Who becomes a teacher? Relative academic rank and entry into teaching profession

By:

Iman Dadgar[1,2], Magnus Nermo[3] and Roujman Shahbazian[1,2,4*]

[1] *Swedish Institute for Social Research (SOFI), Stockholm University*
[2] *Center for Educational Leadership and Excellence, Stockholm School of Economics*
[3] *Department of Sociology, Stockholm University*
[4] *Department of Sociology, Uppsala University*

This paper studies how students' relative academic rank in compulsory school affects entry into the teaching profession. Using population-wide Swedish administrative data, we link grade-9 GPA for cohorts attending grade 9 in 1990–1997 to detailed occupational outcomes observed at age 40. We measure relative position as within-school–cohort GPA rank and estimate rank effects by exploiting variation in ordinal position among students with similar absolute achievement. The empirical design includes school-by-cohort fixed effects and controls for absolute ability via national GPA-rank indicators interacted with grading-environment (school-type) measures, along with family background controls. We find that lower-ranked students are more likely to become teachers, but the pattern differs across teaching segments: low local rank predicts entry into compulsory and upper-secondary teaching, while very high local rank predicts university teaching; there is no clear relationship for pre-school teaching. Effects are concentrated among women and are strongest for women in high-achieving schools. Results are robust to alternative specifications. The findings highlight relative academic standing as an important, previously overlooked determinant of occupational choice into teaching.

Keywords: Educational inequality; Teaching profession; Occupational choice; School position; Reference groups; Relative deprivation; Sweden

***Corresponding authors details (full address and email):**

- **Email:** iman.dadgar@hhs.se
- **Postal address:** Center for Educational Leadership & Excellence, Stockholm School of Economics, PO Box 6501, 11383 Stockholm

Declaration of competing interest: The authors declare that there is no conflict of interest

1. Introduction

Teachers have the power to significantly improve their students' achievements in reading and mathematics (Rivkin et al., 2005; Rockoff, 2004), shape their attitudes and behaviors (Blazar and Kraft, 2017; Downey and Pribesh, 2004), and guide them to better future labor market prospects (Chetty et al. 2014). Despite this, a growing body of research documents a decline in the academic composition of the teaching workforce in several countries (Guarino et al., 2006; Krieg, 2006). This development has coincided with relatively low wage prospects and declining occupational prestige in teaching (Fredriksson and Öckert, 2008; Han, 2021), and increasing workload (Toropova et al., 2021; Perryman et al. 2020), raising concerns about the future supply and quality of teachers (Hargreaves, 2009; Kraft and Lyon, 2024). In particular, teaching appears to have become less attractive to academically high-performing students, with potential implications for educational inequality and student outcomes (Guarino et al., 2006; Alatalo et al., 2024).

Research on selection into teaching has primarily focused on absolute measures of academic ability and labor market incentives, including wages, working conditions, and outside occupational opportunities (Hanushek and Pace, 1995; Hoxby and Leigh, 2004; Guarino et al., 2006; Bacolod, 2007; Podgursky and Springer, 2007; Jackson et al., 2014; Hanushek et al. 2019). While this literature has generated important insights, it pays less attention to how students' relative academic standing within their local school environments may shape expectations, perceived opportunities, and subsequent career choices. Yet educational institutions structure access to valued positions not only through absolute achievement thresholds, but also through continuous peer-based evaluation. Grades and performance feedback are inherently local, embedding students in comparative environments that generate ordinal rankings and information about relative performance. Schools organize students into local peer groups and evaluate performance within these groups, thereby producing comparative signals about relative ability and performance (Coleman, 1961). These signals may shape students' beliefs about their own comparative advantage, academic self-concept, and the expected returns to alternative educational and occupational pathways (Davis, 1966; Marsh, 1987; Lent et al., 1994). These signals may influence beliefs about comparative advantage and expected returns to different careers. Relative academic rank can therefore be interpreted as a summary

measure of comparative performance signals that shapes educational and occupational choices.

A growing literature, enabled by new empirical strategies designed to address unobserved factors related to students' ordinal rank, has examined the long-run consequences of relative academic position (see Delaney and Devereux, 2022, for an overview). This work shows that ordinal rank influences a wide range of outcomes conditional on absolute achievement, including income in adulthood (Denning et al., 2023; Dadgar, 2026), school grades and academic performance (Elsner and Isphording 2017; Murphy and Weinhardt, 2020; Elsner et al. 2021), attainment in STEM fields (Delaney and Devereux, 2021; Shahbazian and Dadgar, 2024), educational aspirations (Kim et al. 2023), violence and deviant behavior (Comi et al., 2021; Chen et al. 2025), health and well-being (Kiessling and Norris, 2023; Kim and Liu, 2023), personality traits (Pagani et al. 2021), as well as fertility and family formation across the life course (Andersson et al., 2025). This growing literature has paid little attention to occupational choice, and in particular to selection into the teaching profession.

This paper examines how students' relative academic rank in compulsory school influences entry into the teaching profession. We measure rank in grade 9 and study occupational outcomes at age 40, when careers are largely settled. This question is important for two reasons. First, teaching plays a central role in shaping human capital, yet many countries have experienced declining academic selectivity into the profession. Second, relative academic rank may be especially relevant for teaching, given its compressed wage structure, strong gender norms, and limited scope for performance-based pay, which may amplify the role of early signals about comparative advantage. To study this question, we use population-wide administrative data from Sweden that link students' compulsory school grades to detailed labor market outcomes observed into prime working ages. Our empirical strategy follows the recent literature on rank effects (Murphy and Weinhardt, 2020; Denning et al., 2023) and exploits within-school, within-cohort variation in ordinal rank, while controlling flexibly for absolute achievement and school-by-cohort fixed effects. This design allows us to compare students with similar national achievement who attended different schools and therefore occupied different relative positions within their local peer environments. Sweden provides a suitable setting due to late tracking, detailed administrative data, and a grading system that generates clear within-school rankings.

We find that relative position in school predicts sorting into different segments of the teaching profession. Students at the top of the rank distribution are more likely to become university teachers, whereas those at the bottom are more likely to enter compulsory and upper-secondary teaching. These patterns persist into midlife, when occupational choices are largely settled (Bihagen et al. 2024), and the estimated effects are sizable relative to baseline entry rates into teaching. Effects are concentrated among women, consistent with the gendered structure of the teaching profession. We also document heterogeneity by school performance: among women, those attending high-performing schools but holding lower ordinal rank are more likely to enter compulsory and upper-secondary teaching. The results are robust across alternative specifications, including stratifying the analytical sample by school size and measuring teaching employment at age 30 rather than 40. Finally, balance tests across a wide range of observable characteristics show no evidence of discontinuous sorting.

This paper contributes to three strands of literature. First, it adds to the growing evidence on long-run consequences of relative academic rank by focusing on teaching professon, i.e. occupational choice, a dimension that has received little attention. Second, it complements existing studies on earnings effects of rank, such as Denning et al. (2023), by examining outcomes observed well into prime working age, rather than early career earnings alone. Third, it contributes to the literature on selection into teaching by highlighting the role of relative academic standing, rather than absolute ability, in shaping entry into the profession.

The remainder of the paper proceeds as follows. Section 2 describes the institutional context and data. Section 3 outlines the empirical strategy. Section 4 presents the main results and heterogeneity analyses. Section 5 reports robustness checks. Section 6 discusses implications and concludes.

2. Relative performance and reference groups in education

Individuals tend to evaluate their performance relative to proximate peers rather than in absolute terms, a process central to reference group theory, which emphasizes that comparisons within local groups shape perceptions of ability and prospects (Kelley, 1952). In school settings, students receive continuous feedback about their standing relative to classmates through grades, teacher feedback, and peer interactions. As a result, the local peer group becomes a natural benchmark for evaluating academic performance. A central implication of this perspective is that perceptions of advantages

or disadvantage depend on relative position rather than absolute achievement. Two students with similar national-level performance may therefore form different beliefs about their own ability depending on their rank within the school environment. Such comparative signals can influence confidence, expectations, and perceived career options. These ideas are closely related to the “frog-pond” argument of Davis (1966) and the Big Fish in a Little Pond Effect (BFLPE) developed in educational psychology (Marsh, 1987; Marsh et al., 2008). This literature shows that students in less competitive environments often develop more favorable academic self-assessments than equally able students in more competitive settings. While the underlying mechanisms are often discussed in terms of academic self-concept, the key implication for this study is more general: local rank provides information about comparative performance that may shape educational and occupational choices.

