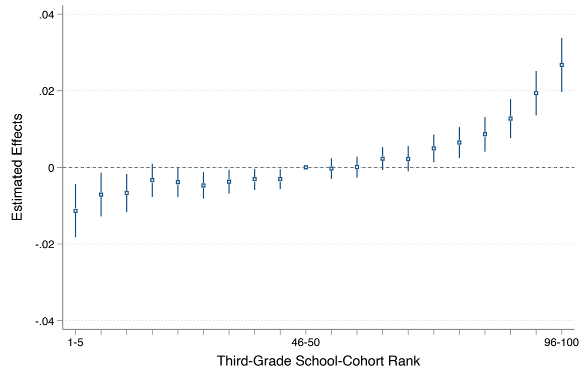
Notes: This figure shows the estimated coefficients and their 95% confidence intervals from estimation of Equation 3. Each panel reports coefficients from a single regression that includes school-cohort-subject fixed effects, third-grade test scores, ventiles of student achievement interacted with 16 indicators for the elementary school distribution (quartiles of mean $\times$ quartiles of standard deviation of student achievement) fixed effects, centile fixed effects for third-grade test scores, individual controls, and is weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. The 46–50th percentile is the omitted group. Standard errors are clustered at the elementary school level.

Figure 8: Estimated Effects of School-Cohort Rank on Characteristics of Middle School

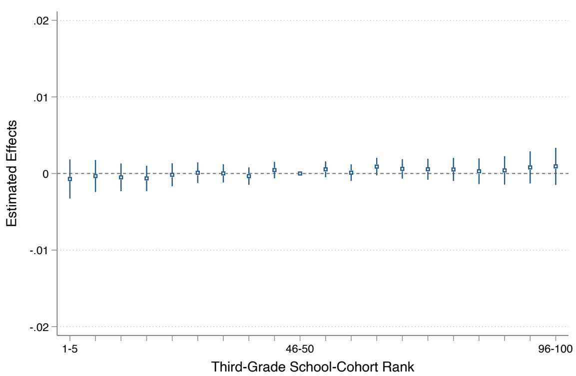
(a) Average math scores



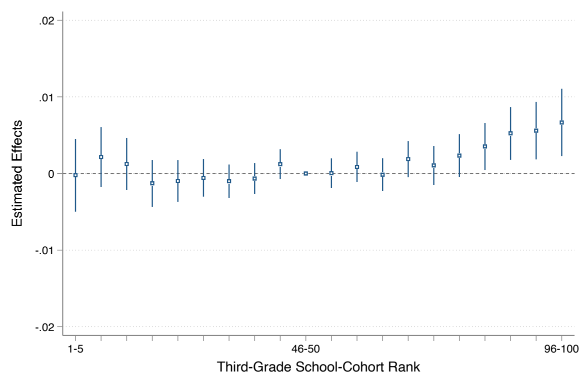
(b) Average reading scores



(c) Share of female teachers



(d) Share of teachers in *Carrera Magisterial*



Notes: This figure shows the estimated coefficients and their 95% confidence intervals from estimation of Equation 3. Each panel reports coefficients from a single regression that includes school-cohort-subject fixed effects, third-grade test scores, ventiles of student achievement interacted with 16 indicators for the elementary school distribution (quartiles of mean × quartiles of standard deviation of student achievement) fixed effects, centile fixed effects for third-grade test scores, individual controls, and is weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator. The 46–50th percentile is the omitted group. Standard errors are clustered at the elementary school level.

Table 1: Summary Statistics

	(1) Full sample	(2) Below-median rank	(3) Above-median rank
Third-grade test scores	0.21	-0.45	0.88
	(0.92)	(0.67)	(0.60)
COMIPEMS test scores	0.03	-0.43	0.50
	(1.00)	(0.86)	(0.92)
Rank (school-cohort)	0.53	0.28	0.78
	(0.29)	(0.16)	(0.14)
Cohort size	67.40	67.61	67.20
	(35.26)	(35.41)	(35.10)
Rank (classroom)	0.53	0.29	0.77
	(0.30)	(0.18)	(0.16)
Class size	26.49	26.46	26.51
	(7.54)	(7.54)	(7.55)
Female	0.50	0.48	0.52
	(0.50)	(0.50)	(0.50)
Mother's education (some high school or higher)	0.47	0.44	0.50
	(0.50)	(0.50)	(0.50)
Telephone	0.70	0.69	0.72
	(0.46)	(0.46)	(0.45)
Refrigerator	0.92	0.92	0.93
	(0.27)	(0.28)	(0.26)
Microwave	0.65	0.64	0.65
	(0.48)	(0.48)	(0.48)
Internet	0.68	0.66	0.70
	(0.47)	(0.47)	(0.46)
Cable TV	0.40	0.41	0.39
	(0.49)	(0.49)	(0.49)

Notes: Each cell shows the mean and the standard deviation (in parentheses) of the listed variables. Column 1 shows the full sample, Column 2 shows observations at or below the median of the school-cohort-rank distribution, and Column 3 shows above-median values of the school-cohort-rank distribution.

