Higher Education Mismatch: a descriptive analysis from Colombia

David A. Ortiz Escobar
Anderson Tami-Patiño
Omar David Vanegas-Virgüez

No 92/2026
Mayo de 2026

DOCUMENTOS de TRABAJO

Universidad Externado de Colombia

Higher Education Mismatch: a descriptive analysis from Colombia

David A. Ortiz Escobar[1] Anderson Tami-Patiño[2] Omar David Vanegas-Virgüez[3]

April 28, 2026

Abstract

We provide the first descriptive evidence on the mismatch between students' academic achievement and the selectivity of the higher-education programs they attend in Colombia. Using administrative microdata, we merge Saber 11 cohorts from 2014–2018 with Saber Pro takers from 2016–2023 to determine students' enrolled programs, yielding a matched sample of 438,530 students. Following recent work on student–program match, we define program selectivity using the median Saber 11 score of enrolled students. Then, we construct an individual match score as the difference between the program's percentile rank and the student's percentile rank. Under a standard classification in which students are considered matched when the match score lies in [−20, 20], 68.5% of students are matched, 12.2% are undermatched, and 19.2% are overmatched. We then examine how match varies across student groups and estimate conditional and unconditional quantile regressions to characterize heterogeneity across the distributions of academic achievement and match. Socioeconomic status is strongly related to match, with larger gaps among lower-achieving students, and gender differences emerge primarily below the median of the achievement distribution. Overall, the results highlight substantial inequality in sorting across programs and suggest that improving student–program matching may be important for equity and social mobility.

Keywords: Higher education inequality; Student mismatch; Undermatch

JEL codes: I23; I24; C21; D63

[1]Department of Economics, Universidad Externado de Colombia. Email: david.ortiz@uexternado.edu.co

[2]KIMEP University, College of Social Science, Department of Economics. Email: a.tamipatino@kimep.kz

[3]Department of Economics, Florida International University, Miami, FL 33199, USA. Email: ovanegas@fiu.edu

1 Introduction

Enrollment in higher education (HE) in Colombia has grown steadily over the past two decades. The gross enrollment rate rose from 49.82% in 2014 to 57.53% in 2024 (Ministerio de Educación Nacional de Colombia, 2025). This increase is observed both in four- to five-year programs, typically offered by universities, and in two-year programs, typically offered by technical and technological institutions. Despite these gains in access, two broader questions remain central: who enrolls in HE programs in Colombia, and has this expansion been accompanied by improvements in quality?

Regarding the first question, a large body of international research examines how socioeconomic background shapes access to higher education. Early work for the case of the US emphasized the roles of race and ethnicity in educational opportunities (Bowen & Bok, 2016; Kane, 1994; Black et al., 2020), while later studies documented persistent barriers to college entry for disadvantaged and minority students (Cameron & Heckman, 2001; Card & Krueger, 2005). In Colombia, the evidence suggests that financial constraints limit students' prospects of enrolling in HE programs and that policies aimed at relaxing these constraints increase HE enrollment, at least among academically strong students (Londoño-Vélez et al., 2020; Melguizo et al., 2016). Other key correlates of HE enrollment include mothers' education and gender, as women have a slightly higher probability than men of enrolling in higher education (Barbosa-Camargo et al., 2023; González-Espitia, 2023).

On the second question, concerns have emerged about the quality of the expansion in programs and institutions. In 2024, only about one third of universities were accredited as high-quality institutions by the Ministry of Education (97 out of 305) (Ministerio de Educación Nacional de Colombia, 2025). Moreover, higher-education programs in Colombia are highly heterogeneous in selectivity, academic effectiveness, and labor-market outcomes (Camacho et al., 2026; Dinarte-Diaz et al., 2024; MacLeod et al., 2017).

This paper addresses a concern that follows from the two previous questions: how students sort into the higher-education system. In particular, we study mismatch, defined as the situation in which students enroll in programs or institutions that are more or less selective (or of higher or lower quality) than those for which they are academically qualified (Bowen et al., 2009; Hoxby & Avery, 2012; Bastedo & Flaster, 2014). In this context, undermatch (overmatch) refers to cases in which academically strong (weak) students attend programs that are less (more) selective and of lower (higher) quality than their academic performance would predict.

