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Paying (and Paving) my way: Extra-class participation and rent extraction

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ABSTRACT

Extra classes, or private tutoring offered by schoolteachers to their pupils, are a widespread phenomenon, particularly in developing countries. This educational arrangement might leave room for distorted incentives. Using data from Vietnam, I find that teachers grant higher school grades to pupils attending extra classes, but extra-class attendance does not yield higher scores on standardized achievement tests. I interpret these results as evidence of opportunistic behavior, whereby teachers exploit their arbitrariness in awarding grades, which count for secondary school admissions, to extract rents. The extent of grade inflation is higher in institutionally underdeveloped settings. Attending extra classes also generates a gap in pupils' self-concept. These findings provide relevant policy implications to align this informal sector with the country's education system.

1. Introduction

Lack of transparency in the public sector is a familiar topic in people's daily lives in developing countries. Paying bribes to traffic police, tax authorities, and customs officers to grease and facilitate basic tasks or services is often unavoidable (Bai et al., 2019). Additional tutoring outside of school, a prone-to-misconduct practice, has become increasingly common in education.[1] A distinct feature of tutoring in poorer countries that differs from the usual setting in richer countries is the tutors, who often are the students' *own* schoolteachers. This practice, prevalent in many developing countries, raises concerns about teachers' rent-seeking behavior, especially when teachers can use their influence to provide after-school tutoring for a fee. Such an arrangement also calls for understanding its effectiveness and implications on (in)equalities.

In Vietnam, the country of interest in this paper, around one-third of pupils at the primary level participate in *extra classes*, an informal educational activity in which children pay for afterschool tutoring provided by their regular teachers. Extra classes make up a substantial part of the household budget (1-5% of total expenditures) in Vietnam (Dang, 2007), with Vietnamese parents spending somewhere between 10 to 40 times more on extra classes than parents in Ethiopia, Peru, or India (Glewwe et al., 2021). Compared to Cambodia, a neighboring country with a comparably extensive private tuition market, the figure is still nearly three-fold as much (de Guzman, 2007). Despite the

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[1] In Cambodia, 31% of pupils of surveyed primary schools received tutoring (Bray, 1999), while the figure is around 40% and 65% in Kenya (Bray, 2006). The phenomenon is not uncommon in developed countries: one out of three students aged 11-16 in England and Wales receive out-of-school tuition at some point (Jerrim, 2017), one third of Canadian parents pay for supplementary tutoring services (Aurini and Davies, 2013). The figure is even higher in East Asian countries Hong Kong, Japan and Korea, with around 45%, 50% and 80% of primary school students taking private tuition (Bray, 1999; Yamato and Zhang, 2017; Y. Ha and Park, 2017).

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prevalence and sizable market of this practice, little is known about the extent of corruption involved in it and its impacts on human capital.[2]

Provision of extra classes to one's own primary school pupils is prohibited. It is very common, however, for schoolteachers to run home-based daycare as the cover for informal tutoring (Ha et al., 2005).[3] Stevenson and Baker (1992) and Bray (1999) coined the term "shadow education" to imply that extra classes are an informal reflection of the public education system, subsequently receiving less inspection and monitoring. At primary schools, a so-called "homeroom teacher" or the main teacher is responsible for both administrative tasks and academic instructions of major subjects (Math, Vietnamese, sciences, morality). As such, weak institutional settings and lack of teacher accountability might increase the power of the teacher. This issue can be severe in an education system where grades matter, raising two issues. First, it leaves room for bribery if teachers pressure parents or favor extra-class attendees. Second, extra classes would interfere with the quality of public schools if teachers shifted focus and effort from their teaching at school into their side job (for example, by deliberately instructing part of the official curriculum only during extra classes—see discussion in Jayachandran, 2014). In this paper, I investigate the former issue, namely whether distorted incentives exist alongside the extra-class market, by examining pupil outcomes at the individual level. The analysis focuses on primary school pupils, as the most common form of extra classes at this level of education is the ones offered by the homeroom teachers.[4]

Using a panel of over 3,000 pupils in Grade 5 (last year of primary school) from the Young Lives (YL) school survey, I develop an empirical approach for studying the effectiveness of extra classes on pupil performance and proof of non-transparency in this shadow system. The data provides information on (i) the grades awarded to pupils in Math and Vietnamese by teachers, and (ii) on standardized achievement tests in the same subjects carried out within the YL survey. Teacher grades come from first 45-minute tests of the current academic year, usually the midterm evaluation of pupil competence. Importantly, components other than cognitive skills, such as class participation and academic conduct, do not comprise teacher grades.[5] The YL assessment tests use questions drawn from textbooks and the nationally representative Grade 5 Learning Assessment to capture pupils' underlying competence in domains relevant to the Grade 5 curriculum. These tests are conducted independently by the YL survey and have no consequences on official school assessments. These alternative measures allow me to distinguish between the effects of extra classes on teacher grades (subjective) and standardized achievement test scores (objective). As teacher grades and YL scores are intended to measure the same skill set, I shall interpret the difference between the effects on teachers' grading versus standardized tests as evidence of rent-extracting behavior by teachers.

In addition, the data also provides information about pupils' non-cognitive skills—measured using standard survey instruments within the YL survey—thereby permitting me to provide evidence on the effects of extra-class attendance on pupils' academic self-concept (ASC). ASC reflects how a pupil perceives their own academic ability, which depends not only on academic performance but also on interactions with the surrounding environment like teachers, parents, or peers.

The richness of the YL data is especially useful for this paper. First, the sampling frame is such that entire classes are surveyed, and class identifiers are recorded in the data. As a result, I can leverage within-class variation in extra-class attendance, coupled with rich information on pupils' backgrounds, for the identification of causal effects. Consistent with the figure drawn from nationally representative data, around one-third of pupils in the sample participate in extra classes. By contrast, teachers significantly underreport their provision of extra classes, suggesting that teachers are unwilling to disclose information about this informal activity.

In the main empirical results, at first glance, pupils attending extra classes receive higher grades at school than their classmates who do not participate in extra classes, conditioned on pre-determined competence. However, the extra classes do not affect pupils' underlying skills over time (in the rest of the paper, competence or underlying skills are used interchangeably). The better performance of extra-class attendees at school reflects a lack of transparency in teaching and grading practice. The baseline model explains nearly half of the total variation in the learning outcomes, and the result is robust to a battery of sensitivity tests. To address potential omitted variable bias, I perform an Oster test to examine coefficient stability, considering R-squared's movement when controls are added to the regression model (Oster, 2019).

In addition, the heterogeneity analysis shows that the positive effect on school grades is mainly driven by extra-class pupils from poorer families or living in rural and remote areas. When comparing school types by school day duration, grade inflation is considerably more substantial in schools that offer a half-day program than in schools with a full-day program. These disadvantaged settings have fewer monitoring mechanisms against (bad) teacher incentives. At the same time, poor households have weaker bargaining power. These results align with the theory of misgovernance (Banerjee, 1997), which states that agency problems within a public organization are aggravated at lower levels of development and in bureaucracies that deal with poor people. Similar to an agent in a public organization, teachers might exert subtle pressure on pupils and parents to increase personal gains.

Anecdotal evidence suggests that one possible strategy for teacher misbehavior is the disclosure of test solutions in advance during extra class, giving extra-class pupils the advantage of insider knowledge or teaching to the tests (Transparency International, 2011). Second, if teacher behavior aligns strongly with their financial interest, they might be more lenient and generous when evaluating the performance of pupils attending extra classes while stricter and more intimidating to those who do not. Unfortunately, I cannot test for teacher differential treatment since teacher effort and attitude towards pupils are not observable. I provide indirect evidence via the effect of extra classes on pupils' academic self-perception, which partially reflects the interactions with teachers and peers. The estimated result shows the emergence of a gap in the confidence level of extra-class attendees compared to the other classmates over the course of the academic year.

Using additional longer-term information for a subset of the sample, I discover that children taking extra classes in Grade 5 are more likely to get into secondary school at age 15. Extra classes inflate GPAs in primary school, increasing the likelihood of attending higher-quality lower secondary schools, which then produce better GPAs, crucial for upper secondary admission. Another potential mechanism is improved self-concept, which translates into positive non-cognitive skills, subsequently affecting both academic attainment and non-academic attainment (Heckman and Rubinstein, 2001). Additionally, the effects of extra classes on confidence and achievements in the longer term might be explained through ordinal class rank, which relates to the literature on

[2] The press occasionally reports fraudulent settlements of revenues and expenditures, resulting in school constructions that deviate from approved designs and fail to meet quality standards; cheating in teacher selection and recruitment process; mark manipulation of students who are relatives of educational officials (Transparency International, 2011).

[3] In Cambodia, extra classes can take place either right at school or at the teacher's house. They are "simply a (privatized) continuation of government school classes" and perfectly imitate the school atmosphere in terms of class organization, instructional methods, frequency of groupwork or assignments, learning materials and other class characteristics (Brehm and Silova, 2014).

[4] The setting at the primary school level grants homeroom teachers almost monopoly power over fellow pupils in their class. At higher levels of education, homeroom teachers do not have the same market power since they teach only one subject. In addition, there exist high-stake national exams at the end of secondary and high school, creating more competition in that students are attracted to the high-quality tutoring offered in the market.

[5] Class participation and academic conduct are evaluated separately and also appear as written comments in the contact book ("so lien lac") between teacher and parents.

peer and rank effects (Murphy and Weinhardt, 2020; Bertoni and Nisticò, 2023; Denning, Murphy, and Weinhardt, 2023; Ladant et al., 2024).[6] Ladant et al. (2024) find that visible rank (based on teacher grades) significantly impacts students' perceptions and subsequent academic performance, while invisible rank (based on unreported standardized test scores) has a negligible effect. This supports the perception-based mechanism observed in my study.

Together with the lack of impact of extra classes on human capital accumulation, these results imply that parents pay for extra classes mainly over the concern of passing examinations and earning qualifications. The education system and the labor market rely on these distorted outcomes to evaluate pupils, creating the so-called "achievement disease" bad equilibrium.[7] Pupils from disadvantaged backgrounds who cannot afford extra classes will likely suffer more in this race. Indeed, data show that the take-up rate is higher for children in urban areas or from wealthier families. Teachers' rent-seeking behavior might become a source of inequality, geographically and socioeconomically (Dawson, 2010; Smyth, 2009), rather than helping weak pupils catch up with their peers (Baker et al., 2001). To this end, extra classes generate efficiency losses and, at the same time, exacerbate inequity.