Table 2: Summary Statistics of Noncognitive Outcomes

	(1) Full sample	(2) Below-median rank	(3) Above-median rank
I am a hard-working person	0.34	0.30	0.39
	(0.48)	(0.46)	(0.49)
I finish everything I start	0.35	0.32	0.38
	(0.48)	(0.47)	(0.48)
I put great care into what I do	0.35	0.31	0.40
	(0.48)	(0.46)	(0.49)
Preference for elite high schools	0.71	0.65	0.78
	(0.45)	(0.48)	(0.42)
Average cutoff: Option 1	-0.00	-0.14	0.14
	(1.00)	(1.05)	(0.92)
Aspirations to attend college	0.85	0.81	0.89
	(0.36)	(0.39)	(0.31)
Never miss classes	0.75	0.71	0.79
	(0.43)	(0.45)	(0.41)
Always participate in class	0.30	0.25	0.34
	(0.46)	(0.43)	(0.47)
Always submit tasks on time	0.49	0.44	0.54
	(0.50)	(0.50)	(0.50)
Always bring the required materials	0.66	0.64	0.69
	(0.47)	(0.48)	(0.46)
Planning your school activities	0.21	0.18	0.24
	(0.41)	(0.38)	(0.43)
Identifying the purpose of assignments given at school	0.22	0.19	0.26
	(0.42)	(0.39)	(0.44)
Identifying difficulties in reaching your goals	0.22	0.19	0.26
	(0.42)	(0.39)	(0.44)
Organizing information	0.20	0.16	0.24
	(0.40)	(0.37)	(0.43)
Always participate in activity planning	0.44	0.38	0.50
	(0.50)	(0.49)	(0.50)
Always collaborate in strategy development	0.42	0.37	0.48
	(0.49)	(0.48)	(0.50)
Always intervene to resolve conflicts	0.34	0.29	0.38
	(0.47)	(0.45)	(0.49)
Always suggest to improve performance	0.41	0.35	0.46
	(0.49)	(0.48)	(0.50)
Always complete tasks	0.60	0.54	0.66
	(0.49)	(0.50)	(0.47)

Notes: Each cell shows the mean and the standard deviation (in parentheses) of the listed variables. Column 1 shows the full sample, Column 2 shows observations at or below the median of the school-cohort-rank distribution, and Column 3 shows above-median values of the school-cohort-rank distribution.

Table 3: Estimated Effects of Rank on the Probability of Taking the COMIPEMS Exam

	(1)	(2)
Dependent variables:	Took COMIPEMS	
Panel A		
Rank (school-cohort)	0.0377***	0.0371***
	(0.0042)	(0.0042)
Observations	3827590	3827558
School-Cohort-Subject Fixed Effects	Yes	Yes
Third Grade Test Score	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes
Individual Controls	No	Yes
Panel B		
Rank (classroom)	0.0352***	0.0348***
	(0.0031)	(0.0031)
Observations	3823330	3823298
School-Cohort-Classroom-Subject Fixed Effects	Yes	Yes
Third Grade Test Score	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes
Individual Controls	No	Yes

Notes: Each column in each panel represents a different regression. Ventiles of Achievement × School Distribution denotes student third-grade test score ventiles interacted with 16 elementary school distribution indicators (quartiles of the mean × quartiles of the standard deviation of student achievement) fixed effects. Individual controls include a female indicator. Standard errors in parentheses are clustered at the elementary school level. *, **, *** significant at the 10%, 5%, and 1% level, respectively.

Table 4: Estimated Effects of Rank on COMIPEMS Test Scores

	(1)	(2)
Dependent variables:	COMIPEMS Test Scores	
Panel A		
Rank (school-cohort)	0.2770***	0.2821***
	(0.0111)	(0.0109)
Observations	2497876	2497876
School-Cohort-Subject Fixed Effects	Yes	Yes
Third-Grade Test Scores	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes
Individual Controls	No	Yes
Panel B		
Rank (classroom)	0.2102***	0.2141***
	(0.0074)	(0.0073)
Observations	2493616	2493616
School-Cohort-Classroom-Subject Fixed Effects	Yes	Yes
Third-Grade Test Scores	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes
Individual Controls	No	Yes

Notes: Each column in each panel represents a different regression. Ventiles of Achievement × School Distribution denotes student third-grade test score ventiles interacted with 16 elementary school distribution indicators (quartiles of the mean × quartiles of the standard deviation of student achievement) fixed effects. All regressions are weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. Standard errors in parentheses are clustered at the elementary school level. *, **, *** significant at the 10%, 5%, and 1% level, respectively.