The conceptual framework can be illustrated by considering two students with the same national academic achievement who attend different schools. One student may rank near the middle of the local distribution, while the other ranks below average because they attend a higher-achieving school. Although their absolute ability is similar, they receive different signals about their relative performance. These signals may influence how they assess their prospects in different educational and occupational pathways.

3. Who goes into teaching professions?

The predominant explanations for entry into the teaching profession in economics emphasize labor market incentives, including wages, working conditions, and outside occupational opportunities (Hanushek and Pace, 1995; Hoxby and Leigh, 2004; Guarino et al., 2006; Bacolod, 2007; Podgursky and Springer, 2007; Jackson et al., 2014; Hanushek et al., 2019). A consistent finding is that relatively low and compressed wages contribute to negative selection into teaching in several countries. While other explanations, such as intergenerational transmission into teaching, have also been discussed (Jacinto and Gershenson, 2021), the literature has largely concentrated on observable characteristics of those who enter the profession.

Teaching is a highly gender-segregated occupation. Women constitute the majority of teachers, particularly at lower educational levels, and this pattern is often linked to differences in outside options and social norms surrounding the profession

(Katsarova, 2019). Research further indicates that students entering teacher education are more likely to come from non-academic or lower-income family backgrounds compared to students in other fields of higher education (Denzler and Wolter, 2009; Neugebauer, 2013; Richardson and Watt, 2006). These patterns suggest that occupational choice into teaching is shaped not only by academic ability but also by differential opportunities and constraints in the broader labor market.

A large body of research documents negative selection into teaching based on academic performance. Prospective teachers, on average, have lower grades and test scores than students entering other professions, and this gap has widened over time (Guarino et al., 2006). Comparative studies further reveal substantial cross-country differences: in countries such as Finland and Singapore, teachers are drawn from the upper part of the skill distribution, whereas in countries such as Austria and Denmark they are drawn from the lower part (Hanushek et al., 2019; Reimer and Dorf, 2014).

In Sweden, a consistent pattern of declining academic selectivity into teaching has been documented. Multiple studies show declines in cognitive ability, social skills, and grade point averages among newly recruited teachers over recent decades (Fredriksson and Öckert, 2008; Grönqvist and Vlachos, 2016; Johansson, 2023; Alatalo et al., 2024). While this literature provides strong evidence of negative selection based on absolute academic achievement, it focuses almost exclusively on absolute performance and remains largely silent on how relative academic standing within local school environments may shape entry into the profession.

Finally, another line of research highlights the role of motivations, often classified as altruistic, intrinsic, or extrinsic, in shaping career choice into teaching (Brookhart and Freeman, 1992; Richardson and Watt, 2006). When asked, teacher candidates tend to emphasize altruistic and intrinsic motives over extrinsic considerations such as income or job security (Heinz, 2015; Thornberg et al., 2023). However, survey-based evidence on motivations is difficult to reconcile with observed patterns of academic selection and is likely influenced by social desirability bias.

Relative academic rank may be particularly relevant for teaching because the profession features compressed wages, structured credential requirements, and limited performance-based pay. In such settings, perceived comparative advantage and signals about one’s position in the ability distribution may play a larger role in career choice than in occupations with strongly convex earnings structures.

3.1. The Swedish context

Sweden offers a useful setting for examining selection into the teaching profession and the role of relative academic position. A substantial literature documents a long-term decline in the academic achievement of individuals entering teaching, making the Swedish case particularly relevant for studying selection patterns. Using ability tests administered at age 13, Fredriksson and Öckert (2008) show a decline in the cognitive ability of tertiary-level teaching graduates, with somewhat larger declines among women. Grönqvist and Vlachos (2016), using Swedish military enlistment data, report similar declines in both cognitive and social abilities among male teachers, along with falling grade point averages for both men and women. More recent studies based on compulsory-school GPA data show that the academic achievement of newly recruited teachers continued to decline from the mid-1990s through the 2010s (Johansson, 2023; Alatalo et al., 2024).

These developments have occurred alongside repeated policy efforts intended to raise the status and attractiveness of the teaching profession. Reforms have included the introduction of teacher certification requirements (Lilja 2011), changes in school leadership structures (Berg and England 2016), and targeted wage increases. Despite these initiatives, teacher education has relatively high dropout rates, with students who entered with weaker academic records disproportionately represented among early leavers (Svensson, 2017). Together, these patterns suggest that selection into teaching remains an important policy concern in Sweden.

Several institutional features of the Swedish educational system are relevant for studying such relative position effects. Sweden has a late-tracking system in which all students follow a common comprehensive curriculum through grade 9, after which they choose between academic and vocational tracks at the upper-secondary level (Halldén, 2008). This structure allows relative rank to be observed before formal tracking occurs and before major educational choices are made. Grade 9 therefore represents a stage at which students are aware of their standing among peers while approaching consequential choices regarding further education.

During the cohorts studied, 1990 to 1997, compulsory-school grades were assigned on a standardized five-point scale with national criteria and standardized tests in core subjects, while grading retained a local component. This structure generates meaningful within-school variation in relative academic rank while limiting large differences across schools. Higher education in Sweden is fully publicly funded.

Tuition-free study, together with universal access to study grants and subsidized student loans, reduces the role of short-term financial constraints in post-compulsory educational choices (Halldén, 2008; Amft, 2012). This institutional setting makes it less likely that observed differences in career paths are driven by liquidity constraints and more likely that they reflect academic signals and relative performance.

4. Data and methods

This study uses population-wide Swedish administrative register data. Each resident is assigned a unique personal identification number, which allows individuals to be linked across registers and to their parents. The analytical population consists of students who attended grade 9 between 1990-1997, identified from school registers containing information on grades and school identifiers. Individuals are followed into adulthood through 2021. Parental characteristics, including income and education, are obtained from tax and education registers using multigenerational linkages.

4.1. Dependent variables

We focus on individuals in the teaching profession at age 40. The average age of teachers tends to be relatively high, around 40+ years, although this varies by country (Neugebauer, 2019). It is important to measure being in a teaching profession as late as possible, as recent research on intragenerational mobility supports the notion that people often change occupations even in adulthood (Bihagen et al. 2024). We define five dichotomous outcomes: (i) any teaching occupation, and separately (ii) university teachers, (iii) upper-secondary teachers (grades 10–12), (iv) compulsory school teachers (grades 1–9), and (v) pre-school teachers. Teaching occupations are identified using the fourth digit of the Swedish Standard Classification of Occupations (SSYK).

4.2. Independent variable

The main explanatory variable is students' relative academic position within their school and cohort in grade 9, measured using GPA. GPA is ranked within each school and cohort and divided into 20 equally sized groups, corresponding to five-percent intervals of the local GPA distribution (Denning et al., 2023). Relative rank therefore varies from 1 (lowest) to 20 (highest). As shown in Table 1, schools in the sample have, on average, 106 students per cohort, resulting in approximately five students per rank.

Using GPA from grade 9 is advantageous in the Swedish context, as students have not yet sorted into academic or vocational tracks.

Table 1. Descriptive statistics by gender

	Prop./ Mean	SD	Prop./ Mean	SD	Prop./ Mean	SD
	All		Men		Women	
GPA	3.24	0.70	3.11	0.69	3.39	0.68
University teachers	0.86	---	0.83	---	0.90	---
Upper-secondary teachers	2.16	---	1.40	---	2.94	---
Elementary school teachers	3.42	---	1.54	---	5.37	---
Pre-school teachers	1.82	---	0.14	---	3.57	---
Having a foreign background	11.01	---	11.11	---	10.90	---
Year of birth	1977.38	2.35	1977.37	2.35	1977.40	2.35
Month of birth (1-12)	6.23	3.37	6.23	3.37	6.24	3.38
Mothers income (SEK)	137480	81791	137236	81843	137735	81736
Fathers income (SEK)	191467	118390	191487	1188.38	191446	117922
Mother years of education	11.33	2.52	11.33	2.52	11.32	2.52
Father years of education	11.20	2.85	11.20	2.85	11.20	2.85
Mothers age at 15 years old	43.21	4.86	43.23	4.85	43.19	4.86
Fathers age at 15 years old	45.91	5.43	45.92	5.42	45.90	5.44
Number of student in each school	106.40	35.49	106.41	35.48	106.39	35.50
Observations	640479		326669		313810	

Note: The table shows means and standard deviations for the full sample and by gender. Teaching occupations are measured at age 40 and expressed as percentages. GPA is measured in compulsory school. Foreign background indicates immigrant background. Parental income is in SEK, and parental education is measured in years. School size reflects the number of students per school–cohort.