Although there have been many concerns regarding this controversial education arrangement (see, for example, Transparency International, 2011), to my knowledge, this is the first paper to empirically point out the scope for wrongdoing in this "shadow" education market and its consequences on primary-school pupil outcomes in Vietnam. This paper contributes to the cross-theme literature on corruption and education quality, in which teacher incentives are the main issue.[8] The notion of corruption is common in the developing world, with rent-extracting behavior by bureaucrats and government officers in power (Banerjee, 1997; Burgess et al., 2012; Olken and Pande, 2012; Fisman, Schulz, and Vig, 2014). Jayachandran (2014) shows that teachers strategically refrain from teaching during regular hours in Nepali schools where private tutoring is offered, creating a negative externality on student achievements where Grade 9 students are more likely to fail the national secondary school exam.[9]

This paper is also related to the growing literature on shadow education in developing countries (Bray and Lykins, 2012; Brehm and Silova, 2014). Few studies that look into the effectiveness of extra classes show negligible or, at most, very modest impacts on students' academic achievements. Ha et al. (2005), using cross-sectional data, find that the hours spent in extra classes are not associated with higher mathematics and vocabulary test scores for 8-year-old children in Vietnam, although it does improve reading ability. Le and Baulch (2012), using two-round panel data and value-added models, also report no effect of extra classes on mathematics and vocabulary. The results hold when they instrument hours spent in extra classes with the commune-level average rate of participation. In contrast, exploiting the self-reporting academic performance of Vietnamese students from a nationally representative dataset, Dang (2007) finds a higher probability of falling into excellent academic performance the greater the expenditures on extra-class tutoring. Dang (2007) addresses the endogeneity of extra-class expenditures with a joint Tobit-ordered probit framework. However, the information on private-tutoring expenditure is not subject-specific, limiting the ability to distinguish its impact on academic versus non-academic subjects. By simultaneously examining teacher grades and YL test scores, the results in my paper reconcile previous studies in that superior performance at school is not necessarily associated with a higher level of cognitive skills. In addition, the paper investigates the effects of extra classes on self-confidence of pupils—a non-cognitive skill that is usually left unexplored when examining pupil outcomes.

The remainder of the paper is as follows: Section 2 describes the education system and institutional setting in Vietnam. Section 3 introduces the data, followed by empirical methodology in Section 4. The main findings and robustness checks are presented in Section 5 and Section 6. Section 7 examines longer-term outcomes. Section 8 concludes.

2. The education system and the emergence of its shadow in Vietnam

As part of the country's Socio-Economic Development Strategies, Vietnam achieved universal primary school in the 2000s and has been working toward universalizing lower secondary level. The Education for All action plan aims to provide every school-age child access to affordable schooling. Massive efforts in recruiting teachers and constructing more classrooms were realized through a combination of increased public and private expenditures on education. The call for mobilization of community resources, also known as "socialization of education," reduces the burden on the state budget and allows schools to collect various contributions from pupils and parents. At least 14 school contributions are identified, for instance, school construction fees, voluntary contributions, medical insurance, class funds, and parental association funds (Duong, 2015).[10] On the one hand, it is time to shift the investment focus in the education system from quantity to quality (teacher pedagogical skills, instructional time, curriculum design, school facilities, etc.).[11] On the other hand, the common practice of socialization of education makes it customary for people to pay for additional education-related fees, extra classes included. To this extent, extra-class tutoring gradually emerges beside formal schooling without receiving much questioning or objections from the public and policymakers alike. As in other neighboring countries like China and Cambodia, the industry started to mushroom in Vietnam after the country adopted a market economy in the late 1980s, which involves around 31% of primary (Grades 1 to 5), 56% of lower secondary (Grades 6 to 9) and 77% of upper secondary school students (Grades 10 to 12), respectively (Dang, 2007).

In 2007, the Ministry of Education and Training (MOET) issues a ban

[6] The literature on rank effects, originating from Murphy and Weinhardt (2020), uses pre-determined ability rank to measure the long-term outcomes of pupils, while in my setting it is based on teacher grading. This aligns more closely with the narrative on the inherent preference for high rank, that is students care about their GPA rank, put forward by Dobrescu et al. (2021), Ladant et al. (2024) and Tincani (2024). I thank an anonymous reviewer to bring my attention to this distinction.

[7] Read more: https://vietnamnews.vn/opinion/393014/the-achievement-disease-in-education.html. Directive No. 33 of the Prime Minister in 2006 deals with combating negativities and overcoming the plague of counterfeit achievements in education. In academic year 2006/2007, the Minister of Education and Training (MOET) launched the campaign "Say no to negativities in exams and no to the disease of artificial achievements in education". Decision No. 16 of MOET in 2008 defines teachers' ethics, part of which requires teachers to ensure "justice in teaching and education, […] combating the disease of artificial achievements".

[8] Another branch of this literature focuses on systematic cheating (Jacob and Levitt, 2003; Bertoni, Brunello, and Rocco, 2013) which is also a relevant concern in the education system of Vietnam, but it is out of the scope of this paper.

[9] Absenteeism and low teacher effort, however, might not be a concern in the Vietnam context as teachers are subject to a rigorous evaluation system which relies heavily on their presence and the performance of their pupils. Therefore, teachers have strong incentives not to lower the grades of their pupils, regardless of their extra-class status. Indeed, the country has achieved impressive outcomes in international assessment tests (PISA) in recent years (Glewwe et al., 2021).

[10] In Cambodia, the chronic underfunding issue of the education system also leaves households to pay for several informal educational fees like examination papers, bicycle-parking fee, various miscellaneous costs and fundraising ceremonies, etc. (Brehm and Silova, 2014).

[11] In academic year 2010-2011, only 36.4% of primary, 19.7% of lower secondary and 10.3% of upper secondary schools meet national standards (General Statistics Office, 2011).

on extra classes for primary school pupils and those who already go to school on a full-time basis (two shifts per day); an exception is for schoolteachers to run home-based daycare *at the request of the family*. A follow-up regulation in 2012 again forbids primary school teachers from tutoring their own pupils. While these moves signal that the government is aware of this shadow system, enforcing efforts so far have been minimal and compliance is low, possibly due to a lack of resources to resolve the roots of the problem. It is difficult to verify if private tutoring takes place during these daycare sessions at the teachers' houses or if the parents' *request* for after-school childcare is voluntary. The predominant type of extra classes at this level of education is after-school tutoring provided by pupils' homeroom teacher with a focus on the same materials in the official school curriculum in Math and Vietnamese rather than on soft skills or well-rounded development (for example, English, sport, music).

Demand for extra classes stems from various drivers, the first of which is cultural elements with an emphasis on success and ranking. Second, a deficient public-school system does not meet the parental preference for education, due to low quality or limited delivery capacity with a small number of places available. Only a small share of children in Vietnam receives full-day schooling. The remaining majority go to school on a half-day basis (either in the morning or the afternoon).[12] Compared to other developing countries like India, Peru, and Ethiopia, Vietnamese children spend significantly less time in school. Instead, they spend much more time studying at home and in tutoring sessions, with notably higher expenses on extra classes, at least tenfold more in primary school (Glewwe et al., 2021). Several researchers argue that the institutional setting of the education system with high-stakes examination contributes to the expansion of extra classes in developing and developed countries alike (Bray, 2010; Jayachandran, 2014). As children progress with their education, competition into the next levels becomes fiercer, creating watershed pressure in the public school system. Since 2005, the primary-leaving examination has been abolished in Vietnam. However, GPA still plays a role in determining the reputation and quality of the institution that students can get in for secondary education. Specifically, Decision 12/2006/QĐ-BGD&DT by the Ministry of Education in 2006 stipulates that admission to lower secondary school is based on primary school transcripts;[13] and admission to upper secondary school combines entrance exam results, GPA, and academic conduct from lower secondary school.[14] Third, extra classes might replace after-school childcare, allowing parents to complete their workday.[15] Fourth, the extremely low salaries of public-school teachers force them to organize private classes for supplemental income. Public school teachers' salaries are determined according to a common salary framework for all public servants, depending on their qualifications, experience, position, and geographical area. To put things in perspective, in 2011, a teacher with seven years of experience would expect to receive a monthly salary ranging between USD 122 and USD 160. Data from Young Lives show that families spend around USD 3.5 on extra classes per child monthly. Extra-class fees comprise nearly 50% of educational expenditures and over 4% of household's non-food expenditures (Table A1, Appendix). In a typical class of 30 pupils, the homeroom teacher would earn an additional income of roughly 105 USD, equal to a substantial portion of their official salary. It is, therefore, interesting to examine whether extra classes provide room for rent-extracting behavior by teachers and understand the consequences of extra classes on pupil outcomes.

3. Young Lives data

The analysis in this paper is based on Young Lives (YL) Study in Vietnam, with two datasets: a 15-year longitudinal study of 1,138 children born in 2001—the YL children across five survey rounds (Round 1 in 2002; Round 2 in 2006; Round 3 in 2009; Round 4 in 2013; Round 5 in 2016),[16] and a Primary School Survey in 2011 of 3,284 children, comprising of the YL children and their classmates when they are in Grade 5. I primarily rely on the data from the school survey to investigate the impacts of extra classes on pupils in Grade 5. In the second part of the analysis, I make use of additional information on YL children between Round 2 to Round 5 of the longitudinal study for robustness check and exploring longer-term outcomes. Table A2 in the Appendix summarizes the timeline of data sources used in the analysis and the corresponding sample size and cohort characteristics (age, grade, school level).

The school survey is a spin-off from the longitudinal study, and data collection is conducted in schools where YL children are attending. In each Grade 5 classroom with the presence of at least one YL child, a total of 20 pupils are randomly chosen.[17] The final sample consists of 3,284 Grade 5 pupils, belonging to 176 classes in 92 school sites (both main and satellite sites) with two survey waves: wave 1 at the beginning of the academic year (October–December 2011) and wave 2 at the end of the academic year (April–May 2012). The survey instruments include data collection at the school, class, and pupil levels, involving interviews with the principals, homeroom teachers, and pupils. At the class-teacher level, the survey also collects class registers and pupil records from homeroom teachers. At the pupil level, the survey collects information about their schooling and family background.

Pupils are considered taking extra classes in a subject if they answer "Yes" to the question "Do you attend unofficial/non-compulsorily extra classes, whether at school or not?" and spend nonzero hours attending extra classes in that subject weekly. The question does not distinguish the providers and venues of extra classes. Extra classes might take place at the homeroom teacher's place or school. In the latter case, the school simply plays the role of an intermediate organizer, and revenues are apportioned to teachers. Primary school principal is usually a normal teacher with administrative duties on top of regular teaching duties. Therefore, extra classes offered by the homeroom teacher or the school

[12] Read more: https://www.baodanang.vn/channel/5411/201007/de-cac-truong-tieu-hoc-day-2-buoingay-1998309/. One third of primary schools in Da Nang city (one of the country's biggest urban areas and one among the five surveyed sites in this paper) does not have enough rooms and facilities to deliver full-day schoolings by 2010. Several schools must ration full-day option: in one school with a total of 35 classes, pupils in 27 classes enjoy double-shift study, and those in the remaining 8 classes go to school on a half-day basis (either in the morning or afternoon shift). In other provinces and rural areas, full-day schooling is further limited.

[13] Admission quotas and entrance score thresholds are determined by individual schools or the district's Office of Education. As such, more reputable schools might set a higher entrance score threshold as they receive more applications. For example, in the academic year 2006-2007, the threshold for admission to Grade 6 in a district in Ho Chi Minh City is 16.75 points out of a possible 20, based on the sum of GPA in Math and Vietnamese in Grade 5. Read more: https://nld.com.vn/giao-duc-khoa-hoc/tuyen-sinh-lop-1–6-nam-hoc-2006-2007-155231.htm.