Table 5: Estimated Effects of School-Cohort and Classroom Ranks on COMIPEMS Test Scores

	(1)	(2)	(3)	(4)	(5)
Sample restrictions:	None	2+ classrooms within the same school cohort			
Rank (school-cohort)	0.2821***	0.3013***	0.2957***		0.1237***
	(0.0109)	(0.0123)	(0.0124)		(0.0159)
Rank (classroom)				0.2224***	0.1688***
				(0.0079)	(0.0101)
Observations	2497876	2125676	2121416	2121416	2121416
School-Cohort-Subject Fixed Effects	Yes	Yes	No	No	No
School-Cohort-Classroom-Subject Fixed Effects	No	No	Yes	Yes	Yes
Third-Grade Test Score	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes	Yes	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes

Notes: Each column represents a different regression. Ventiles of Achievement × School Distribution denotes student third-grade test score ventiles interacted with 16 elementary school distribution indicators (quartiles of the mean × quartiles of the standard deviation of student achievement) fixed effects. All regressions are weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. Standard errors in parentheses are clustered at the elementary school level. *, **, *** significant at the 10%, 5%, and 1% level, respectively.

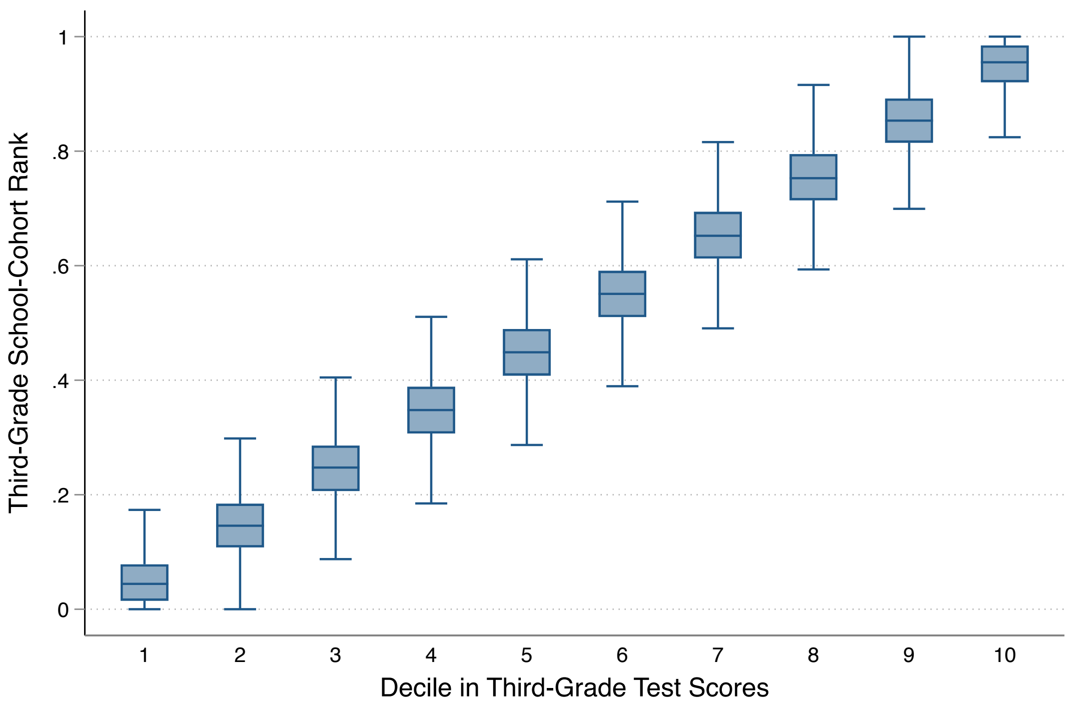
Table 6: Estimated Effects of School-Cohort Rank on Characteristics of Elementary School Teachers