4.3. Control variables

Absolute academic ability is measured as students' national GPA rank within each cohort. Following Dadgar (2026), GPA ranks are divided into 50 categories, corresponding to two-percent intervals of the national distribution. This measure captures the full range of academic performance at the national level.[1] We further control for parental income and years of education, measured when the individual was in grade 9, as well as immigration background (having at least one foreign-born parent). Year and month of birth are included to account for cohort differences and relative-age effects (Fredriksson and Öckert, 2014; Valdés, 2024). Gender is included in pooled models and omitted in gender-specific analyses.

[1] Using fewer than 50 levels to capture absolute academic ability results in slightly larger effect estimates. By using the maximum available granularity, 50 levels, we ensure more precise control for absolute ability, and the estimates can be considered conservative.

4.4. Empirical strategy

Our empirical strategy builds on recent work on ordinal rank effects (Denning et al., 2023; Dadgar, 2026) and exploits within-school, within-cohort variation in students' relative academic position.[2] The key idea is that students with similar national achievement may occupy different ordinal positions across schools because local peer composition varies across cohorts. Conditional on absolute achievement and school-by-cohort fixed effects, this generates variation in local rank among otherwise similar students. Importantly, this variation is not assumed to be fully random. Rather, conditional on the rich set of controls described below, remaining differences in ordinal rank are interpreted as plausibly orthogonal to individual background characteristics. This interpretation follows the logic of recent rank-effect studies that rely on within-school comparisons while flexibly controlling for absolute ability.

We estimate linear probability models in which the outcome indicates whether an individual is employed in a teaching occupation at age 40. The baseline specification is:

$$y_{isc} = \sum_{r \neq r_0} \beta_r \, \mathbb{1}\{\text{LocalRank}_{isc} = r\} + \sum_{d=1}^{50} \sum_{d=1}^{10} \gamma_{ad} + \mathbb{1}\{\text{NationalRank}_{ic} = a\} \times \mathbb{1}\{\text{SchoolType}_{sc} = d\} + \mu_{sc} + X_i'\delta + \varepsilon_{isc}.$$

Here, y_{isc} is an indicator for whether individual i, who attended school s in cohort c, is working in a teaching occupation at age 40. We also consider alternative definitions corresponding to different levels of the teaching profession.

LocalRank_{isc} denotes the student's ordinal rank within their school and cohort, based on GPA. Ranks are grouped into 20 categories, with the 10th category used as the reference group. The coefficients β_r capture the effect of relative academic position within the local school environment on entering teaching occupation.

To control flexibly for absolute academic ability and for systematic differences in grading environments across schools, we include interactions between national GPA rank and school-type indicators. National GPA rank, NationalRank_{ic}, is constructed

[2] Figure 1 in Dadgar (2026) illustrates substantial variation in students' school-specific rank across the national achievement distribution, showing that for any given national ability rank, students occupy a wide range of relative positions within their schools.

within each cohort and divided into 50 equal-sized categories, corresponding to two-percent intervals of the national distribution. School type, SchoolType_{sc}, is defined by grouping schools into ten categories based on the within-cohort school variance of GPA, which captures differences in grading dispersion and peer heterogeneity. The full set of interactions $\mathbb{1}\{\text{NationalRank} = a\} \times \mathbb{1}\{\text{SchoolType} = d\}$ allows returns to absolute ability to vary flexibly across grading environments. These interactions allow the relationship between absolute achievement and outcomes to vary across grading environments, reducing the risk that estimated rank effects capture differences in school-level grading practices or peer composition.[3]

The term μ_{sc} denotes school-by-cohort fixed effects, which absorb all time-varying and time-invariant differences across schools, including neighborhood characteristics, cohort-specific peer composition, grading standards, teacher quality, and school-specific trends. Identification therefore comes from comparisons between students attending the same school in the same cohort who differ in their relative rank but have similar absolute ability and background. Finally, X_i is a vector of individual controls including gender, parental income and education measured in grade 9, immigration background, and month and year of birth, and ε_{isc} is an error term.

4.5. Balancing tests

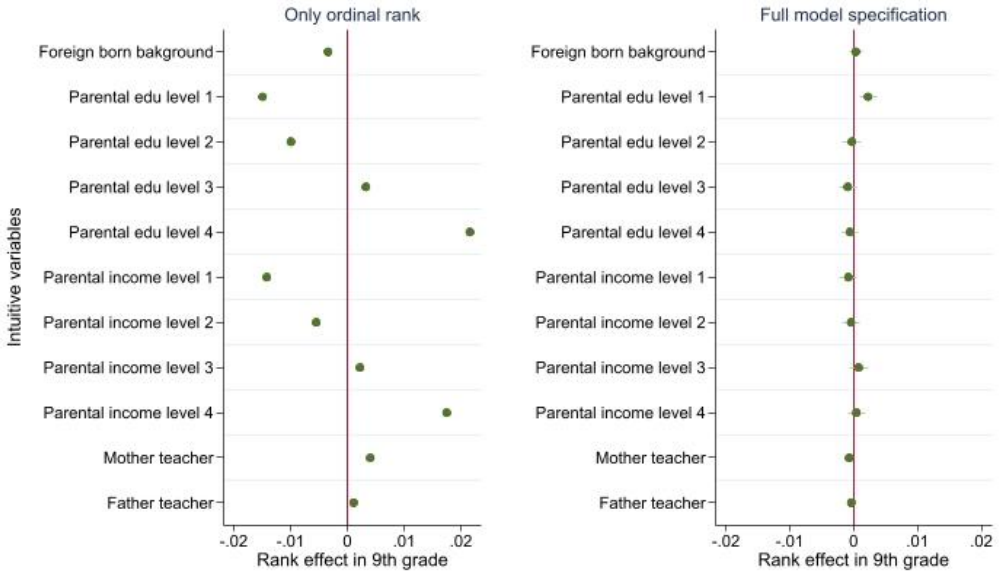
To assess whether the empirical strategy adequately accounts for observable and unobservable confounding, a set of linear balancing tests is conducted. The purpose is to examine whether students' relative academic position within schools remains systematically associated with predetermined background characteristics once the full model specification is applied.

The tests are implemented by estimating the baseline and full model specifications using background characteristics as dependent variables. These include immigration background, parental education (four categories), parental income (four categories), and indicators for whether the mother or father was employed in a teaching occupation in year 1990. These characteristics are strongly related to students' academic performance and school outcomes (Holmlund et al., 2020).[4]

[3] For the detailed discussion about the interaction term, see Denning et al. (2023), and Dadgar (2026).
[4] When estimating balancing tests with background characteristics as outcomes, the full model includes all covariates from the main specification, excluding indicators from the same categorical group as the

Figure 1 presents the results. The left-hand panel reports estimate from models including only relative academic position, while the right-hand panel reports estimate from the full specification with school-by-cohort fixed effects and controls. In the baseline models, relative academic position is strongly correlated with all background characteristics: students from less advantaged family backgrounds and those with a foreign background tend to occupy lower positions in their school's GPA distribution, while students from more advantaged backgrounds and those with a parent employed as a teacher tend to occupy higher positions.

Figure 1: Balancing tests



Note: The x-axis represents the estimated effects of relative position on eleven intuitive variables, with 95% confidence intervals, while y-axis lists the intuitive variables being tested. The figure is divided in two panels: the left panel shows results from the model using only relative position, and the right panel shows results from the full model specification with the full model specification (the combinations of fixed effects), and the lines indicate the confidence intervals around those estimates.

Once the full model specification is applied, these associations are substantially reduced and close to zero. None of the coefficients remain statistically significant at conventional levels, with the exception of the lowest parental education category. The remaining association is small, and parental education is included as a control variable in the main analyses. While balance on observables does not guarantee full

dependent variable to avoid mechanical relationships. For instance, when low parental income is the outcome, other parental income category indicators are omitted.