[14] A maximum of 20 points from GPA and academic conduct is equally weighted with Math and Vietnamese exam scores. For instance, students with good academic conduct receive 2.5 points for a Below Average GPA (3.5-5) and 5 points for a Good GPA (8 or above). Thus, GPA plays a significant role in upper secondary school admissions.

[15] Even in full-day setting, school usually finishes at 4 pm, while normal office hours last until 5–6 pm and some parents might even work on Saturday. Read more: https://vietnamnet.vn/vn/giao-duc/chi-duoc-day-them-moi-tuan-3-buoi-96571.html.

[16] The original sample has 2,000 children. I limit the analysis to the 1,138 children who were 10 years old and attending Grade 5 during the Primary School Survey.

[17] Including all YL children in each class and a random selection of their classmates until a total number of 20 pupils is reached. In case there are fewer than 20 pupils in the class, the entire class will be interviewed. In case there are more than 20 YL children in the class, all YL pupils will be interviewed and other non-YL classmates are excluded.

are similar in nature for the purpose of this paper. The question might also capture participation in third-party tutoring. As discussed earlier, the share of pupils taking this option should be reasonably small. If anything, it would bias the estimated effect of taking *teacher-provided* extra classes on grade inflation toward zero. Fig. 1 presents the extra-class participation rate in the sample by subject, gender, and living area.[18] In Panel A, consistent with the figure drawn from national representative data, around one-third of pupils in the sample participate in extra classes. Most pupils who take extra Math also take extra Vietnamese and vice versa, a minimal fraction reports attending extra classes in just one subject. Panel B shows extra-class participation separately for boys and girls and shows no gender difference. In Panel C, when living area is taken into consideration, extra classes are much more prevalent in the urban areas, with around half of the urban pupils participating, double the rate in rural areas.

While 35% of the pupils in the sample report taking extra classes, and 77% of the classes have at least one pupil taking extra classes, only 11% of the interviewed homeroom teachers report providing extra classes to supplement their income (Table A3 and Table A4, Appendix). The underreporting figure suggests that teachers are not willing to be open about this sensitive topic. Perhaps they are afraid that the information would be used against them (for instance, be flagged by local authority), and even though extra classes is very common, it better remains an underground activity.

For pupils' outcomes at school, I rely on pupil records from homeroom teachers, which provide information on a grade (out of 10) for each pupil in the first 45-minute tests of the current academic year in Math and Vietnamese—the two core subjects that are generally considered the most important for schooling and exams, especially at primary school level. These tests are typically class-teacher specific, prepared, and graded by the homeroom teacher.[19] As such, school grades capture pupils' underlying skills and any teacher subjective bias in grading. I refer to the results of teacher-graded tests as school grades or teacher grades in the rest of the paper.

In addition, pupils are administered standardized achievement tests by Young Lives survey to assess competences in Math and Vietnamese at the beginning and end of the school year. The tests, consisting of 30 questions each, are developed jointly with expert consultants in test design and curriculum. Importantly, most questions are drawn from textbooks as well as the nationally representative Grade 5 Learning Assessment in the 2010 round to ensure the tests capture pupils' underlying competence in domains relevant to the Grade 5 official curriculum. Pilots and test refinement were also carried out to improve the tests' appropriateness further (James, 2013). The tests are constructed in a way that allows the results to be comparable across two survey waves, with scores in wave 1 following standard normal distributions. Any change in the test scores between wave 1 and wave 2 reflects learning increment in each subject. The final standardized scores are called Young Lives scores (YL scores). Fig. 2 illustrates the distribution of YL scores for each wave and skill gain between the two waves by subject. Furthermore, the survey measures pupils' academic self-concept (ASC), or how they perceive their ability, which can be decomposed into academic confidence and effort. Information on ASC is also available for both survey waves. Details about the content and structure of YL assessment tests, how I construct the standardized YL scores, and the ASC scale (Table A5) are described in the Appendix.

Table 1 shows the descriptive summary of pupil characteristics by extra-class status. Additional teacher characteristics are described in Table A4, Appendix. School grades by subject (given by the homeroom teacher) are presented in raw and standardized values. The rest of the analysis uses standardized school grades for ease of interpretation. At the beginning of the school year, pupils who attend extra classes appear to perform better, both at school (0.30 standard deviation (SD) higher in both subjects) and on the YL assessment tests (0.40 and 0.33 SD higher in Math and Vietnamese, respectively). They also have a higher level of self-perceived confidence and effort. In wave 2, while remaining positive, the gaps in YL scores are somewhat reduced (to 0.23 and 0.18 SD). This is not the case, however, for the persistent gap in confidence and effort between extra-class takers and non-takers.

Selection into extra classes does not differ across genders. Extra-class takers have fewer siblings, but the difference is small and insignificant. On average, ethnic minority and pupils from poorer families are less likely to attend extra classes. Treated children are more likely to have highly educated parents, have more than ten books at home, and live in wealthier families with shorter distances to school. Notably, a third of the pupils in the sample are unaware of their parental education, and the incidence is slightly more common among treated children. Pupil's wealth is a standardized index based on a list of assets and properties owned at home. Classroom assets indicate the number of teaching objects and tools available out of 12 items. Extra-class takers tend to attend schools with better facilities and larger classes. This is in line with the prevalence of extra classes in urban areas or localities with generally better socioeconomic conditions.

For YL children, with data in rounds 3 to 5 of the longitudinal study, I have additional information on parental education (up to round 4) and school enrollment (up to round 5). The variable on parental education from the longitudinal survey (reported by household heads) is less prone to measurement errors than pupil-reported answers from the school survey. Table A6, Appendix presents descriptive statistics for the subsample of YL children.

4. Empirical strategy

This paper is interested in investigating the effectiveness of attending extra classes and whether this educational arrangement is associated with rent-extracting behavior (by teachers) or unearned reward (for pupils). To do so, I develop an empirical model in which I examine and contrast the effects of extra-class participation on two alternative measures of pupil performance: (i) teacher grades (given by homeroom teacher) at the beginning of Grade 5, and (ii) YL score 2 at the end of Grade 5 (obtained from standardized achievement tests). I estimate the following model for all Grade 5 pupils:

$$y_{ijc} = \alpha + \beta extra_{ijc} + \delta ylscore^{1}_{ijc} + \boldsymbol{X}_{ic}\Gamma + \gamma_j + \theta_c + \varepsilon_{ijc} \quad (1)$$

where y_{ijc} is academic performance in subject j (Math or Vietnamese) of pupil i from class c. $extra_{ijc}$ is a dummy variable for pupil i to take extra classes in subject j. $ylscore^{1}_{ij}$ is YL scores in wave 1, proxy for predetermined competence of pupil i in subject j. In most specifications, $\boldsymbol{X}_{ic}$ is a vector of individual controls including indicators for gender, ethnic minority, number of siblings (one, two, three or more), having more than ten books at home, time to school longer than 15 minutes and wealth index. γ_j denotes subject fixed effects and θ_c is class-teacher fixed effects. Since each class-teacher pair usually remains unchanged during each academic year, I do not distinguish between classroom and teacher effects. Standard errors are clustered at the class level to account for potential correlations of observations within the same class.

The intuition in (1) relies on the inclusion of YL score 1: when the outcome of interest is teacher grades, the coefficient β shows the deviation of teacher grades from underlying skills due to extra-class participation. This deviation is the sum of (i) change in real learning resulting from extra classes, and, (ii) grade inflation for pupils who attend extra classes. As teacher grades and YL score 1 are measured roughly at the

[18] Table A3, Appendix shows details at regional level for the five sampled regions in the study.

[19] There are four exams in each academic year: one midterm exam (class level, teacher-prepared) and final exam (school level) in each semester (according to Circular 32/2009/TT-BGDĐT of the Ministry of Education). The first 45-minute tests refer to midterm exams of the first semester, usually between October and December.

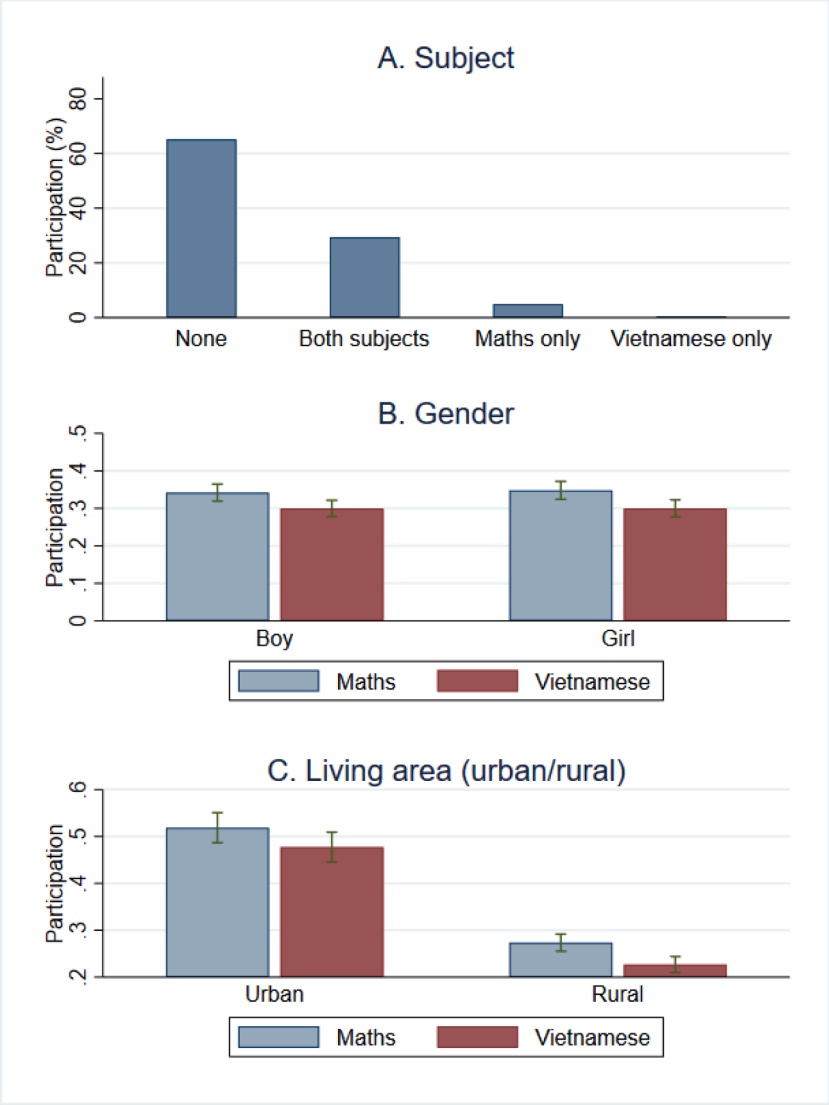

Fig. 1. Extra-class participation rate (%)
Notes: Panel B and Panel C show extra-class participation by subject and demographic characteristics with 95% confidence intervals. Source: Author's calculation using data from wave 1 of Young Lives school survey of Grade 5 pupils.

same time in wave 1 (midterm of semester 1), it is unlikely that attending extra classes has an immediate effect on improving pupils' actual learning. Any difference between school grade and underlying skills must, therefore, reflect the non-transparent aspect of taking extra classes, in other words, grade inflation. This difference might also capture potential grade deflation for pupils who do not attend extra classes. However, as teacher performance is usually evaluated based on pupil performance, teachers have strong incentives against lowering the grades of their pupils. YL scores are measured independently by the survey's assessment tests and have been validated by experts to ensure that they capture underlying skills in Math and Vietnamese. The questions' wording, level of difficulty, and competence areas closely follow the formal curriculum and textbooks, making the YL scores a good measure of pupils' underlying skills and, more importantly, free from teacher bias in grading. For example, extra-class pupils might get to know the exam questions and answers in advance (they are "taught to the test") or get graded by teachers more leniently, so they earn higher grades than other classmates who are not taking extra classes. Alternatively, when the outcome variable is YL scores in wave 2, β shows how attending extra classes affects the gain in underlying skills over one school year. Extra-class participation is assumed to remain unchanged between the two survey waves.[20]

The main identification challenge in (1) is selection into extra classes. Parents and pupils who opt for extra-class tutoring might differ from those who do not in ways that affect both the decision to take extra classes and pupil academic outcomes. For example, in families that care more about education, parents might spend more time to help their children with homework while also investing in extra classes. Likewise, strongly motivated pupils attend extra classes even if they are already at the top of the class.[21] Controlling for YL score 1 and a vector of family

[20] Extra-class status is provided by pupils in wave 1. As mentioned in section 2, the share of students taking extra classes increases from 31% in primary school to 56% in lower secondary and 77% in upper secondary school. Given that the tendency to take extra classes increases as students progress through their schooling, it is reasonable to assume that, within a school year, once participated students do not drop out of extra classes. However, there is the possibility that a pupil might start taking extra classes after wave 1, which would bias the effect downward.