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variables:	Female	Less than 40 years old	Bachelor's degree or higher	6+ years of experience as a teacher	6+ years of experience as a teacher at this school	Enrolled in *Carrera Magisterial* program
Panel A: Fourth-Grade Teacher						
Rank (school-cohort)	-0.0029	0.0220	-0.0059	-0.0234	-0.0105	-0.0112
	(0.0157)	(0.0194)	(0.0193)	(0.0153)	(0.0194)	(0.0190)
Observations	120594	120196	119894	117830	106528	112380
School-Cohort-Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Third-Grade Test Score	Yes	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes	Yes	Yes	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Fifth-Grade Teacher						
Rank (school-cohort)	-0.0180	-0.0139	-0.0401	0.0212	0.0122	-0.0080
	(0.0307)	(0.0285)	(0.0320)	(0.0197)	(0.0337)	(0.0265)
Observations	59942	59840	59410	57586	48620	56550
School-Cohort-Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Third-Grade Test Score	Yes	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes	Yes	Yes	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Sixth-Grade Teacher						
Rank (school-cohort)	0.0303	0.0086	-0.0055	0.0252	0.0112	-0.0192
	(0.0315)	(0.0305)	(0.0291)	(0.0228)	(0.0341)	(0.0298)
Observations	49002	48856	48642	46824	38224	46212
School-Cohort-Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Third-Grade Test Score	Yes	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes	Yes	Yes	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Each column in each panel represents a different regression. Ventiles of Achievement × School Distribution denotes student third-grade test score ventiles interacted with 16 elementary school distribution indicators (quartiles of the mean × quartiles of the standard deviation of student achievement) fixed effects. All regressions include a female indicator. Standard errors in parentheses are clustered at the elementary school level. *, **, *** significant at the 10%, 5%, and 1% level, respectively.