Mismatch in higher education (HE) has been studied in contexts such as the United Kingdom (Campbell et al., 2022; Maragkou, 2020; Kozman & Sanders, 2019), the United States (Hoxby & Avery, 2012; Dillon & Smith, 2017; Smith et al., 2013; Deutschlander, 2017; Cortes & Lincove, 2019), Sri Lanka (de Silva, 2025), and Chile (Carpentier et al., 2022). However, evidence for Colombia remains scarce, and to our knowledge no mismatch measure has yet been implemented. Related work by Londoño-Vélez et al. (2020) shows that programs such as Ser Pilo Paga, which relax financial constraints, can improve not only access to HE but also program choice, as most beneficiaries enrolled in highly selective and reputable universities. More broadly, the presence of test-score-based sorting and reputational mechanisms in Colombia suggests that selectivity signals may matter for labor-market outcomes (MacLeod et al., 2017); consequently, undermatch may have real economic consequences and may constitute a barrier to social mobility. More generally, the sorting patterns observed in Colombian education resonate with what some authors describe as an "educational apartheid" that begins early in the schooling cycle (Fergusson & Flórez, 2021).

This paper addresses the lack of systematic evidence on mismatch in Colombian higher education and makes two main contributions. First, we construct, to our knowledge, the first measure of mismatch between students' academic achievement and the selectivity of the higher-education programs they attend in Colombia. Following Campbell et al. (2022), our measure compares each student's academic achievement, as measured by the Saber 11 exam, to program selectivity, proxied by the median Saber 11 score of enrolled students.

Second, we investigate the mechanisms underlying mismatch by examining how socioeconomic, demographic, and geographic factors shape the likelihood that students enroll in programs below (undermatch) or above (overmatch) their academic potential. To this end, we implement three complementary empirical approaches, closely following Campbell et al. (2022). We first describe the joint distribution of student-achievement percentiles and program-selectivity percentiles, highlighting how sorting patterns vary across student groups. We then estimate the association between mismatch and individual covariates using conditional quantile regressions (CQR), which characterize heterogeneity across the distribution of academic achievement (Saber 11 score).

Finally, to focus on students at the extremes (severe undermatch and overmatch), we replicate the analysis using unconditional quantile regressions (UQR).

The analysis reveals several broad patterns. The CQR results indicate that socioeconomic status (SES), proxied by students' stratum, is strongly associated with match: higher SES is linked to higher match scores, reflecting less undermatch and more overmatch. This association weakens among high-achieving students (those with higher Saber 11 scores). Gender also matters, but only below the median of the Saber 11 distribution: male students exhibit higher match scores than female students in the lower half of the achievement distribution. Mothers' education is positively associated with match as well, but the relationship is concentrated among students in the lower part of the Saber 11 distribution (roughly the first third). By contrast, fathers' education and urban residence show no clear or systematic association with match.

The UQR results indicate that among severely overmatched students, being male, having higher SES, and having more educated parents are all associated with higher match scores. Among severely undermatched students, being male is also associated with higher match scores, whereas, somewhat counterintuitively, higher SES is associated with lower match scores.

The paper is organized as follows. Section 2 describes the Colombian education and socioeconomic stratification systems. Section 3 presents the data and key sample characteristics. Section 4 explains the construction of our match measure and outlines the empirical approach. Section 5 discusses the main results. Section 6 concludes.

2 Institutional Background

2.1 Colombian Education System

The Colombian higher-education system comprises universities (roughly comparable to four-year colleges in the U.S.) and technical or technological institutions (which resemble U.S. community colleges). These institution types differ in quality. For instance, among the 107 institutions holding high-quality accreditation, only 27 are technical or technological. The accreditation process is overseen by the Ministry of Education through the National Accreditation Council, and accreditation status plays a central role in differentiating institutional prestige.

Higher education institutions (HEIs) can be public or private. As of December 2025, Colombia had 116 public and 245 private HEIs, with a significant concentration in Bogotá, where 122 institutions are located (Ministerio de Educación Nacional de Colombia, 2025). This geographic imbalance could have implications for access and the likelihood of students matching with institutions according to their academic achievement.

Each HEI and program has its own admission protocols, but admission to most HEIs relies on students' performance on the standardized Saber 11 exam.[4] Although the exam's methodology has changed over time, it is always taken in the final year of secondary school (11th grade) and is mandatory for high school graduation (Ministerio de Educación Nacional de Colombia, 2010). Since the second semester of 2014, the competencies assessed have been Critical Reading, Mathematics, Natural Sciences, Social Sciences, and English (ICFES, 2014). The Colombian Institute for Educational Evaluation (ICFES), which administers the exam, computes the global score as follows:

$$GS = \frac{3\times M + 3\times CR + 3\times NS + 3\times SC + 1\times E}{13} \quad (1)$$

where *M* is Mathematics, *CR* is Critical Reading, *NS* is Natural Sciences, *SC* is Social Sciences, and *E* is English.