[21] Table A7 in the Appendix shows logit estimates for determinants of extra-class participation and confirms that underlying skills are positively correlated with extra-class participation.

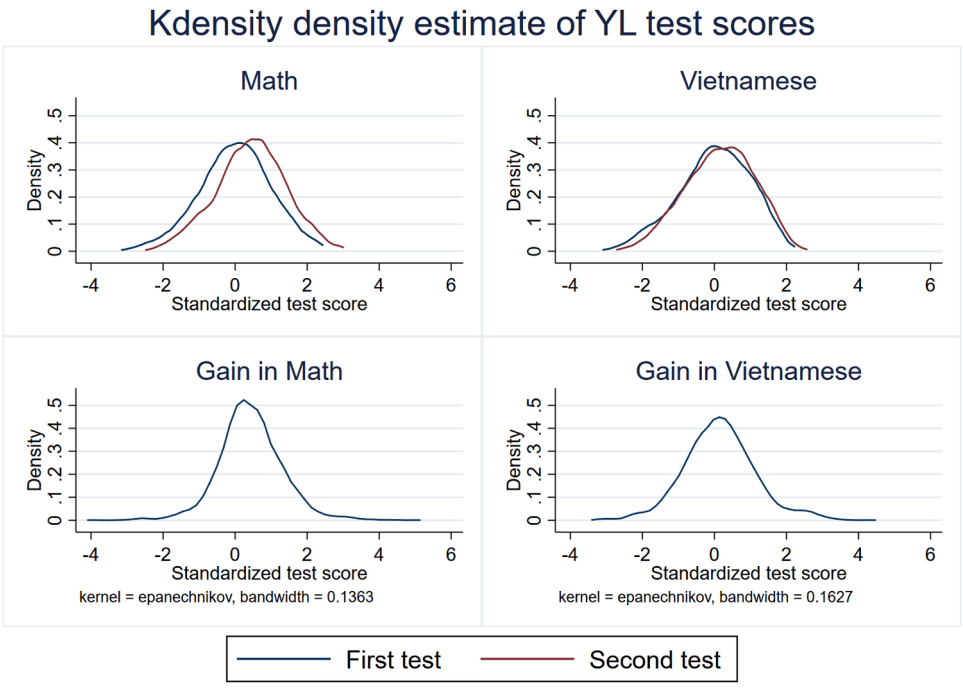

Fig. 2. Distribution of YL test scores
Notes: YL scores are standardized values of the estimated latent ability for each subject using the mean and standard error in wave 1, such that the standardized scores have a mean of 0 and a variance of 1 in wave 1 and these moments can shift in wave 2. The difference in skills across the two waves reflects progress or learning increment in respective subject (Math or Vietnamese) over the course of the academic year. Latent ability is estimated using a three-parameter logistic (3 pl) Item Response Theory (IRT) Model, see details in the Appendix.

characteristics helps mitigate potential biases arising from self-selection among children with varying competences and backgrounds. Nevertheless, it is important to acknowledge the potential presence of unobservable factors that could still contaminate the estimates. I will come back to this point and establish effect bounds in section 6.3. Furthermore, a simultaneous comparison of the effects of extra classes on teacher grades (subjective measure) and YL score 2 (objective measure) lends additional support to the causal inference of the findings. Assuming that omitted variable bias affects the two measures of pupil performance to the same extent, the net difference between extra-class effects on teacher grades and YL score 2 should reveal the true extent of grade inflation.

Secondly, I estimate the impact of extra classes on primary school pupils' academic self-concept using another version of (1):

$$ASC_{ic}^{2} = \alpha + \beta extra_{ic} + \gamma ASC_{ic}^{1} + \delta ylscore_{ic}^{1} + \boldsymbol{X}_{ic}'\Gamma + \theta_c + \varepsilon_{ic} \quad (2)$$

where ASC stands for academic self-concept score. ASC_{ic}^{2} is ASC at the end of the year (wave 2) and a function of extra-class attendance $extra_{ic}$, lagged ASC (wave 1) ASC_{i}^{1}, and an average of initial YL scores in Math and Vietnamese $ylscore_{ic}^{1}$. As before, the specification controls for demographic background, class-teacher fixed effects, and standard errors are clustered at the class level. The treatment dummy, $extra_{ic}$ is equal to 1 for pupils attending extra classes in *any* subject, either Math or Vietnamese or both subjects. The degree and direction in which extra classes stir the self-image of pupils is ambiguous *ex ante*. On the one hand, refusing to participate in extra classes might be associated with negative teacher experience (discrimination) and higher peer pressure for non-takers, causing detrimental effects on their subjective well-being. On the other hand, the additional tutoring workload in the evening can be stressful and tiring for extra-class takers after a long school day. Extra-class participation can also dampen pupils' confidence if they perceive their taking extra classes as inferior (they are low performers and need tutoring to catch up with their peers). However, if there is no such stigma on attending extra classes, it might boost pupils' confidence if it improves their academic performance.

5. Results

5.1. Effect of extra classes on school grade

Table 2 reports OLS estimates for regression of Grade 5 pupils' teacher grades on extra-class attendance, all columns control for subject fixed effects. Point estimates are consistent across specifications. Attending extra classes raises pupils' school grades by 0.14 to 0.28 standard deviation (SD), all significant at the 1% level. The first column regresses teacher grades on extra-class status. After controlling for class-teacher fixed effects, the coefficient of interest reduces slightly from 0.28 to 0.22 in column (2), suggesting that the effect of extra classes comes from within- rather than between-classroom variation. This reassures my empirical strategy since midterm 45-minute tests at school and extra-class provisions are usually class-teacher specific, making what happens within each classroom unit the most important. Column (3) adds YL score 1, and column (4) further includes individual and household characteristics and parental education. Pre-determined competence strongly correlates with teacher grade. Scoring one SD above the mean in the YL test increases teacher grades by more than 0.4 SD. Since both YL scores and teacher grades are measures of pupil learning outcome, this strong and significant correlation is reassuring for my identification strategy in using YL scores as a proxy for underlying skills. In column (5), I drop parental education due to large measurement errors of these variables as pupils are not fully aware of their parent's level of education (more than one-third of pupils in the sample do not know this information, see Table 1). As expected, these variables are rather uninformative, and point estimates remain virtually unchanged compared to column (4). Column (6) controls for school fixed effects instead of class fixed effects and adds class teacher characteristics, including teacher gender, experiences, type of contract, qualifications, wealth index, class assets, class size, class share of ethnic minority, and full-day schooling at class level (see descriptive statistics of teacher characteristics in

Table 1
Summary of pupil characteristics by extra-class attendance

	Extra-class takers (1)	Non- takers (2)	Diff. (1) – (2)
Baseline (Wave 1)			
School grade in Math (raw, scale 0-10)	8.12	7.55	0.57***
School grade in Viet (raw, scale 0-10)	8.11	7.62	0.49***
School grade in Math (standardized)	0.20	-0.10	0.30***
School grade in Viet (standardized)	0.20	-0.10	0.30***
Young Lives score in Math	0.26	-0.14	0.40***
Young Lives score in Viet	0.22	-0.11	0.33***
Academic self-concept score	0.10	-0.06	0.16***
Confidence score	0.11	-0.06	0.17***
Effort score	0.06	-0.03	0.09*
Girl	0.47	0.47	0.00
Ethnic minority	0.07	0.15	-0.07***
Number of siblings below 16 years old	0.93	0.99	-0.06
Mother's education			
None	0.17	0.29	-0.12***
Low	0.22	0.24	-0.02
High	0.31	0.20	0.11***
Missing	0.31	0.27	0.03*
Father's education			
None	0.13	0.22	-0.09***
Low	0.16	0.23	-0.08***
High	0.35	0.23	0.12***
Missing	0.36	0.31	0.04*
Have more than ten books at home	1.58	1.39	0.19***
Time traveling to school longer than 15 minutes	1.40	1.41	-0.01
Wealth	0.37	-0.19	0.57***
Classroom's assets	6.77	6.29	0.48***
Class size	30.56	28.26	2.30***
Observation	1136	2120	
Endline (Wave 2)			
Young Lives score in Math	0.59	0.36	0.23***
Young Lives score in Viet	0.27	0.09	0.18***
Academic self-concept score	0.09	-0.10	0.19***
Confidence score	0.13	-0.03	0.16***
Effort score	0.01	-0.14	0.15***
Observation	1119	2060	

Notes: Academic self-concept (ASC), Confidence and Effort scores are calculated using a one-parameter logistic model. YL score in Math, YL score in Vietnamese, ASC score, confidence score and effort score are standardized. Wealth is a standardized index based on a list of assets and properties owned at a pupil's home. Classroom assets indicates the number of teaching objects and tools available in the classroom out of 12 items.

Table A4). Lastly, column (7) drops school fixed effects and includes additional controls at the school level and commune fixed effects. The results in Table 2 indicate that, upon inclusion of YL score 1, the estimated effect of extra-class participation on teacher grades are highly significant and relatively insensitive to adding controls to the regression.[22]

The specification in column (5) is the preferred model of the analysis, explaining almost half of the variation in grade (R-squared = 0.472). Extra-class takers receive 0.14 SD higher teacher grades than their classmates. On average, girls get higher grades than boys. Ethnic minorities and pupils with more than three siblings perform worse at school. Owning more than ten books at home does not affect school outcomes. Children spending more than 15 minutes to get to school also generally have lower grades. Longer traveling time could be due to living far away from the district center or limited transportation options, which might indicate a lower socioeconomic background. On the contrary, children from wealthier families perform much better at school. Interestingly, the effect size of wealth on grade is approximately that of Extra. In other words, attending extra classes raises teacher grades by an amount equal to the effect of one SD increase in family wealth. Parents with plentiful resources might choose to invest in their children in one way or another, for example, by spending more quality time with their kids, helping with their homework, allowing their kids to use a computer with educational software, sending them to an English center or swimming lessons, etc. Since the grade reported is the result of the first test at the beginning of the school year, the coefficient of interest shows the immediate effect of taking extra classes on school grade, which is comparable to the return through investment of a wealthier family over an extended period (think, for example, of flow versus stock). Therefore, the magnitude of the effect and the immediate impact of extra classes on pupils' grades are questionable.