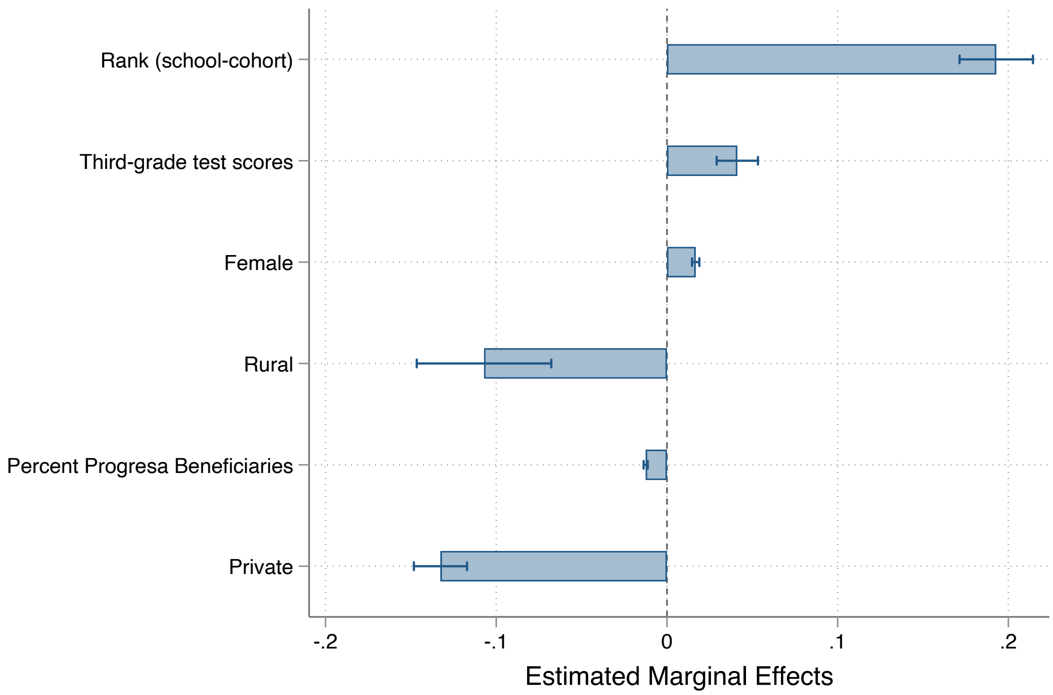
Appendix A

Figure A.1: Third-Grade Test Score and School-Cohort Rank Distribution



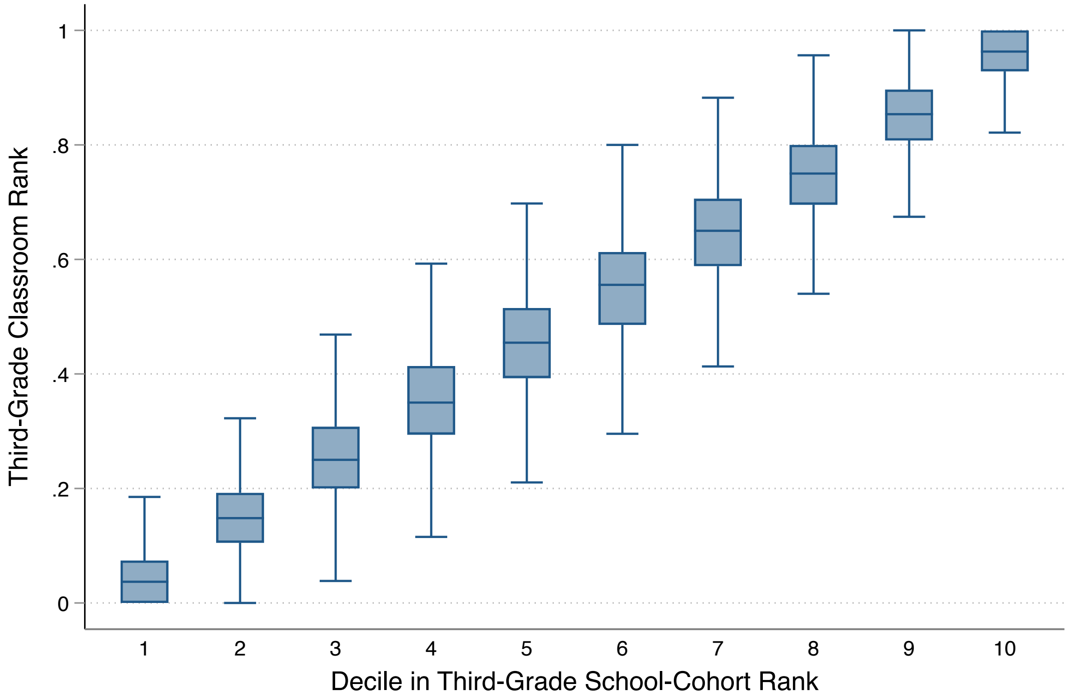
Notes: This figure shows a box plot of the relationship between school-cohort rank and the residualized test scores after taking into account school-cohort-subject fixed effects. The center line in each box represents the 50th percentile (median) of school-cohort rank for each decile of residualized test scores. The lower and upper bounds of each box represent the 25th and 75th percentiles, respectively, and outside values are excluded.

Figure A.2: Determinants of the Probability of Taking the COMIPEMS Exam



Notes: All coefficients and 95% confidence intervals come from the same logit regression that additionally includes indicators of the ventiles of student achievement interacted with 16 indicators for elementary school distribution (quartiles of mean × quartiles of standard deviation of student achievement) and centile fixed effects for third-grade test scores. Standard errors are clustered at the elementary school level.

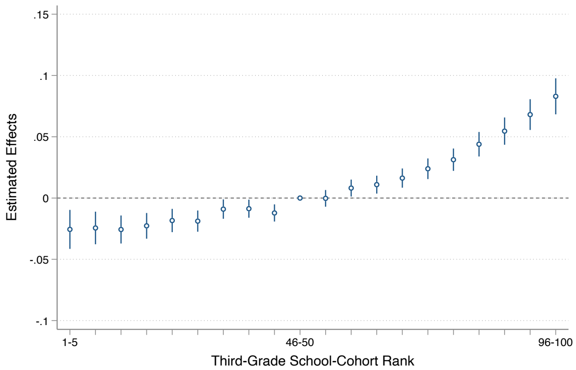
Figure A.3: School-Cohort Rank and Classroom Rank Distribution



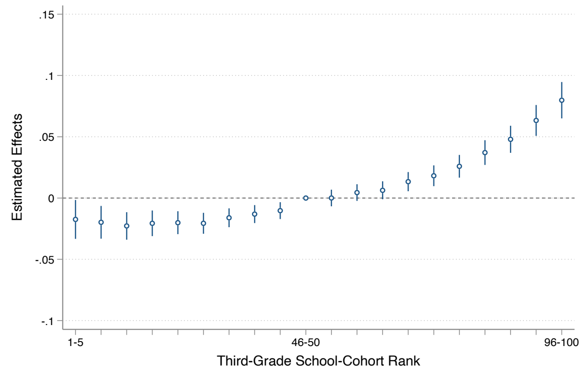
Notes: This figure shows a box plot of the relationship between school-cohort rank and classroom rank. The center line in each box represents the 50th percentile (median) of classroom rank for each decile of school-cohort rank. The lower and upper bounds of each box represent the 25th and 75th percentiles, respectively, and outside values are excluded.

Figure A.4: Estimated Effects of School-Cohort Rank on Academic Ambition: Additional Outcomes