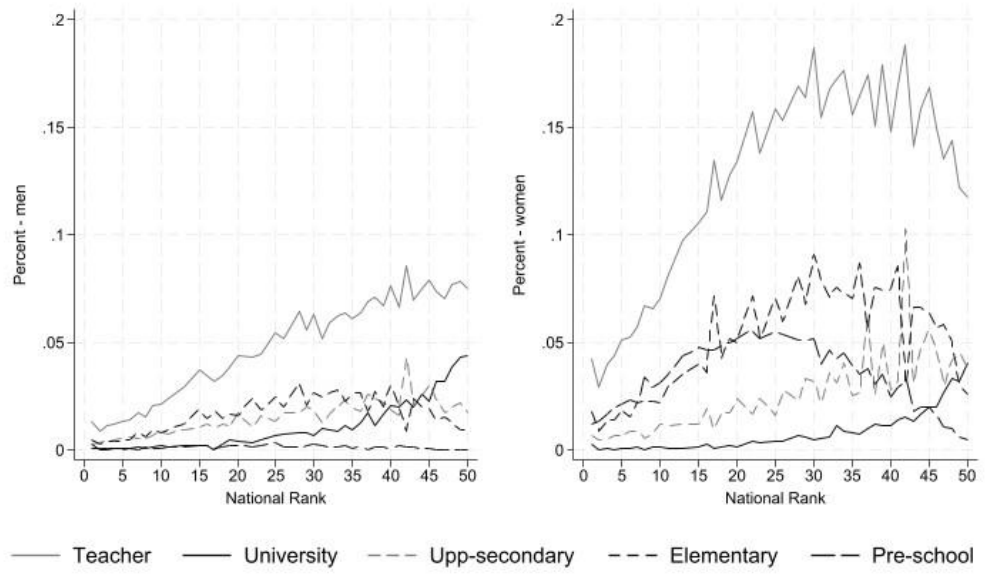
exogeneity, these results are consistent with the identifying assumptions used in recent rank-effect studies.

5. Results

5.1. Teaching outcomes in adulthood across national GPA ranks

Figure 2 illustrates the distribution of men and women across absolute academic position (based on GPA) in four teaching professions: university, upper-secondary, elementary, and pre-school. The figure is descriptive and intended to document how entry into teaching varies across the national achievement distribution by gender.

Figure 2: Distribution of teaching professions across national rank



Note: The x-axis represents national rank based on GPA, and the y-axis shows the percentage of individuals in teaching professions. The figure is divided into two panels: the left panel displays data for men, and the right panel for women. Each panel includes five lines, representing: all teacher, university, upper-secondary, elementary, and pre-school teachers.

A first observation is the substantial gender disparity in teaching professions, with women dominating across all levels, consistent with prior research (Katsarova, 2019). The percentages in the right panel (women) are consistently higher than those in the left panel (men), indicating that women are much more likely than men to hold a teaching profession in midlife.

For men, the share working as teachers is generally low across all national ranks, with only a slight increase for university-level teaching at higher ranks. For other

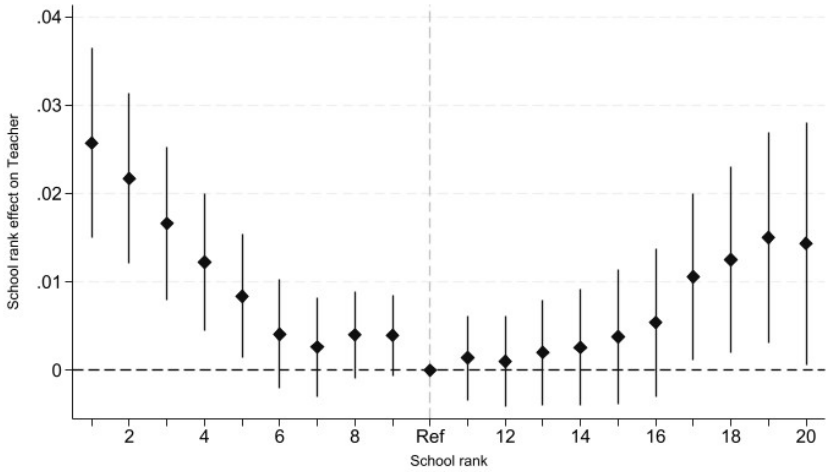
teaching levels, the shares remain low and relatively flat across the national achievement distribution.

For women, the relationship between national rank and teaching professions is more pronounced. The share of women in teaching increases with national achievement for elementary and upper-secondary teaching, although this pattern weakens at the very top of the distribution. This indicates that teaching is less common among women at the very top of the achievement distribution. University teaching becomes more common at higher ranks for women, but the overall percentages are still lower compared to other teaching levels. Pre-school teaching, on the other hand, remains relatively stable across all ranks, besides the top national ranks, for both men and women, although women are far more likely than men to enter this profession.

5.2. Results for having a teaching profession

Figure 3 shows the effect of individuals' relative position in school on the likelihood of being a teacher at the age of 40. The reference category is those in the middle. Given absolute academic ability, compared in the country, individuals at the lower end of the school ability distribution are more likely than others to become teachers, but this effect decreases as their relative position in school increases. In other words, individuals in the bottom 25 percent and the top 20 percent of the school ability distribution are more likely to go in a teaching profession. However, the effect is smaller in the top than in the lower end of the distribution.

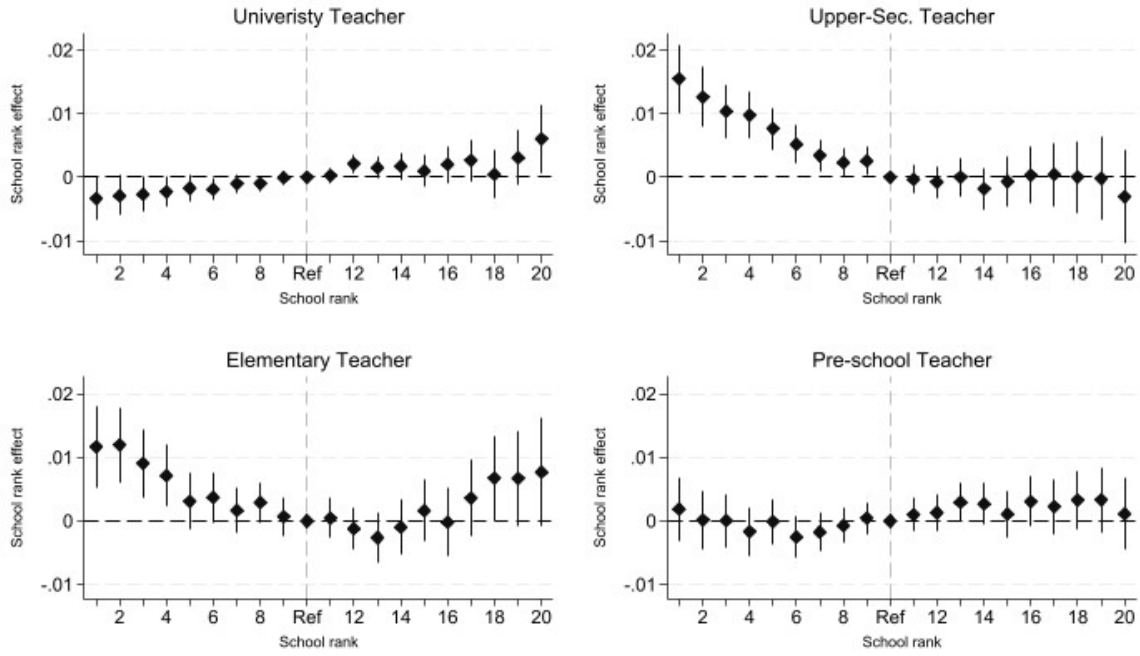
Figure 3: Having a teaching profession



Note: The x-axis shows relative position in school (20 groups), with rank 10 as reference group. While the y-axis represents the estimates of school rank, with 95% confidence intervals.

The semi-U-shaped probability in Figure 3 indicates that both lower and somewhat high ability students are more likely to become teachers. In Figure 4 below we focus on four categories of teaching professions separately: university, upper secondary, elementary, and pre-school. By doing so, it becomes clear that those who have a lower ordinal position in school tend to enter a teaching profession at elementary and upper secondary school. There is a slightly higher probability of becoming a university teacher if the individual was at the very top of the school's ability distribution, although the magnitude is small. Moreover, there is no evidence that relative position in school affects the decision to become a pre-school teacher.