Notice that extra-class participation in previous schoolyears is irrelevant to this analysis as class-teacher pairs change from one year to the next, and past teachers are unlikely to influence pupils' current academic performance other than through knowledge transfer, which is reasonably captured by family wealth and pre-determined competence at the beginning of the new academic year (YL score 1). To this extent, it is reasonable to interpret the effect on school grades as a lack of transparency in this shadow teaching and learning practice. As mentioned in section 3, I do not observe the provider of extra classes and where they take place. This implies that the variable Extra might also capture participation in third-party tutoring, which I expect to be relatively small. In such cases, pupils attending extra classes provided by someone other than the homeroom teacher will not get any favorable treatment or might even face repercussions (from the teacher), potentially biasing the estimated effect of taking teacher-provided extra classes on grade inflation toward zero. For the rest of the analysis, I refer to this gap in teacher grades between extra-class takers and non-takers as grade inflation.

5.2. *Effect of extra classes on underlying skills*

Following the analysis in the previous section, I examine whether attending extra classes affects children's learning outcomes throughout an academic year. If extra classes help children learn better and improve their skills, we would see a larger learning increment among extra-class takers than non-takers. Table 3 reports regression results on YL score 2 at the end of Grade 5. In the first two columns, pupils attending extra classes get significantly higher scores on the second YL assessment tests. However, the effect completely disappears as soon as YL score 1 is introduced into the equation (columns (3) to (7)). The lagged outcome variable captures pupils' initial or pre-determined competence in materials already covered in previous Grades and the beginning of Grade 5, while YL score 2 reflects knowledge related to materials taught in the Grade 5 curriculum.

In my preferred model, column (5), children attending extra classes gain 0.04 higher SD in cognitive skills in wave 2. The point estimate is relatively small compared to the effect on grade inflation (about a quarter in magnitude) and not statistically significant. The results are very similar and consistent with the preferred baseline when I control for additional class-teacher characteristics (column (6)) and school-principal characteristics (column (7)). The impact of extra classes on YL score 2 is completely absent. This finding strengthens the argument on grade inflation in section 5.1. It provides evidence that better performance at school differs from an actual gain in learning outcomes for pupils attending extra classes. School grades, assessed by teachers, are

[22] Later in the analysis, I perform a battery of robustness checks and show that, even without controlling for parental education, inclusion of YL score 1 and other individual and family characteristics is enough to take good care of selection into extra class. In Table A8, I redo the analysis for subsample of YL children, whose precise information on parental education (provided by the household head) can be obtained from the longitudinal survey data. The results are very similar to the baseline. The less precise estimations might be due to smaller number of observations (restricting the regression to YL children reduces the sample size by around two third).

Table 2
Effect of attending extra classes on grade at school

Dependent variable: Teacher grade	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Extra	0.276***	0.220***	0.161***	0.135***	0.136***	0.141***	0.169***
	(0.072)	(0.055)	(0.044)	(0.042)	(0.041)	(0.040)	(0.041)
YL score 1			0.456***	0.401***	0.402***	0.405***	0.401***
			(0.021)	(0.020)	(0.020)	(0.020)	(0.021)
Girl				0.279***	0.280***	0.282***	0.277***
				(0.028)	(0.028)	(0.028)	(0.029)
Minority				-0.323***	-0.325***	-0.297***	-0.307***
				(0.080)	(0.078)	(0.080)	(0.079)
Number of siblings							
one				0.037	0.036	0.046*	0.031
				(0.026)	(0.026)	(0.027)	(0.028)
two				0.029	0.027	0.029	0.003
				(0.037)	(0.036)	(0.036)	(0.037)
three or more				-0.092*	-0.098*	-0.106**	-0.093*
				(0.051)	(0.051)	(0.050)	(0.049)
> 10 books at home				0.019	0.017	0.007	0.007
				(0.029)	(0.029)	(0.029)	(0.029)
Time to school > 15'				-0.086***	-0.088***	-0.084***	-0.080***
				(0.028)	(0.028)	(0.029)	(0.029)
Wealth				0.133***	0.134***	0.145***	0.153***
				(0.017)	(0.017)	(0.018)	(0.018)
Constant	-0.102	-0.080	-0.053	-0.361***	-0.319***	0.059	-0.084
	(0.066)	(0.053)	(0.055)	(0.088)	(0.081)	(0.284)	(0.468)
Parental education				X			
Class characteristics						X	
School characteristics							X
Class FEs		X	X	X	X		
School FEs						X	
Commune FEs							X
Observations	6,504	6,504	6,485	6,309	6,343	6,213	5,949
R-squared	0.017	0.308	0.436	0.472	0.472	0.432	0.421

Notes: Observations are at the subject-pupil level. All regressions controlled for subject fixed effects. Parental education includes mother and father level of education (provided by the pupil). Class-teacher characteristics include teacher gender, Grade-5 teaching experience, type of contract, qualifications, teacher's wealth index, class assets, class size, class share of ethnic minority, and full-day schooling at the class level. School-principal characteristics include principal gender, province of origin, experience, qualifications, award, pupil difficulty, school size, school share of ethnic minority, and full-day schooling at the school level. Robust standard errors in parentheses, clustered at the class level in Columns (2) to (5), at the school level in Column (6), at the commune level in Column (7), *** p<0.01, ** p<0.05, * p<0.1.

susceptible to grading biases. In addition, if teachers prepare school tests, the test content may be exclusively covered during extra classes, providing an insider advantage for pupils who attend these private lessons. As described in section 3, YL assessment tests resemble the national curriculum, making them suitable for measuring pupils' academic competence. I will address whether any difference in the test content might threaten the validity of the empirical results in section 6.4. Alternatively, YL scores can be calculated by summing up the total number of correct answers out of 30 questions. I present the results using the standardized YL scores of this linear transformation version in Table A9, which fully confirm the baseline results.

The lack of impact on true learning implies that parents pay for extra classes mainly over the concern of passing examinations and earning qualifications. To this end, schooling and qualifications are mere indicators on which the labor market relies, creating the so-called "achievement disease." Through drilling and exercising, pupils get the answers without truly understanding the mechanism or concept. Such practice might backfire on pupils' patience, concentrating ability, and creative thinking, preventing them from solving seemingly new problems (for example, by simply changing the wording of questions) (Bray and Lykins, 2012).

While several studies refer to "achievement disease" or "diploma disease" as a fueling source for private tutoring (Bray, 2014), the disease is not exclusive from the household standpoint. Teachers, school leaders, and local authorities might as well have a vested interest in polishing pupil achievements. Improved grade point average, low retention rate, reaching the quota for the share of pupils in Good and Excellent categories, etc., can be taken as indicators of quality teaching and decent educational service, earning agents recognition and promotion for their (apparent) contributions. As such, the system itself would induce teachers and schools to teach to the test, as discussed in the multitask principal-agent model (Holmstrom and Milgrom, 1991). Such manipulation of pupil achievements creates inefficiencies in education and society (Bertoni, Brunello, and Rocco, 2013). To this extent, extra classes are just one manifestation of the chronic, deep-rooted problem of "achievement disease" and multi-level embezzlement in the education system.

5.3. *Effect of extra classes on academic self-concept (ASC)*

Table 4 shows the regression results of equation (2) for the effect of attending extra classes on pupils' ASC and its two components: academic confidence and academic effort. All columns control for individual and family characteristics and class fixed effects, as in my preferred model in column (5), Table 2. In addition, an average of YL scores in Math and Vietnamese in wave 1 and lagged outcome variables are included. In each regression, lagged outcome and outcome variables are calculated by the method specified at the top of the column. The outcome variable in the first four columns is ASC, the outcome in the next two columns is academic confidence, and in the last two columns is academic effort. One SD higher in the initial ASC increases the year-end ASC by almost 0.4 SD. In all columns, the coefficient on lagged ASC is estimated with high precision and significant at the 1% level. Overall, attending extra classes has a positive effect on ASC among Grade 5 pupils. Point estimates are consistent across specifications and calculation methods in columns (1) to (4). The effect size is around 0.1 SD and significant at the 5% level in all specifications, aside from column (1) in which the ASC score is simply the standardized linear sum of pupils' responses.

The potential ASC differences induced by academic competence are accounted for through the inclusion of average YL score 1. Nevertheless,

Table 3
Effect of attending extra classes on skills at the end of academic year

Dependent variable: YL score 2	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Extra	0.204***	0.110**	0.049	0.034	0.036	0.038	0.053
	(0.076)	(0.047)	(0.036)	(0.037)	(0.036)	(0.037)	(0.039)
YL score 1			0.433***	0.420***	0.420***	0.442***	0.429***
			(0.020)	(0.020)	(0.020)	(0.022)	(0.025)
Girl				0.051**	0.051**	0.060**	0.062**
				(0.025)	(0.025)	(0.026)	(0.027)
Minority				-0.116*	-0.108*	-0.056	-0.058
				(0.060)	(0.058)	(0.057)	(0.061)
Number of siblings							
one				0.040	0.040	0.059**	0.068**
				(0.025)	(0.025)	(0.025)	(0.026)
two				0.030	0.033	0.005	-0.008
				(0.033)	(0.033)	(0.035)	(0.037)
three or more				-0.054	-0.050	-0.018	0.015
				(0.042)	(0.042)	(0.047)	(0.052)
> 10 books at home				0.003	0.004	-0.020	-0.003
				(0.025)	(0.024)	(0.026)	(0.029)
Time to school > 15'				-0.073***	-0.071***	-0.071***	-0.087***
				(0.022)	(0.022)	(0.024)	(0.028)
Wealth				0.052***	0.051***	0.057***	0.063***
				(0.016)	(0.016)	(0.018)	(0.019)
Constant	0.638***	0.675***	0.700***	0.766***	0.718***	0.960	-0.418
	(0.079)	(0.059)	(0.056)	(0.090)	(0.084)	(0.682)	(0.719)
Parental education				X			
Class-teacher characteristics						X	
School characteristics							X
Class FEs		X	X	X	X		
School FEs						X	
Commune FEs							X
Observations	6,352	6,352	6,335	6,159	6,193	6,067	5,809
R-squared	0.030	0.412	0.531	0.535	0.536	0.447	0.418

Notes: Observations are at the subject-pupil level. All regressions controlled for subject fixed effects. Parental education includes mother and father level of education (provided by the pupil). Class-teacher characteristics include teacher gender, Grade-5 teaching experience, type of contract, qualifications, teacher's wealth index, class assets, class size, class share of ethnic minority, and full-day schooling at the class level. School-principal characteristics include principal gender, province of origin, experience, qualifications, award, pupil difficulty, school size, school share of ethnic minority, and full-day schooling at the school level. Robust standard errors in parentheses, clustered at the class level in Columns (2) to (5), at the school level in Column (6), at the commune level in Column (7), *** p<0.01, ** p<0.05, * p<0.1.

the ASC score is a *subjective* measure of how pupils *perceive* their academic ability: two pupils who exert the same level of effort in schooling and achieve comparable educational outcomes might feel differently about their schooling experience. More ambitious pupils may have a different attitude toward studying (i.e., striving for better performance) and self-sort into taking extra classes. Selection bias by self-perception is addressed when the lagged ASC score is controlled for unless there is heterogeneity in return to ASC, and pupils with higher initial ASC are more likely to attend extra classes. Then, the Extra coefficient captures the inherently larger ASC score produced among pupils with higher initial ASC. Table A10 in the Appendix tests for the balance of ASC level at the beginning of Grade 5 and shows no significant difference between the two groups. In other words, extra-class attendees do not systematically have higher initial ASC.