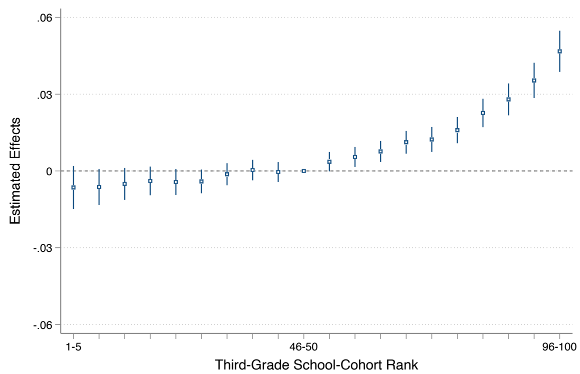
(a) Average cutoff: Option 2



(b) Average cutoff: Option 3

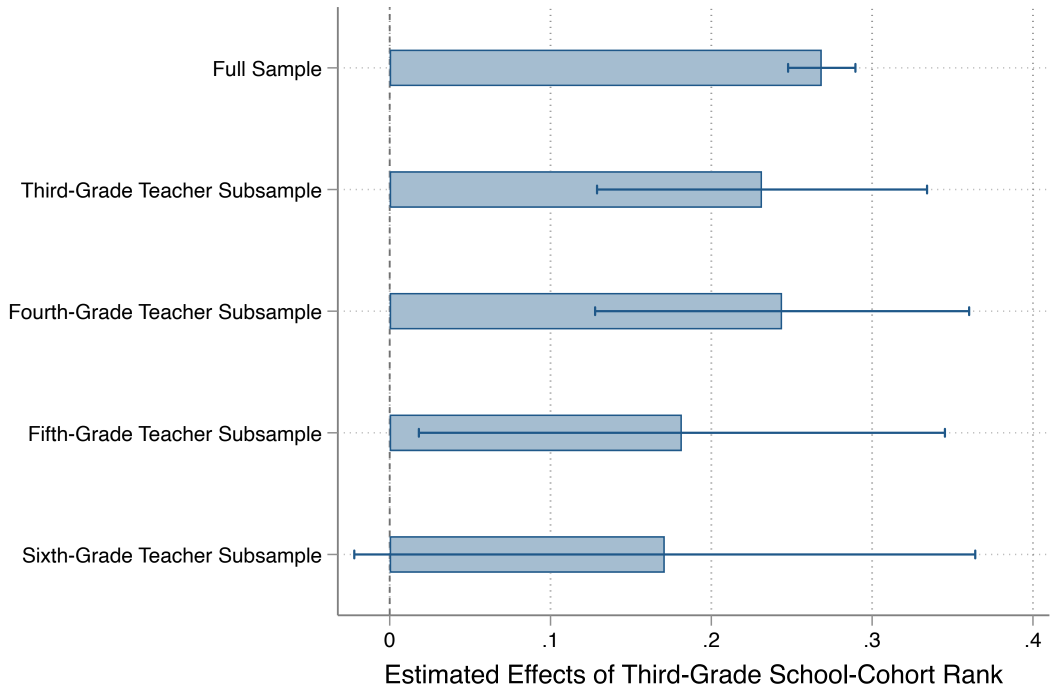


(c) Aspirations to attend grad school



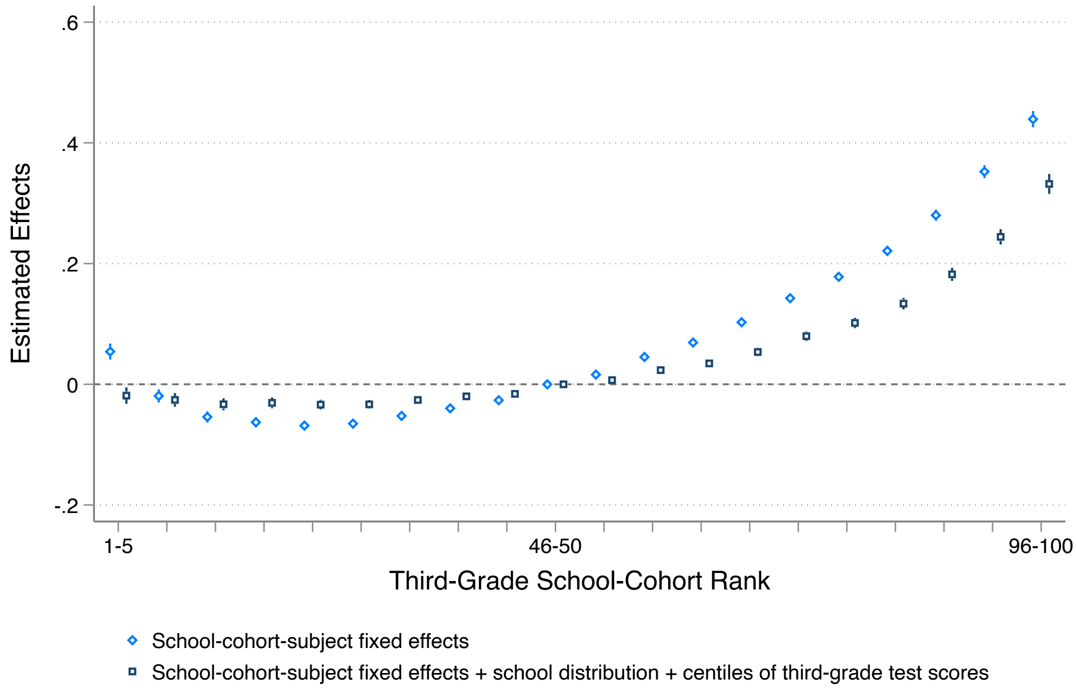
Notes: This figure shows the estimated coefficients and their 95% confidence intervals from estimation of Equation 3. Each panel reports coefficients from a single regression that includes school-cohort-subject fixed effects, third-grade test scores, ventiles of student achievement interacted with 16 indicators for the elementary school distribution (quartiles of mean × quartiles of standard deviation of student achievement) fixed effects, centile fixed effects for third-grade test scores, individual controls, and is weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. The 46–50th percentile is the omitted group. Standard errors are clustered at the elementary school level.