Figure 4. School rank effects on the probability of employment in teaching at age 40, by teaching Level

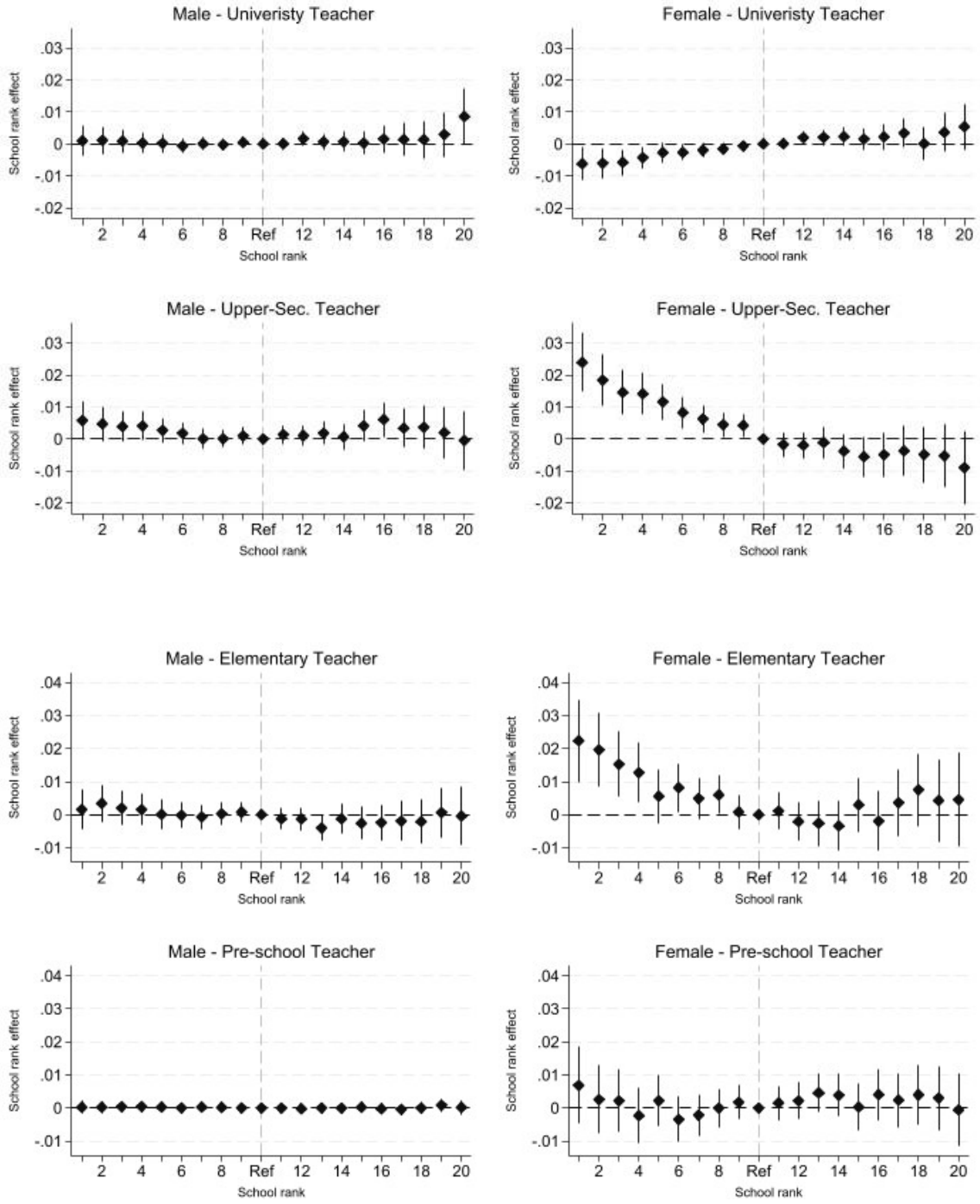


Note: The x-axis shows school rank (20 groups), with rank 10 as reference group. While the y-axis represents the estimates of school rank, with 95% confidence intervals. The figure shows four different categories of teaching professions: university, upper-secondary, elementary, and pre-school level.

5.3. Gender typicality of teaching professions

Previous findings indicate that teaching professions are markedly gender typical, i.e. women are heavily overrepresented in especially lower levels of teaching professions (Katsarova, 2019). It is therefore interesting to perform the same analysis separately for women and men. The gender typicality of teaching professions becomes evident in the analysis presented in Figure 5, as the effect of relative position for men is statistically insignificant at all ranks except the very top for university teachers.

Figure 5: Level of teaching profession divided by gender



Note: The figure shows four different categories of teaching professions: university, upper-secondary, elementary, and pre-school level, by gender. The x-axis shows school rank (20 groups), with rank 10 as reference group. While the y-axis represents the estimates of school rank, with 95% confidence intervals.

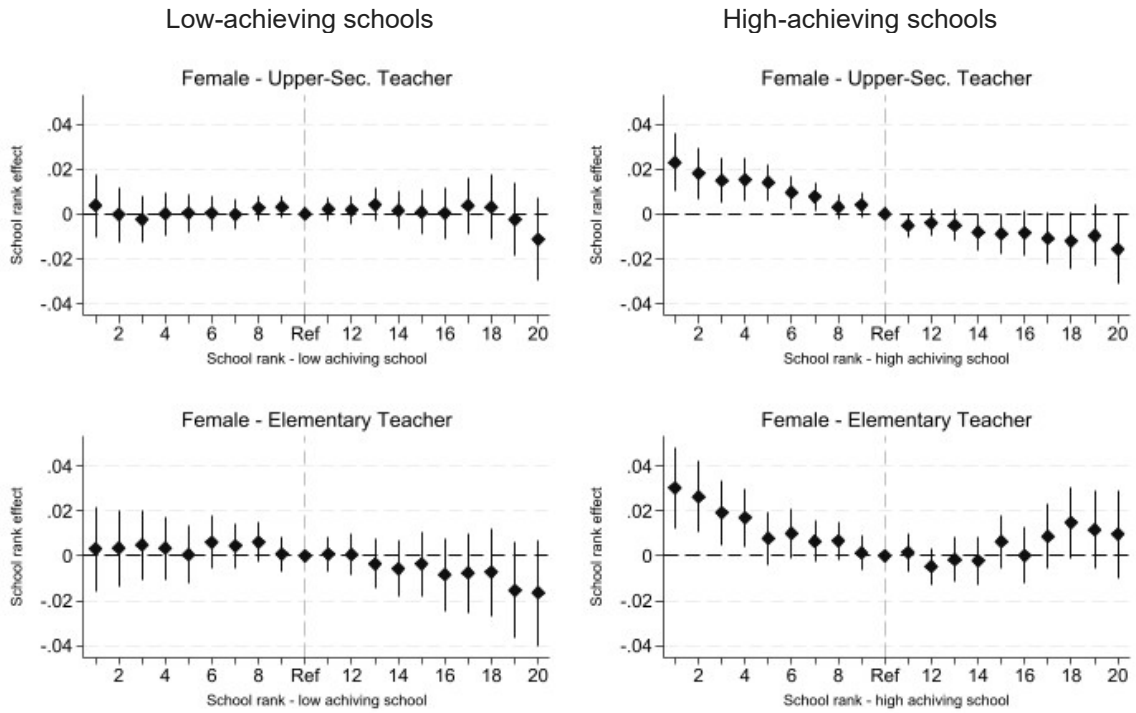
For men at other teaching levels, there is literally no effect of relative position in school on having a teaching position. However, the pattern for women is similar to the pattern reported in Figure 4 above. Thus, women at the lower end of the ability distribution tend to have a higher likelihood of entering elementary and upper secondary school teaching. Here we especially highlight the gender difference in upper secondary school, where women in the lowest positions are clearly more likely than men to become upper secondary school teachers. This further indicates that the earlier presented findings are entirely driven by women. This pattern is also confirmed by the descriptive statistics in Table 1 and Figure 1, which indicate that women dominate especially on lower levels of teaching professions.

5.4. Different schools as a potential channel for teaching profession

The results above indicate that a low position in the school's GPA distribution increases the probability for becoming a teacher, especially for women compare to men. The fact that students with relatively lower positions enter the teaching profession may be somewhat concerning and surprising, given that teaching in Sweden is a certified occupation requiring between 3 to 5.5 years of tertiary education. Teaching at the university level typically requires a PhD degree. The higher proportion of women compared to men in tertiary education may partly explain why individuals with lower positions in school still enter the teaching profession, which requires a tertiary level education. Another possible explanation is that girls attending higher-achieving schools might have a lower relative position in their school's ability distribution, and at the same time a higher probability of entering teaching. This suggests that the effect of ordinal rank on becoming a teacher may differ for women between high-achieving and low-achieving schools. To test this, we divide the schools into high- and low-achieving schools, based on the national overall GPA average of each school.