When the ASC score is further decomposed into confidence (columns (5) and (6)) and effort (columns (7) and (8)), it seems that the positive effect of extra classes on ASC is primarily concentrated on the higher confidence level. The effect of extra-class attendance on pupil confidence at the end of Grade 5 is 0.1 SD and significant at the 5% level (column (5). Since the initial levels of ASC and its components are balanced across treated and control pupils (Table A10), the results in Table 4 provide evidence that, compared to non-extra pupils, pupils attending extra classes feel more confident academically. This could result from either relatively better academic performance or reception of kinder treatment and compliments from their teacher. In a culture that honors hard work and achievement, school grades are a crucial indicator of success and a favorite subject of conversation. Children attending extra classes are rewarded with higher grades at school, boosting their self-confidence. In contrast, other pupils might feel intimidated by the teacher for not paying for extra classes. If teachers give non-extra pupils more challenging questions on topics not thoroughly covered during regular class, these pupils could easily become anxious when questioned by teachers, hurting their confidence. I come back to discussing this possibility in section 7.

Another potential mechanism is class ordinal rank, which has recently been discussed in the peer effects and rank effects literature. Tincani (2024) argues that students are motivated by rank concerns and relative performance, while Dobrescu et al. (2021) highlight society's preference for higher ranks. Higher class rank, independent of underlying ability, boosts the self-perception of primary school pupils (Murphy and Weinhardt, 2020; Bertoni and Nisticò, 2023; Ladant et al., 2024). Note that Murphy and Weinhardt (2020) and related studies based on their method focus on pre-determined ability rank, whereas my study considers teacher-assigned grades. Similarly, Ladant et al. (2024) distinguish between a "visible" primary school rank derived from teachers' exam grades and an "invisible" rank based on undisclosed standardized test scores, serving as a placebo. Möller et al. (2009) also find a strong positive correlation between achievements and self-concept, noting that the correlation is stronger when grades are used as the indicator for achievement, as opposed to standardized scores.

Despite the influence of extra classes on self-confidence, it does not appear to affect a pupil's perception of their learning effort. Point estimates in columns (7) and (8), although positive, are relatively small and not statistically significant. While the ASC is more of a qualitative measure and interpreting such information calls for caution, this finding indicates a lack of association between real learning and extra-class participation. The impact of extra classes on ASC could act as a channel through which teachers might increase their rent by increasing the cost for pupils in the non-cognitive dimension.

Table 4
Effect of attending extra classes on academic self-concept

Dependent variable	(1) Academic self-concept (ASC)	(2)	(3)	(4)	(5) Confidence	(6)	(7) Effort	(8)
Method	Linear	PCA	1 pl	2 pl	1 pl	2 pl	1 pl	1 pl
Extra	0.093	0.114**	0.110**	0.121**	0.114**	0.108*	0.062	0.077
	(0.059)	(0.054)	(0.054)	(0.054)	(0.056)	(0.055)	(0.053)	(0.058)
Lagged dep. var.	0.373***	0.377***	0.388***	0.390***	0.349***	0.339***	0.305***	0.294***
	(0.028)	(0.027)	(0.022)	(0.021)	(0.022)	(0.025)	(0.024)	(0.033)
YL score 1	0.207***	0.215***	0.207***	0.215***	0.219***	0.218***	0.141***	0.144***
	(0.025)	(0.026)	(0.026)	(0.025)	(0.026)	(0.027)	(0.028)	(0.031)
Observations	3,093	3,082	3,082	3,082	3,082	3,082	3,082	3,082
R-squared	0.310	0.325	0.331	0.338	0.309	0.295	0.244	0.227

Notes: Observations are at the pupil level. All regressions include indicators for gender, ethnic minority, number of siblings (one, two, three or more), having more than ten books at home, time to school longer than 15 minutes, wealth index, and class fixed effects. Calculation methods of Academic Self Concept include linear sum of raw score, principal component analysis (PCA), one-parameter (1 pl) and two-parameter logistic model (2 pl). The lagged dependent variable used in each specification is calculated with the same method as for the respective outcome. Robust standard errors clustered at the class level in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

6. Robustness check

6.1. Skill content of the tests: curricular vs. non-curricular skills

The empirical strategy of the paper relies on controlling for pre-determined competence (YL score 1) to address the endogeneity in extra-class participation. One crucial concern over the interpretation of grade inflation is that YL assessment tests and school tests might not necessarily measure the same set of skills. If they measure related but only partly overlapping skills, it would drive similar outcomes. For example, teachers could focus on teaching questions usually asked at school/national exams, while YL tests focus on higher-order thinking. While the latter should help to do the school/national exam type questions, specific training that drills pupils for school/national exams will likely not be helpful to improve higher-order cognitive skills. This would provide an alternative explanation for the findings, which have nothing to do with corruption. To ensure that any difference between the contents of YL assessment tests and school tests might not confound the results, I further examine the components of the YL assessment test in Math. In particular, I observe whether a test item (out of 30 items, see section 3) is curricular. Curricular items in the first assessment test covered general topics in Grades 3 and 4 or the beginning of Grade 5 and were mostly drawn from textbooks or the latest nationally representative Grade 5 Learning Assessment. Therefore, they should capture well the skills that are practical for school/national exams. Non-curricular items, instead, had a high level of difficulty and required pupils to "apply knowledge of fractions, number patterns, and shapes to unfamiliar question formats" (for details, see James, 2013). In Table 5, I redo the analysis using this additional information.

Column (1) shows the result from a logit regression of extra-class attendance on the two components of Math skills, individual and family characteristics with class fixed effects.[23] Suppose pupils' choice into extra classes is only concerned with performance at school. In that case, their skills in domains that do not directly affect formal achievement will hardly play an essential role in the decision-making process. As expected, only the curricular-related Math skills are correlated marginally with the decision to attend extra class. The coefficient of non-curricular YL score 1 is much smaller than that of curricular YL score 1 and is not statistically significant. Children who are more proficient in Math domains included in the school syllabus have a higher propensity to pick up extra classes, possibly in the hope of improving their competitive advantage even further. This tendency does not apply to proficiency in Math domains unrelated to the curriculum, potentially because this area of competence does not count on official academic transcripts.

Table 5
Effects on achievements regarding curricular and noncurricular Math skills

Dependent variable	(1) Extra	(2) Math Teacher grade	(3) Curr. Math YL score 2	(4) Non-curr. MathYL score 2
Extra		0.144***	0.022	-0.006
		(0.041)	(0.036)	(0.038)
Curricular Math YL score 1	0.171*	0.401***	0.373***	0.183***
	(0.090)	(0.023)	(0.021)	(0.021)
Non-curricular Math YL score 1	0.066	0.088***	0.128***	0.161***
	(0.089)	(0.021)	(0.019)	(0.021)
Observations	2,182	3,167	3,092	3,092
R-squared		0.491	0.608	0.517

Notes: Observations are at pupil level. Curricular (non-curricular) Math YL scores are estimated based on curricular (non-curricular) items in each YL assessment test in Math. Column (1) shows logit estimates of determinants of extra-class participation. Columns (2) to (4) show the effects of extra classes on different outcomes for the whole sample using the preferred model. All regressions include indicators for gender, ethnic minority, number of siblings (one, two, three or more), having more than ten books at home, time to school longer than 15 minutes, wealth index, and class fixed effects. Robust standard errors clustered at the class level in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Column (2) shows the impacts of extra classes on Math grades at school when pre-determined competence in Math is broken down into two components (curricular and non-curricular), including the same control variables as in the preferred model (column (5), Table 2). The result is highly consistent with the baseline: attending extra classes increases Math grades at school by 0.14 SD, and the estimate is significant at the 1% level.[24] Non-curricular Math skills are positively correlated with teacher grades but to a much smaller extent than curricular skills (0.09 vs.0.40). Columns (3) and (4) present the effects of extra classes on curricular Math skills and non-curricular Math skills at the end of the academic year, respectively. As expected, extra classes do not affect year-end skills, while lagged dependents for both types of skills are strong predictors of the outcomes. These findings point toward the robustness of the grade inflation effect associated with extra-class participation and provide an additional argument for the link between extra classes and preference for superficial schooling achievements.

6.2. Intensity of extra classes

If extra classes truly provide pupils with knowledge, one might

[23] Observations are dropped when there is no variation within a cluster (when all or no pupils attend extra classes within a class).

[24] In Table 2, where subject fixed effects are controlled for, there is also no difference between Math and Vietnamese (result not shown in the table).

Table 6
Effects of attending extra classes by intensity

Dependent variable	(1) Teacher grade	(2) Teacher grade	(3) YL score 2	(4) YL score 2
Extra	0.134***	0.112***	0.054	0.044
	(0.043)	(0.036)	(0.038)	(0.032)
Extra × 3 hours/week	-0.063		-0.024	
	(0.057)		(0.057)	
Extra × 4 hours/week	0.065		0.019	
	(0.055)		(0.057)	
Extra × 5–8 hours/ week	0.019		-0.087	
	(0.060)		(0.058)	
Extra × 4–8 hours/ week		0.068		-0.023
		(0.041)		(0.041)
Observations	6,328	6,328	6,178	6,178
R-squared	0.473	0.472	0.536	0.536

Notes: Observations are at the subject-pupil level. All regressions include indicators for gender, ethnic minority, number of siblings (one, two, three or more), having more than ten books at home, time to school longer than 15 minutes, wealth index, subject fixed effects and class fixed effects. The omitted category of the interaction terms in Columns (1) and (3) is below 2 hours, and in Columns (2) and (4) is below 4 hours. Robust standard errors clustered at the class level in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

reasonably expect that the more hours they spend attending these classes, the more they will learn, which translates into better learning outcomes. Table 6 reports the effects of extra-class attendance at the intensive margin by looking at the interaction between participation status and the weekly hours spent in extra classes.

In columns (1) and (3), I divide extra-class intensity into less than 2 hours per week, 3–4 hours per week, and above 5 hours; in columns (2) and (4), extra-class intensity is split between below and above 4 hours per week. In all specifications, the first intensity category is the reference group (omitted category of the interaction terms between participation status and intensity). In the first two columns, similar to the baseline result, extra-class participation raises pupils' grades by 0.11–0.13 SD. All interactions between extra-class attendance and intensity, however, are not significantly different from zero. This finding suggests that tutoring intensity does not matter, and pupils who spend longer hours in extra classes do not earn higher grades than those who spend minimal time there.