Figure A.5: Estimated Effects of School-Cohort Rank on COMIPEMS Test Scores: Elementary School Teachers Subsamples



Notes: This figure shows the estimated coefficients and their 95% confidence intervals. Each estimate and its 95% confidence interval comes from a different regression. All regressions include elementary school-cohort-subject fixed effects, third-grade test scores, ventiles of student achievement interacted with 16 indicators for elementary school distribution (quartiles of mean × quartiles of standard deviation of student achievement) fixed effects, centile fixed effects for third-grade test scores, and a female indicator. Standard errors are clustered at the elementary school level.

Figure A.6: Estimated Effects of School-Cohort Rank on COMIPEMS Test Scores: By Functional Form



Notes: This figure shows the estimated coefficients and their 95% confidence intervals from estimation of Equation 3. School distribution indicates ventiles of student achievement interacted with 16 indicators for elementary school distribution (quartiles of mean × quartiles of standard deviation of student achievement) fixed effects. Each regression includes third-grade test scores, individual controls, and is weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. The 46-50th percentile is the omitted group. Standard errors are clustered at the elementary school level.

Table A.1: Estimated Effects of Rank on Students' Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variables:	Female	Mother's education	Telephone	Refrigerator	Microwave	Internet	Cable TV
Panel A							
Rank (school-cohort)	0.0256***	0.0052	0.0078*	0.0058**	0.0070	0.0147***	0.0006
	(0.0054)	(0.0045)	(0.0046)	(0.0029)	(0.0049)	(0.0045)	(0.0050)
Observations	2497876	2497876	2497876	2497876	2497876	2497876	2497876
School-Cohort-Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Third-Grade Test Score	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	No	No	No	No	No	No	No
Centiles of Third-Grade Test Scores Fixed Effects	No	No	No	No	No	No	No
Panel B							
Rank (school-cohort)	0.0455***	0.0044	0.0011	0.0021	0.0018	0.0062	-0.0010
	(0.0070)	(0.0055)	(0.0057)	(0.0035)	(0.0061)	(0.0055)	(0.0062)
Observations	2497876	2497876	2497876	2497876	2497876	2497876	2497876
School-Cohort-Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Third-Grade Test Scores	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C							
Rank (classroom)	0.0337***	0.0029	-0.0002	0.0015	0.0032	0.0018	-0.0064
	(0.0050)	(0.0041)	(0.0042)	(0.0026)	(0.0045)	(0.0041)	(0.0046)
Observations	2493616	2493616	2493616	2493616	2493616	2493616	2493616
School-Cohort-Classroom-Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Third-Grade Test Scores	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Each column in each panel represents a different regression. Ventiles of Achievement × School Distribution denotes student third-grade test score ventiles interacted with 16 elementary school distribution indicators (quartiles of the mean × quartiles of the standard deviation of student achievement) fixed effects. All regressions are weighted by the inverse of the probability that a student took the COMIPEMS exam. Standard errors in parentheses are clustered at the elementary school level. *, **, *** significant at the 10%, 5%, and 1% level, respectively.

Table A.2: Estimated Effects of Rank on COMIPEMS Test Scores: Gender Interactions

	(1)	(2)
Dependent variables:	COMIPEMS Test Scores	
Panel A		
Rank (school-cohort)	0.2821***	0.2845***
	(0.0109)	(0.0112)
Observations	2497876	2491326
School-Cohort-Subject Fixed Effects	Yes	Yes
Third-Grade Test Score	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes
Individual Controls	Yes	Yes
School-Cohort-Subject Fixed Effects × Female	No	Yes
Third-Grade Test Score × Female	No	Yes
Ventiles of Achievement × School Distribution × Female	No	Yes
Centiles of Third-Grade Test Scores Fixed Effects× Female	No	Yes
Individual Controls × Female	No	Yes
Panel B		
Rank (classroom)	0.2141***	0.2175***
	(0.0073)	(0.0076)
Observations	2493616	2481558
School-Cohort-Classroom-Subject Fixed Effects	Yes	Yes
Third-Grade Test Score	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes
Individual Controls	Yes	Yes
School-Cohort-Classroom-Subject Fixed Effects × Female	No	Yes
Third-Grade Test Score × Female	No	Yes
Ventiles of Achievement × School Distribution × Female	No	Yes
Centiles of Third-Grade Test Scores Fixed Effects× Female	No	Yes
Individual Controls × Female	No	Yes