In Figure 6, we see that women who attended a high-achieving school are more likely to become elementary or upper-secondary school teachers. However, for girls who attended low-achieving schools, there is no effect of relative position. This confirms the explanation that girls in high achieving school are more likely than girls in low achieving schools to become teachers. We find no effect for becoming a university or pre-school teacher (results showed in the appendix figure A1 and figure A2).

Figure 6: Low and high achieving schools



Note: The x-axis represents the school rank, dividing students into 20 ranks, and the y-axis shows the estimated effects of school rank on the likelihood of becoming a teacher, with 95% confidence intervals. The figure is divided into four panels: the top panels represents upper-secondary teachers, with the left panel for low-achieving schools and the right panel for high-achieving schools. The bottom panels show the effects for elementary school teachers, similarly split into low-achieving schools (left) and high-achieving schools (right).

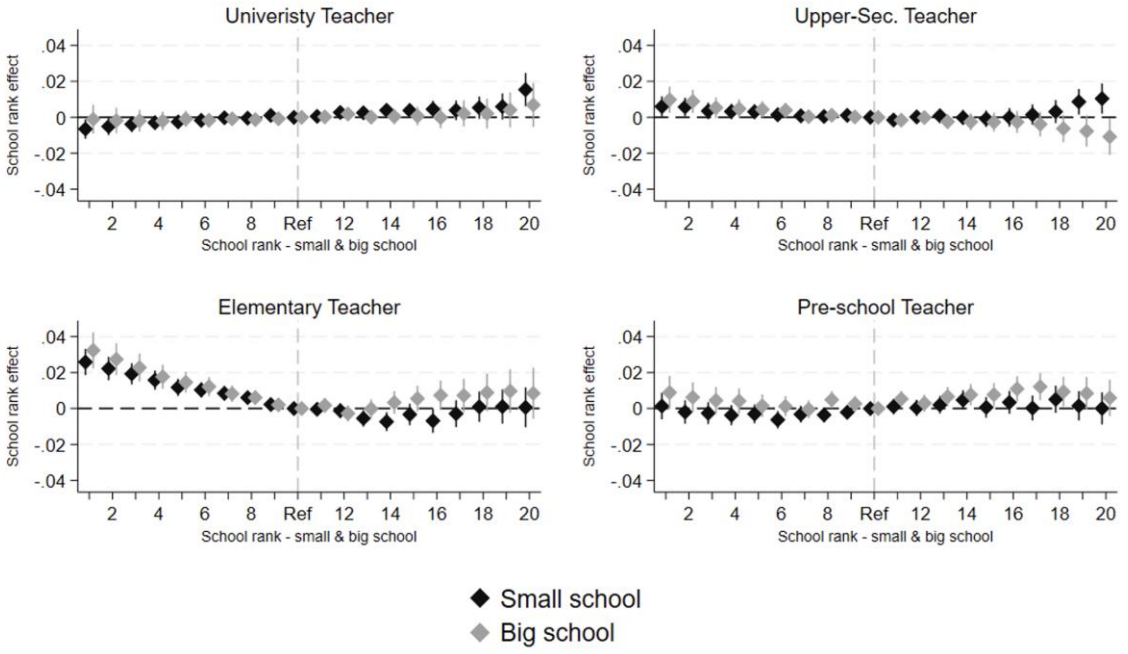
5.5. Robustness checks

School size

A common concern in the ordinal rank literature is whether relative position should be defined at the classroom or school level. In Sweden, most students attend the same school throughout grades 7–9, and often throughout compulsory schooling, implying sustained interaction with peers across classes within the same cohort. Nevertheless, if reference groups are primarily classroom-based, school-level rank may be an imperfect proxy. Because the administrative registers do not contain classroom identifiers for these cohorts, a direct comparison is not possible. Following established practice (e.g., Denning et al., 2023; Dadgar, 2026), a robustness check is therefore conducted by stratifying schools by size. Smaller schools more closely resemble classroom-based environments, while larger schools represent broader peer contexts.

Figure 7 presents the robustness check comparing estimated ordinal-rank effects across small and large schools. For each teaching category, coefficients are plotted separately by school size, using the same within-school rank specification. Across outcomes, the patterns are broadly similar for small and large schools, with overlapping confidence intervals throughout most of the rank distribution. This suggests that the estimated effects are not driven by school size and that ranking students within schools provides comparable information in both contexts. The similarity of estimates supports the interpretation that school-level rank captures relevant reference-group processes, even if theoretically day-to-day comparisons may occur at the classroom level.

Figure 7. School rank effects on the probability of employment in teaching at age 40, by school size.



Note: The figure reports estimated effects of within-school ordinal rank on the probability of working as a teacher at age 40, separately by school size. Rank is measured in ventiles within each school–cohort, with the 10th ventile (Ref) as the omitted category. All models include national GPA rank fixed effects, school-by-cohort fixed effects, and individual background controls. Dots indicate point estimates and vertical bars show 95% confidence intervals. Small and large schools are defined based on cohort size (cutoff described in the text).

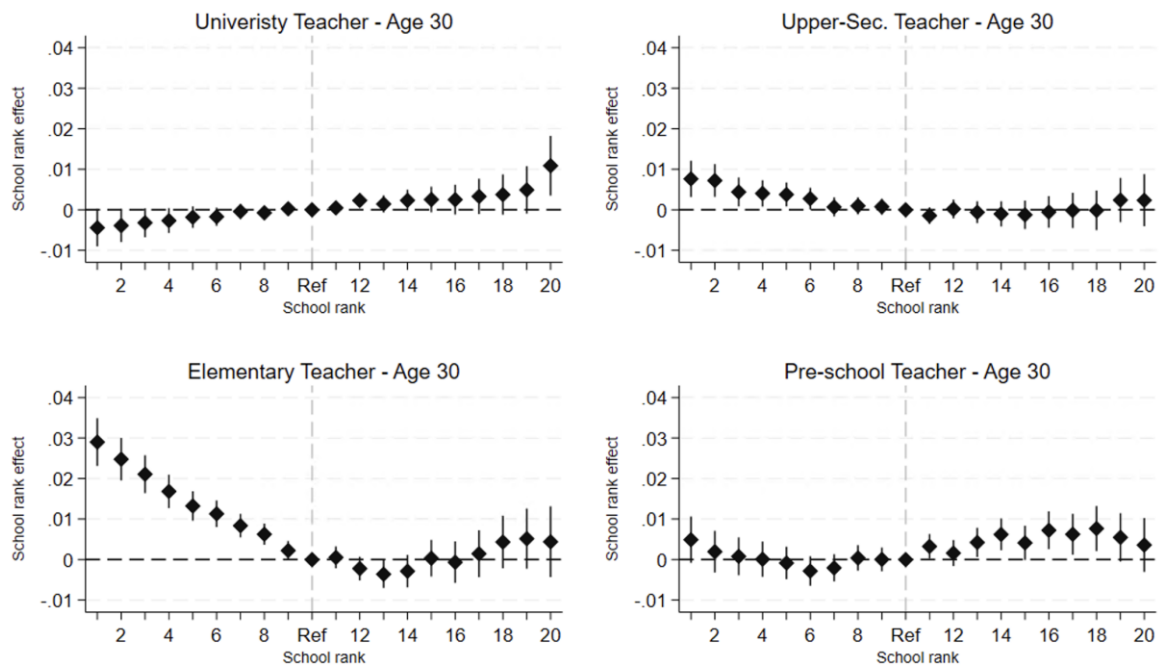
Measuring teaching occupation at age 30

The main analyses define teaching occupation at age 40, reflecting the relatively high average age of teachers and continued occupational mobility into midlife (Neugebauer,

2019; Bihagen et al., 2024). Nevertheless, results could be sensitive to this timing if early-career sorting differs from later occupational outcomes. As a robustness check, teaching occupation is therefore measured at age 30. This allows an assessment of whether relative academic position predicts earlier entry into teaching or whether observed patterns emerge only later in the career.

Figure 8 shows that the overall pattern across school rank positions closely mirrors the age-40 results. In most cases, estimated effects are larger at age 30, particularly for elementary school teachers, suggesting that relative academic position plays an even stronger role in early career sorting into teaching.

Figure 8. School Rank Effects on the Probability of Employment in Teaching at Age 30, by Teaching Level



Note: The x-axis shows school rank (20 groups), with rank 10 as reference group. While the y-axis represents the estimates of school rank, with 95% confidence intervals. The figure shows four different categories of teaching professions: university, upper-secondary, elementary, and pre-school level.