Additionally, it aligns with the idea that parents might see sending their kids to the teacher's house as a convenient form of daycare. Columns (3) and (4) fully confirm the baseline results, indicating that regardless of the intensity, extra classes have no impact on underlying skills. All in all, it seems that the connection between extra-class attendance and grade inflation is mainly at the discretion of the home-room teacher, and the longer time spent in extra classes does not necessarily result in knowledge accumulation. Following this line of argument, if the extra classes are purely a means for teachers to collect rent, parents might realize that enrolling their kids in extra classes is unnecessary once they pay the bribe. If this is true, the estimated effect on school grades is likely downward biased as some pupils in the control group also get favorable treatment from their teachers.

6.3. Bounds on coefficient of interest using Oster test

The estimates in the previous sections consistently show the inflation effect of attending extra classes on grades at school using model (1). As discussed in section 3, this approach may yield unreliable estimates of the Extra coefficient if, conditioning on YL score 1, parents and pupils in the treated group are still different from the control group in unobservable dimensions. For example, parents who pay for extra classes also have more patience and time to help their children with homework. Pupils with more serious attitudes toward schooling both go to extra classes and spend more time revising and practicing before the test. In this section, I carry out an Oster test to investigate the robustness of my results to omitted variable bias (Oster, 2019). Oster's work extends the theory on the link between omitted variable bias and coefficient stability (see, for example, Altonji, Elder, and Taber 2005a) and builds a framework to estimate the effect bounds.

The intuition of the idea is that selection on observables is informative about selection on unobservables. By jointly examining coefficient and R-squared movements upon inclusion of controls, it is possible to diagnose the quality of the controls and recover the relationship between treatment and unobservables, subsequently developing a consistent estimator of the treatment effect. The first key input for the estimator is R_{max}, the hypothetical R-squared in a regression of outcome on treatment and a full set of controls (both observable and unobservable). Theoretically, if the outcome variance can be fully explained, the R-squared of such regression will be 1. Empirically, especially in economic research, this is unlikely due to idiosyncratic variation in the outcome and measurement errors. The second key input is δ, the ratio between the degree of variation accounted for by unobservables and the degree of variation explained by observables. A value of $\delta > 1$ means the unobserved controls are more important than their observable counterparts in explaining the treatment effect. When $\delta \in [0, 1]$, the true treatment effect is bounded between values of the β in my preferred specification ($\beta_{controlled}$) and the β estimated from the hypothesis model with R_{max} and δ ($\beta_{bias-adjusted}$). Following Oster's recommendation, I set $\delta = 1$ and $R_{max} = 0.614$, or 1.3 times the R-squared in the preferred model. The bias-corrected estimate for the regression of teacher grades on extra-class attendance is reported in Table 7. In column (6), $\beta_{bias-adjusted}$ is equal to 0.04, representing the lower bound of the treatment effect. Even when selection on unobservables is assumed to be equally large to that of observables, omitted variables cannot explain away my main finding on grade inflation.

6.4. Longer-term outcome on school enrollment

To gain further insights into the impact of extra classes in the longer term, I limit the analysis to the sample of YL children and make use of information in other survey rounds from the YL longitudinal study. Table 8 presents the effects of extra classes on school enrollment at age 12 and age 15, for the subsample of YL children. A 12-year-old child is expected to attend Grade 7 in lower secondary school. At age 15, students transition from lower to upper secondary school, this is also the minimum age required to enter the labor market. As mentioned earlier in Section 2, admission to upper secondary school depends on the results of the entrance examination and previous academic records.

Columns (1) and (2) show OLS regression results on enrollment at age 12 (Grade 7) and age 15 (Grade 10), controlling for initial YL scores in both subjects, individual characteristics, parental education (provided by the household head in the longitudinal data), teacher characteristics and school fixed effects.[25] All explanatory variables are as of Grade 5 (from the school survey) unless noted otherwise. Since Vietnam is working toward universal education at the lower secondary level, nearly all children are in school at age 12,[26] extra-class participation does not affect enrollment at this stage. However, when children reach age 15, those who took extra classes in Grade 5 are 6.8 percentage points more likely to be enrolled in Grade 10 (column (2)).

[25] Teaching characteristics include teacher age, gender, qualifications, type of contract, Grade-5 teaching experience, number of weekly teaching periods, parent-teacher meeting frequency. The last variable captures a potential channel through which teachers might have long-lasting effects on pupils other than direct knowledge transfer, for example, if they provide parents with frequent feedback that help parents better assist their children learning or choosing the right schools.

[26] The constant term (not shown) is 0.915 in column (1).

Table 7
Oster test for stability of coefficient (treatment variable: Extra)

(1) R_{max}	(2) δ	(3) Unrelated controls	(4) $\beta_{uncontrolled}[R^2]$	(5) $\beta_{controlled}[R^2]$	(6) $\beta_{bias-adjusted}$
0.614	1	subject, class	0.237*** [0.313]	0.136*** [0.472]	0.043

Notes: This table shows the validation results for the effect of extra-class participation on test score at school of pupils. Unrelated controls mentioned in Column (3) are included in all regressions. Full controls further add indicators of gender, ethnic minority, number of siblings (one, two, three or more), having more than ten books at home, time to school longer than 15 minutes, wealth index. Column (4) replicates the model in Column (2), Table 2 and shows the estimate for the same sample from Column (5). Column (5) presents the same estimate of the preferred model as in Column (5), Table 2. Column (6) shows $\beta_{bias-adjusted}$, calculated based on R_{max} in Column (1) and δ in Column (2). Robust standard errors clustered at the class level in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 8
Effect of extra classes on school enrollment, YL subsample

Dependent variable	(1) Enroll Grade 7	(2) Enroll Grade 10	(3) Enroll Grade 10	(4) Enroll Grade 10	(5) Enroll Grade 10
Extra	0.003	0.068**	0.058*	0.069**	0.065**
	(0.003)	(0.031)	(0.032)	(0.031)	(0.032)
Extra Grade 7			0.123***		
			(0.034)		
Poor Grade 7				-0.069	
				(0.050)	
Poor Grade 10					-0.118**
					(0.049)
Observations	994	994	985	985	994
R-squared	0.074	0.309	0.315	0.311	0.315

Notes: Observations are at the pupil level. Enroll is a dummy equal to 1 if the pupil is enrolled in the indicated Grade. Poor is an indicator for being eligible for the Hunger Eradication and Poverty Reduction program (HEPR) in the indicated Grade. Extra Grade 7 is a dummy equal to 1 if the pupil attends extra classes on the school premises in Grade 7. All regressions control for indicators for gender, ethnic minority, number of siblings (one, two, three or more), having more than ten books at home, time to school longer than 15 minutes, wealth index, YL score 1 in Math and Vietnamese, mother and father level of education (provided by the household head), teacher characteristics including teacher age, gender, qualifications, type of contract, Grade-5 teaching experience, number of weekly teaching periods, parent-teacher meeting frequency, and school fixed-effect. Robust standard errors clustered at the class level, *** p<0.01, ** p<0.05, * p<0.1.

Despite no effect on lower secondary enrollment, extra-class participation might increase the likelihood of attending reputable, higher-quality schools, which produce better student outcomes, such as GPAs and academic conduct, which matter for upper secondary admission. Another mechanism is improved self-concept, predominantly confidence, as shown in section 5.3. Self-concept translates into positive non-cognitive skills, subsequently affecting both academic attainment and non-academic attainment (see, for example, Heckman and Rubinstein, 2001). The increased ASC could result from a differential interaction dynamic with their teacher and peers or from higher class rank. Ladant et al. (2024) find that visible rank, based on teachers' grades, significantly impacts students' perceptions and performance, with higher-ranked students self-selecting into high schools with significantly higher average student achievements. On the contrary, invisible rank, based on unreported standardized test scores, has a negligible effect. This suggests that visible rank operates through perception, which is consistent with the effects observed in my study.

While family wealth is controlled for, it is worth noting the findings of Bertoni, Huynh, and Rocco (2019), which reveal that children from families eligible for the Hunger Eradication and Poverty Reduction Program (HEPR) have a higher tendency for school dropout and early employment by age 15. Since poorer (richer) families are less (more) likely to send kids to extra classes, I introduce poverty status in Grade 7 and Grade 10 in Columns (4) and (5), respectively. Both Poor Grade 7 and Poor Grade 10 are negatively related to enrollment in Grade 10, with the latter being significant at the 5% level, confirming that children from poor families are less likely to go to upper secondary school. However, the main coefficient of interest, Extra, remains unchanged. This indicates the persistent effects of attending extra classes in primary school on enrollment in upper levels and provides additional evidence that the effect of extra classes is not confounded by socioeconomic background.[27] In addition, when the children are in Grade 7, families are asked, "Has [YL Child] participated in extra classes (additional to regular schooling, mostly voluntary & charge a fee) on school premises during the school months of the last academic year?" Notice that *extra classes on school premises* might not be the same as the type of extra classes captured in the school survey. This is a related but not identical measure of extra-class participation in Grade 5. Column (3) shows that participation status in Grade 7 is associated with higher enrollment in Grade 10. Upon the inclusion of Extra Grade 7, the point estimate for Extra slightly decreases but is not significantly different from the baseline in column (2), pointing toward a long-lasting positive effect of attending extra classes on future enrollment.

7. Heterogeneity and discussion

In this section, I examine the heterogeneous effects of extra classes by demographic and institutional settings. Table 9 summarizes the heterogeneous treatment effects on grades at school, grouped into individual and family factors (Panel A) and school-related factors (Panel B). Each estimate comes from a separate regression. The results on skills and academic self-concept at the end of the academic year are presented in Appendix Table A11 and Table A12, respectively.

7.1. Individual and family background

The first two columns of Panel A report the effects separately for boys and girls and show similar effects on teacher grades for both genders, suggesting no gender discrimination toward pupils. To examine whether there are heterogeneous effects across skill distribution, I divide pupils into low or high skills if their initial YL score is below or above the median and report the results in columns (3) and (4). Although the results provide some suggestive evidence that grade inflation is larger among the former (0.17 vs. 0.09), point estimates are not statistically different between low and high achievers.[28] In addition, the effect on the latter group is likely capped since skills are highly correlated with school grades, which cannot go beyond 10.

Columns (5) and (6) of Panel A show that the effect of extra classes on grades is strongly and significantly concentrated on pupils from low-income families (0.27).[29] The effect is negligible (0.007) among treated children from wealthier backgrounds. The fact that school grades are given on an absolute scale of 0 – 10 points might partially explain the absence of grade inflation for children from wealthier families in column (6), who may already be achieving top grades, thereby underestimating the effect for this group. Appendix Table A12 shows a

[27] Results (not reported) are very similar when I include class fixed effects and remain robust when I use a comprehensive measure of household's socioeconomic status and access to services in Grade 7 and Grade 10, calculated based on information provided by household heads in the YL longitudinal data.

[28] I test for the null hypothesis of no difference between coefficients using the Wald test and report the F-statistic and p-value in the second column of each background or school factor.