Notes: Each column in each panel represents a different regression. Ventiles of Achievement × School Distribution denotes student third-grade test score ventiles interacted with 16 elementary school distribution indicators (quartiles of the mean × quartiles of the standard deviation of student achievement) fixed effects. All regressions are weighted by the inverse of the probability that a student took the COMIPEMS exam. Individual controls include a female indicator, mother's education (some high school or higher), and indicators for the availability of telephone, refrigerator, microwave, internet, or cable TV at home. Standard errors in parentheses are clustered at the elementary school level. *, **, *** significant at the 10%, 5%, and 1% level, respectively.

Table A.3: Estimated Effects of School-Cohort Rank on Students' Characteristics by Gender

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variables:	Mother's education	Telephone	Refrigerator	Microwave	Internet	Cable TV
Panel A: Female students						
Rank (school-cohort)	-0.0021	0.0064	-0.0002	0.0080	0.0136*	0.0028
	(0.0080)	(0.0083)	(0.0055)	(0.0090)	(0.0083)	(0.0088)
Observations	1249304	1249304	1249304	1249304	1249304	1249304
School-Cohort-Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Third-Grade Test Scores	Yes	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes	Yes	Yes	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Male students						
Rank (school-cohort)	0.0113	-0.0022	0.0011	-0.0006	0.0014	-0.0004
	(0.0080)	(0.0087)	(0.0051)	(0.0088)	(0.0079)	(0.0090)
Observations	1242022	1242022	1242022	1242022	1242022	1242022
School-Cohort-Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Third-Grade Test Scores	Yes	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes	Yes	Yes	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Each column in each panel represents a different regression. Ventiles of Achievement × School Distribution indicates ventiles of student achievement interacted with 16 indicators for elementary school distribution (quartiles of mean x quartiles of standard deviation of student achievement) fixed effects. All regressions are weighted by the inverse of the probability that a student took the COMIPEMS exam. Standard errors in parentheses are clustered at the elementary school level. *, **, *** significant at the 10%, 5%, and 1% level, respectively.

Table A.4: Estimated Effects of Classroom Rank on Students' Characteristics by Gender

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variables:	Mother's education	Telephone	Refrigerator	Microwave	Internet	Cable TV
Panel A: Female students						
Rank (classroom)	0.0003	0.0050	0.0011	0.0113*	0.0107*	-0.0091
	(0.0060)	(0.0063)	(0.0040)	(0.0068)	(0.0060)	(0.0067)
Observations	1244330	1244330	1244330	1244330	1244330	1244330
School-Cohort-Classroom-Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Third-Grade Test Scores	Yes	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes	Yes	Yes	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Male students						
Rank (classroom)	0.0078	-0.0042	0.0013	-0.0019	-0.0060	0.0004
	(0.0061)	(0.0064)	(0.0038)	(0.0065)	(0.0061)	(0.0067)
Observations	1237228	1237228	1237228	1237228	1237228	1237228
School-Cohort-Classroom-Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Third-Grade Test Scores	Yes	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes	Yes	Yes	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Each column in each panel represents a different regression. Ventiles of Achievement × School Distribution denotes student third-grade test score ventiles interacted with 16 elementary school distribution indicators (quartiles of the mean × quartiles of the standard deviation of student achievement) fixed effects. All regressions are weighted by the inverse of the probability that a student took the COMIPEMS exam. Standard errors in parentheses are clustered at the elementary school level. *, **, *** significant at the 10%, 5%, and 1% level, respectively.

Table A.5: Estimated Effects of Rank on Characteristics of Third-Grade Teachers

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variables:	Female	Less than 40 years old	Bachelor's degree or higher	6+ years of experience as a teacher	6+ years of experience as a teacher at this school	Enrolled in *Carrera Magisterial* program
Rank (school-cohort)	0.0064	0.0051	0.0050	0.0024	-0.0222	-0.0093
	(0.0181)	(0.0194)	(0.0206)	(0.0141)	(0.0203)	(0.0170)
Observations	126298	126164	125586	123690	110152	117712
School-Cohort-Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Third-Grade Test Score	Yes	Yes	Yes	Yes	Yes	Yes
Ventiles of Achievement × School Distribution	Yes	Yes	Yes	Yes	Yes	Yes
Centiles of Third-Grade Test Scores Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Each column represents a different regression. Ventiles of Achievement × School Distribution denotes student third-grade test score ventiles interacted with 16 elementary school distribution indicators (quartiles of the mean × quartiles of the standard deviation of student achievement) fixed effects. All regressions include a female indicator. Standard errors in parentheses are clustered at the elementary school level. *, **, *** significant at the 10%, 5%, and 1% level, respectively.