6. Discussion

Across many countries, the teaching profession has undergone substantial changes in recent decades, including declining occupational prestige, relatively weak wage growth, and increasing workloads (Hargreaves, 2009; Johansson, 2023; Kraft and Lyon, 2024). These trends raise concerns given the central role teachers play in shaping students' academic performance, aspirations, and long-term labor market outcomes. While teaching remains a high-status and selective occupation in some countries, such as Finland and Japan (Reimer and Dorf, 2014), evidence from several other contexts points to declining interest among academically high-performing students. This study contributes to this literature by examining an underexplored dimension of selection into teaching: students' relative academic position within their school.

The results show that relative academic position is systematically associated with entry into teaching, even among students with similar absolute academic ability at the national level. Individuals located at the lower end of their school's GPA distribution are more likely to enter teaching by midlife, particularly at the elementary and upper-secondary levels. A weaker but positive affect is also observed at the top of the school rank distribution for university teaching. These patterns are almost entirely driven by women, reflecting the strong gender segregation of the teaching profession, especially at lower educational levels (Katsarova, 2019). For men, relative academic position plays a limited role, except among those at the very top of the school distribution who are more likely to become university teachers. Further analyses indicate that these relative position effects are concentrated among women attending high-achieving schools. Among women from lower-achieving schools, relative rank has small effect with entry into teaching. This finding highlights the importance of school context and suggests that relative comparisons may be particularly salient in academically competitive environments, where signals about standing and future prospects are more pronounced.

One possible interpretation is that academically competitive school environments increase the informational content of relative academic position for subsequent educational and occupational choices. In high-achieving schools, students who rank lower within their cohort may receive stronger signals about the relative returns to highly selective academic or professional tracks, even when their absolute

academic performance remains high at the national level. For women in these environments, entry into teaching may therefore reflect a rational response to relative position, as the profession requires substantial tertiary education and certification but may be less sensitive to relative academic rank than alternative high-status careers. By contrast, in lower-achieving schools, relative rank may be less salient or less informative for occupational sorting, which could explain the absence of rank effects in these contexts.

These findings are also consistent with sociological theories of reference groups and relative deprivation (Kelley, 1952; Merton, 1968; Jonsson and Mood 2008). Students evaluate their performance and prospects relative to proximate peers rather than absolute standards, and these comparisons appear to shape long-term career trajectories. Lower-ranked students may update beliefs about comparative advantage and perceived attainability of different occupations, making teaching, particularly at non-university levels, a relatively attractive option. Conversely, higher-ranked students in competitive environments may view university teaching as a feasible continuation of academic success, while opting out of other teaching careers. These results also align closely with insights from educational psychology, particularly the Big Fish in a Little Pond Effect (Marsh and Parker, 1984; Marsh et al., 2008).

While the use of population-wide administrative data allows long-term tracking of cohorts across the entire Swedish school system, the absence of subjective measures limits direct testing of underlying mechanisms. For example, differential encouragement from teachers, role-model effects, or early specialization decisions cannot be directly observed. Another plausible explanation is that declining occupational status and rewards in teaching reduce its appeal among the highest-achieving students (Johansson, 2023), despite policy efforts aimed at professionalization and status enhancement, such as certification reforms (Lilja, 2011) and leadership reforms (Berg and Englund, 2016).

All in all, the findings suggest that relative academic position within schools is an important, and previously overlooked, factor shaping selection into the teaching profession. Understanding how school-based comparisons influence career choices provides new insight into the processes underlying teacher recruitment and the evolving composition of the teaching workforce. Future research should examine whether these patterns translate into differences in teacher effectiveness and student

outcomes, and how policy interventions might mitigate unintended consequences of relative evaluation within schools.

During the preparation of this work, the author(s) used ChatGPT (GPT-5) in order to assist with language editing and stylistic improvements. After using this tool/service, the author(s) reviewed and edited the content as needed and take full responsibility for the content of the published article.

References:

Alatalo, T., Hansson, Å., & Johansson, S. (2024). Teachers' academic achievement: evidence from Swedish longitudinal register data. *European Journal of Teacher Education*, *47*(1), 60-80.

Andersson, L., Dadgar, I., & Shahbazian, R. (2025). Does the Bigger-Fish-in-the-Pond Hatch More Fry? A Register-Based Analysis of the Causal Effect of Students Grade Rank Position in Schools on Completed Fertility, Marriage, and Divorce by Age 40.

Bacolod, M. P. (2007). Do alternative opportunities matter? The role of female labor markets in the decline of teacher quality. *The Review of Economics and Statistics*, *89*(4), 737-751.

Blazar, D., & Kraft, M.A. (2017). Teacher and teaching effects on students' attitudes and behaviors. *Educational evaluation and policy*

Brookhart, S.M. and Freeman, D.J., (1992). Characteristics of entering teacher candidates. *Review of educational research*, *62*(1), pp.37-60.

Chen, L., Lin, J., Wang, Z., & Wu, G. (2025). The impact of student's ordinal cognitive ability rank on school violence: Evidence from China. *Economic Modelling*, *143*, 106967.

Chetty, R., Friedman, J.N., & Rockoff, J.E. (2014). Measuring the impacts of teachers II: Teacher value-added and student outcomes in adulthood. *American economic review*, *104*(9), 2633-2679.

Coleman, J.S., et al. (1966). *Equality of educational opportunity*. Washington D.C.: US Government Printing Office

Comi, S., Origo, F., Pagani, L., & Tonello, M. (2021). Last and furious: Relative position and school violence. *Journal of Economic Behavior & Organization*, *188*, 736-756.

Dadgar, I. (2026). The effect of ordinal rank in school on educational achievement and income in Sweden. *Economics of Education Review*, *110*, 102737.

Davis, J. A. (1966). The campus as a frog pond: An application of the theory of relative deprivation to career decisions of college men. *American journal of Sociology*, *72*(1), 17-31.

Delaney, J. M., & Devereux, P. J. (2021). The economics of gender and educational achievement: Stylized facts and causal evidence. In *Oxford Research Encyclopedia of Economics and Finance*.

Delaney, J.M., & Devereux, P.J. (2022). Rank effects in education: What do we know so far?. *Handbook of Labor, Human Resources and Population Economics*, 1-24.

Denning, J.T., Murphy, R., & Weinhardt, F. (2023). Class rank and long-run outcomes. *Review of Economics and Statistics*, *105*(6), 1426-1441.
Denzler, S. and Wolter, S.C., (2009). Sorting into teacher education: How the institutional setting matters. *Cambridge Journal of Education*, *39*(4), pp.423-441.
Downey, D.B., & Pribesh, S. (2004). When race matters: Teachers' evaluations of students' classroom behavior. *Sociology of Education*, *77*(4), 267-282.
Elsner, B., & Isphording, I. E. (2017). A big fish in a small pond: Ability rank and human capital investment. *Journal of Labor Economics*, *35*(3), 787-828.
Elsner, B., Isphording, I. E., & Zölitz, U. (2021). Achievement rank affects performance and major choices in college. *The Economic Journal*, *131*(640), 3182-3206.
Fredriksson, P., & Öckert, B. (2008). The supply of skills to the teacher profession. *Scandinavian Journal of Economics*, *110*(2), 277-296.
Fredriksson, P., & Öckert, B. (2014). Life-cycle effects of age at school start. *The Economic Journal*, *124*(579), 977-1004.
Grönqvist, E., & Vlachos, J. (2016). One size fits all? The effects of teachers' cognitive and social abilities on student achievement. *Labour Economics*, *42*, 138-150.
Guarino, C.M., Santibanez, L., & Daley, G.A. (2006). Teacher recruitment and retention: A review of the recent empirical literature. *Review of educational research*, *76*(2), 173-208.
Halldén, K. (2008). The Swedish educational system and the ISCED-97.
Han, E. S. (2021). Teacher wage penalty and decrease in teacher quality: Evidence from career-changers. *Labor Studies Journal*, *46*(3), 251-285.
Hanushek, E.A., & Pace, R.R. (1995). Who chooses to teach (and why)?. *Economics of education review*, *14*(2), 101-117.
Hanushek, E.A., & Rivkin, S. G. (2006). Teacher quality. *Handbook of the Economics of Education*, *2*, 1051-1078.
Hanushek, E.A., Piopiunik, M., & Wiederhold, S. (2019). The value of smarter teachers: International evidence on teacher cognitive skills and student performance. *Journal of Human Resources*, *54*(4), 857-899.
Hargreaves, L. (2009). The status and prestige of teachers and teaching. In *International handbook of research on teachers and teaching* (pp. 217-229). Boston, MA: Springer US.
Heinz, M. (2015). Why choose teaching? *Educational research and evaluation*, *21*(3), 258-297.
Holmlund, H., Sjögren, A., & Öckert, B. (2020). *Jämlikhet i möjligheter och utfall i den svenska skolan* (No. 2020: 7). IFAU-Institute
Hoxby, C. M., & Leigh, A. (2004). Pulled away or pushed out? Explaining the decline of teacher aptitude in the United States. *American Economic Review*, *94*(2), 236-240.
Hyman, H. (1942). The Psychology of Status. *Archives of Psychology/Columbia Universit*
Jacinto, A., & Gershenson, S. (2021). The intergenerational transmission of teaching. *American Educational Research Journal*, *58*(3), 635-672.
Jackson, C. K., Rockoff, J. E., & Staiger, D. O. (2014). Teacher effects and teacher-related policies. *Annu. Rev. Econ.*, *6*(1), 801-825.
Johansson, (2023). Teacher Recruitment in Sweden Over the Last Two Decades: How Has Entering Teachers' GPA Changed Over Time?. In *Effective Teaching Around the World* (pp. 85-96).
Jonsson, J.O., & Mood, C. (2008). Choice by contrast in Swedish schools: How peers' achievement affects educational choice. *Social forces*, *87*(2), 741-765.
Katsarova, I., (2019). Teaching careers in the EU: Why boys do not want to be teachers, EPRS: European Parliamentary Research Service. Belgium.
Kim, J., & Liu, R. (2023). A tale of tails: Nonlinear effects of ability rank on adolescent psychological well-being. *Social Science Research*, *111*, 102856.