[29] Cut off point for poor/rich family is at the median of wealth index variable.

positive effect of attending extra classes on ASC across the family wealth distribution. If anything, the estimated effect appears larger for pupils from wealthier backgrounds despite the absence of grade inflation for this group. These findings indicate that the influence of extra-class participation on ASC does not solely operate via the rank channel (see section 5.3). While wealthier pupils do not see grade gains, they exhibit increased confidence, hinting at a differential interaction dynamic with the teacher. These results also align with the notion that pupils have a desire to compete (Tincani, 2024), leading them to attend extra classes to maintain their standing. As pointed out by Le and Baulch (2012), many Vietnamese families send their children to extra classes simply because "their classmates do so," fearing their children might fall behind their peers.

Extra-class attendance also has a stronger impact on grade inflation for children living in rural areas and in poor communes (columns (7) to (10)) compared to children living in urban areas or non-poor communes. Poor communes are those listed under the P135 program, a national poverty alleviation program targeting ethnic minorities and remote areas. While grade inflation arises in all schools regardless of the communes in which they are located (columns (9) and (10)), the degree of inflation in poor communes is fivefold that in non-poor communes: 0.43 compared to 0.08. In my sample, raw Math grade has a SD of 1.9, so the effect size of 0.43 SD in standardized grade would be equivalent to an increase of nearly 1 point in real term. This sizable increase is large enough to move the grade description one point up on a 10-point grading scale:[30] 7 to 8 means Above Average to Good, while 8 to 9 means Good to Excellent.

Interestingly, the effects on underlying skills at the end of the academic year are null in most specifications, confirming the robustness of the benchmark result in Table 3, except for treated pupils in poor communes. In such a disadvantaged setting, private tutoring might complement its deficient public counterpart and provide useful learning resources for pupils, in terms of both quantity and quality (Dang and Rogers, 2008). Still, the estimated effect is marginally significant, and the magnitude of skill gain (0.17) in poor communes is modest compared to the degree of grade inflation (0.43).

7.2. Teacher and school characteristics

The first two columns of Panel B report the effect of attending extra classes by teacher gender. The male-to-female ratio of primary school teachers in the YL school sample is 1-to-3. My regression results reveal that the degree of grade inflation is almost three times higher for male teachers (0.30) than for female teachers (0.09). The difference is significant at the 5% level. Looking at teacher qualifications, in column (3), I find extra classes' impact on grade is 0.19 for pupils whose teachers have low qualifications (received three-year college or two-year professional training). Interestingly, in column (4), teachers with university or higher degrees tend not to favor their pupils based on extra-class status. Likewise, columns (5) and (6) suggest that the effect is higher in schools with low-qualification principals (0.20) than in those with high-qualification principals (0.12). The estimated effect in column (5), however, is less precise as less than a quarter of the surveyed schools are led by a college-or-below principal, and it is not statistically different from the effect for schools with a university-or-above principal.

The following two columns of Panel B report heterogeneity of treatment effect in schools where pupils attend lessons on a half-day or full-day basis, using information reported by homeroom teachers. The last two columns also show heterogeneity by school day length but use information reported by the school principal. The descriptive summary of full-day schooling options is reported in Table A13, Appendix. I classify a class (school) as offering the full-day option if the teacher (principal) reports that some or all pupils attend full-day schooling. In a half-day setting, each classroom is usually shared between two classes, one in the morning and another in the afternoon. This arrangement is relatively standard, especially at school sites with inadequate learning facilities. On the contrary, full-day schooling means the school day lasts longer, typically from 7 am to 4 pm, in which pupils often stay at school over lunch (semi-boarding). Using either source of information, the effect of extra classes is much stronger when no full-day schooling is available: 0.18 in column (7) and 0.25 in column (9), both significant at the 1% level. The effect magnitude is three times smaller in schools that provide full-day schooling (0.08), and the difference in heterogeneous effects across school day durations is significant at the 5% level (column (10)). Interestingly, the effects on ASC (Panel B, Table A12) mirror the effect pattern on teacher grades, with larger positive effects when the teacher or the principal has low qualification and when there is no full-day schooling. Once again, no impact of extra classes on year-end skills is observed (Panel B, Table A11).

8. Discussion

A clear pattern that emerges in both Panel A and Panel B of Table 9 is the greater extent of grade inflation in less developed settings, for example, schools located in P135 communes and rural areas or schools without full-day programs. This pattern is not accompanied by an improvement in skills. The effects on ASC vary more considerably across teacher and school characteristics than across family characteristics, indicating that these factors are more influential in shaping pupils' self-concept in the context of extra-class participation. The lack of teacher accountability and monitoring mechanisms in such settings raises concerns over teaching quality and corruption in education.

The effect of extra classes on grade inflation is also stronger for children from poor families, in which parents are more likely to have a lower level of education and lack information to evaluate teacher behaviors. These findings align with the theory of misgovernance (Banerjee, 1997), in which the teachers play the role of the agent, and the education system is a public organization. Agency problems are intensified when dealing with poor people, in poor areas, or in underdeveloped institutions, which are highly correlated with the cultural tolerance for corruption. In addition, teachers in these disadvantaged groups generally hold lower qualifications (Fig. A1, Appendix), which lays heavier financial pressure on them. Teachers who graduated from university are more likely to secure a position at schools with full-day options and make greater earnings thanks to the combination of higher qualifications and double-shift teaching allowance. An average teacher in the YL school sample has seventeen years of teaching experience. If s/he has finished two years of professional training, the expected teaching salary is around USD 122 per month. Her colleague who graduated from university with the same experience level would receive 160 USD, net of other allowances.[31] The reduction in financial pressure might, in turn, mitigate their incentives for moral hazard. The extended schooling hours also allow more learning materials to be covered at school, reducing the benefit that was previously obtained through extra classes. Calculated from detailed data on household expenditures collected by the YL longitudinal study in Round 3 (when YL children are

[30] Grading is on a scale of 10 where 9–10: Excellent, 8: Good, 6.5: Above Average, 5: Average, 3.5: Below Average, and below 3.5: Very Poor.

[31] Base salary in 2011 for public servants was approximately 40 USD (830,000 VND). Public organization remuneration policy follows Decree No. 204/2004. At the beginning of their career, a primary school teacher with university training gets a salary coefficient of 2.34, while that for one with college or short-course professional training starts off at 2.10 or 1.86, respectively. As their number of working years accumulate, the salary coefficients slowly progress to the next grades, typically after every two to three years. A 17-year experienced teacher will progress to salary coefficient 3.06 in case they have short-course training, or 3.99 in case of university graduate. Their respective salary will be approximately 122 USD and 160 USD.

Table 9
Heterogeneous effects on grade at school

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Panel A. Individual and family background									
	Child gender		Skill		Family		Living area		Poor commune	
	boy	girl	low	high	poor	rich	rural	urban	yes	no
Dependent variable:										
Teacher grade	0.122***	0.144***	0.172***	0.094*	0.265***	0.007	0.187***	0.061	0.429***	0.082**
	(0.044)	(0.043)	(0.063)	(0.052)	(0.055)	(0.058)	(0.061)	(0.049)	(0.119)	(0.039)
Wald test:										
F-statistic		0.1366		0.9577		12.9988		2.7097		8.0358
p-value		(0.7121)		(0.3291)		(0.0004)		(0.1015)		(0.0051)
	Panel B. Teacher and school									
	Teacher gender		Teacher qualifications		Principal qualifications		Full-day schooling			
	male	female	low	high	low	high	no	yes	no	yes
Dependent variable:										
Teacher grade	0.295***	0.092**	0.194***	0.057	0.202*	0.117***	0.181***	0.092	0.248***	0.083*
	(0.079)	(0.046)	(0.060)	(0.055)	(0.113)	(0.044)	(0.056)	(0.057)	(0.068)	(0.048)
Wald test:										
F-statistic		5.1340		2.9999		0.5080		1.2894		4.0751
p-value		(0.0247)		(0.0850)		(0.4770)		(0.2577)		(0.0450)

Notes: This table presents the heterogeneous treatment effects of extra-class participation across demographic and institutional backgrounds, conditional on YL score 1. Each estimate comes from a separate regression. The F-statistic and p-value of the Wald test for equality of coefficients are reported in the second column of each background factor. Observations are at the subject-pupil level. All regressions control for indicators for gender, ethnic minority, number of siblings (one, two, three or more), having more than ten books at home, time to school longer than 15 minutes, wealth index, subject fixed effects and class fixed effects. In Panel A, columns (3) and (4), skill is low (high) if YL score 1 is below (above) median. In columns (5) and (6), the family is poor (rich) if the wealth index is below (above) the median. In columns (9) and (10), poor communes are those listed under the P135 program of the government. In panel B, columns (3) to (6), qualifications refer to university degree and up (high) or below (low). Full-day schooling is reported by the homeroom teacher in columns (7) and (8), and by the principal in the last two columns. Robust standard errors clustered at the class level in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

in Grade 3), the monthly average extra-class fee per child is around USD 3.5. In my school sample, the average class size is around 30. Thus, a typical teacher would expect to earn 105 USD from extra-class tutoring each month and substantially improve their earnings. If the main reason for teachers to provide extra classes is low salaries, an increase in teacher salaries might mitigate their rent-seeking behavior. (De Ree et al., 2018) show that teachers are significantly less likely to hold outside jobs or report financial stress when their salary is doubled. However, the unconditionality of this policy change is not effective in improving teacher effort or productivity.

9. Conclusion

This paper examines the phenomenon of extra classes, rent-seeking behavior by schoolteachers, and the impacts of extra classes in the short and long term. I find evidence that pupils attending extra classes receive higher grades at school by 0.14 SD. Such grade inflation, however, is not accompanied by a parallel gain in underlying cognitive skills. Extra-class attendees are found to have higher academic self-confidence than their non-extra classmates. These findings can be interpreted as evidence of teachers' moral hazard in the public school system. The issue is aggravated in disadvantaged settings with a lack of monitoring mechanisms, for example, in rural areas, in schools that do not have the capacity to offer full-day schooling, or for children from lower socio-economic backgrounds, where the degree of grade inflation can be as high as 0.5 SD.

I also perform a battery of robustness checks to support the causal inference of the impacts of extra classes on teacher grades. Using additional control of parental education and carrying out the Oster test to address omitted variable bias, the results are robust and consistent with the baseline. Extended hours spent in extra classes are not associated with a larger degree of grade inflation, implying that the treatment effect only depends on whether or not the child pays the extra-class fee. Alternatively, parents may bribe the teacher in other unobservable ways, making the estimated effect of extra classes on teacher grades likely downward biased. Even if extra-class attendance has zero productive value on human capital in the short run, it yields substantial returns in the longer run: households pay for extra classes in exchange for better education prospects for their children.

These findings suggest that extra classes come at the cost of both efficiency and equity in education and provide useful implications for the government and educational planners. If teachers can raise the costs for pupils and parents through channels other than schooling outcomes, centralization of national examination might reduce but not sufficiently eliminate the discretionary power of teachers. If teachers' low salaries are the main reason for them to offer extra-class tutoring, the government could solve this issue by setting an efficient wage.

CRediT authorship contribution statement

Quynh Huynh: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Young Lives: School Survey, Vietnam, 2011-2012 (Original data) (Data is publicly available at UK Data Service).

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.labeco.2024.102616.

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