Kim, J., Liu, R., & Zhao, X. (2023). A big (male) fish in a small pond? The gendered effect of relative ability on STEM aspirations under stereotype threat. *European Sociological Review*, *39*(2), 177-193.
Kelley, H.H. (1952). “Two Functions of Reference Groups.” Pp. 410–14 in *Readings in Social Psychology*, edited by Swanson G. E., Newcomb T. M., Hartley E. L. New York: Holt.
Kiessling, L., & Norris, J. (2023). The long-run effects of peers on mental health. *The Economic Journal*, *133*(649), 281-322.
Kraft, M. A., & Lyon, M. A. (2024). The rise and fall of the teaching profession: Prestige, interest, preparation, and satisfaction over the last half century. *American Educational Research Journal*, *61*(6), 1192-1236.
Krieg, J.M. (2006). Teacher quality and attrition. *Economics of Education review*, *25*(1), 13-27.
Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of vocational behavior*, *45*(1), 79-122.
Lilja, P. (2011). Lärarlegitimation-professionalisering med förhinder? *Arbetsmarknad & Arbetsliv*, *17*(4), 29-42.
Marsh, H.W. (1987). The big-fish-little-pond effect on academic self-concept. *Journal of educational psychology*, *79*(3), 280.
Marsh, H.W., & Parker, J.W. (1984). Determinants of student self-concept. *Journal of personality and social psychology*, *47*(1), 213.
Marsh, H.W., et al. (2008). The big-fish–little-pond-effect stands up to critical scrutiny. *Educational psychology review*, *20*, 319-350.
Merton, R. K. (1968). *Social theory and social structure*. Simon and Schuster.
Murphy, R., & Weinhardt, F. (2020). Top of the class: The importance of ordinal rank. *The Review of Economic Studies*, *87*(6), 2777-2826.
Neugebauer, M. (2013). Wer entscheidet sich für ein Lehramtsstudium–und warum? *Zeitschrift für Erziehungswissenschaft*, *16*(1), 157-184.
Neugebauer, M. (2019). Teachers: Their characteristics and their role in the education system. *Research handbook on the sociology of education*, 365-382.
Pagani, L., Comi, S., & Origo, F. (2021). The effect of school rank on personality traits. *Journal of Human Resources*, *56*(4), 1187-1225.
Perryman, J., & Calvert, G. (2020). What motivates people to teach, and why do they leave? *British Journal of Educational Studies*, *68*(1), 3-23.
Podgursky, M. J., & Springer, M. G. (2007). Teacher performance pay: A review. *Journal of policy analysis and management*, *26*(4), 909-949.
Reimer, D., & Dorf, H. (2014). Teacher recruitment in context: Differences between Danish and Finnish beginning teacher education students. *Scandinavian Journal of Educational Research*, *58*(6), 659-677.
Richardson, P. W., & Watt, H. M. (2006). Who chooses teaching and why? Profiling characteristics and motivations across three Australian universities. *Asia-Pacific Journal of Teacher Education*, *34*(1), 27-56.
Rivkin, S. G., Hanushek, E. A., & Kain, J. F. (2005). Teachers, schools, and academic achievement. *econometrica*, *73*(2), 417-458.
Rockoff, J.E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *American economic review*, *94*(2), 247-252.
Sacerdote, B. (2011). Peer effects in education: How might they work, how big are they and how much do we know thus far?. In *Handbook of the Economics of Education* (Vol. 3, pp. 249-277).
Svensson, F. (2017). Lärarstudenternas gymnasiebetyg, avhopp och studieprestation.

Thornberg, R., Wänström, L., Lindqvist, H., Weurlander, M., & Wernerson, A. (2023). Motives for becoming a teacher, coping strategies and teacher efficacy among Swedish student teachers. *European Journal of Teacher Education*, 1-19.

Toropova, A., Myrberg, E., & Johansson, S. (2021). Teacher job satisfaction: the importance of school working conditions and teacher characteristics. *Educational review*, *73*(1), 71-97.

Valdés, M. T. (2024). The effect of the month of birth on academic achievement. *European Societies*, *26*(4), 1094-1120

Appendix

Figure A1 Estimated School Rank Effects on Teaching Employment at Age 40 Among Females: Low- vs. High-Achieving Schools

Low achiving school	High achiving school

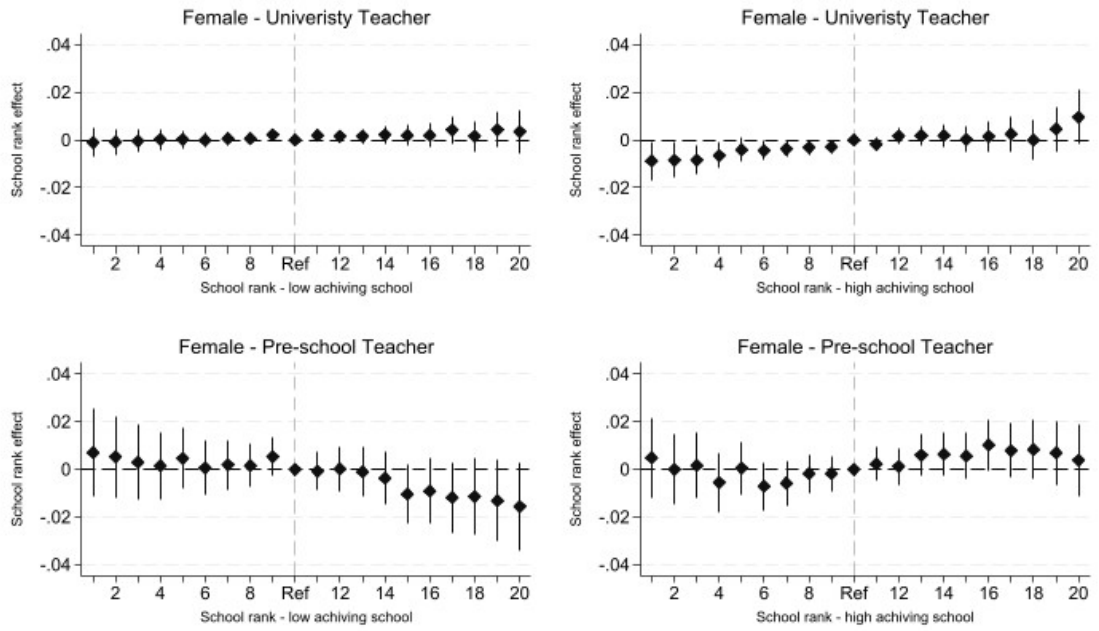


Figure A2 Estimated school rank Effects on teaching employment at age 40 among males: Low- vs. High-Achieving Schools

Low achieving school	High achieving school