This score was also a key criterion in programs such as Ser Pilo Paga (2014–2017) (Ministerio de Educación Nacional de Colombia, 2018) and Generación E (2018–2023) (Ministerio de Educación Nacional de Colombia, 2023), which awarded financial support to students admitted to high-quality HEIs. These policies illustrate how exam performance directly influences both access to higher education and the alignment between student achievement and institutional quality.

2.2 Socioeconomic Stratification of Households

While exam scores determine admission opportunities, socioeconomic conditions shape students' ability to take advantage of them. In Colombia, these conditions are often analyzed through the stratification system, which classifies households based on geographical characteristics and their urban or rural surroundings. Households are grouped into six strata that signal differing economic

[4] A small number of public institutions administer their own admission tests.

capacities. Since 1983, this system has primarily been used to apply differentiated charges for residential public utility services (Alzate, 2006).

Households in stratum 1 are considered relatively poor, while those in stratum 6 are considered relatively wealthy. This classification provides a useful proxy for socioeconomic status, which interacts with academic achievement to influence the match between students and the quality of the higher education programs they enter.

3 Data and Descriptive Statistics

To identify the higher-education (HE) program attended by each student who enrolls in HE, we merge the Saber 11 and Saber Pro microdata, which are publicly available from ICFES. Saber Pro is a mandatory standardized exam taken at the end of undergraduate studies. We do not use the Saber Pro score; instead, we exploit the associated information on the student's HE program.

For Saber 11, we use cohorts from 2014 to 2018, since exam content and scoring before 2014 differed substantially. Over this period, approximately 2.9 million students took Saber 11. We then match these records to students who took Saber Pro between 2016 and 2023, yielding a merged sample of 438,530 students.

Table A.1 reports descriptive statistics for the matched sample of students who took Saber 11 and subsequently enrolled in an HE program. About 90% resided in urban areas; roughly 40–50% had parents with complete or incomplete HE; and 23% belonged to stratum 1. Nearly all students attended calendar A schools (which begin the academic year in January), and only a very small share attended bilingual schools.

4 Methodology

4.1 Measurement of Match in HE

The concept of undermatch refers to situations in which academically strong students, often from disadvantaged backgrounds, do not enroll in highly selective universities, despite being qualified to do so (Smith et al., 2013; Hoxby & Avery, 2012; Ovink et al., 2018). More recently, the literature has expanded to the broader notion of mismatch, which also considers cases of overmatch, where students enroll in programs for which they are academically underprepared (Campbell et al., 2022).

Following Campbell et al. (2022), we construct an individual-level measure of match by comparing each student's academic standing (measured by Saber 11) with the selectivity of the higher education program she ultimately attends. Specifically, we compare the student's Saber 11 percentile rank to the percentile rank of her program, defined by the median Saber 11 score of its enrolled students.

Let $S11_{iy}$ denote the Saber 11 score of student i, who took the exam in year y. We rank all students within each year y by their Saber 11 scores and assign them a percentile P_i. For each university program u in year y, we compute the median Saber 11 score $MS11_{uy}$, rank programs accordingly, and assign each program a percentile P_u.

We define the match indicator as:

$$m_i = P_u - P_i \quad (2)$$

A value of zero indicates a perfect match between the student and her program. Positive values indicate overmatch (the student is less qualified than the program's typical entrant), while negative values indicate undermatch (the student is more qualified than the program's typical entrant).

4.2 Descriptive Analysis

Our main objective is to assess the extent to which match differs between urban and rural students, male and female students, high- and low-SES students, and students with higher versus lower parental education.

To study these gaps, we begin by plotting students' academic-achievement percentiles against program-selectivity percentiles and comparing the resulting distribution to the 45° line that represents perfect matching. Specifically, we examine how these distributions vary across student characteristics.

4.3 Conditional Quantile Regression

We employ Conditional Quantile Regression (CQR) to estimate the relationship between each covariate and match across deciles of students' academic achievement. We expect the coefficients to decline among high-achieving students, while the influence of covariates on match should be stronger among low-achieving students.

In the baseline OLS specification represented in the following equation β is the vector of coefficients capturing the relationship between covariates X_i and the outcome m_i for individual *i*:

$$m_i = \alpha + \beta' X_i + \varepsilon_i \quad (3)$$

Following Campbell et al. (2022) and the approach introduced by Koenker & Bassett (1978), instead of estimating equation (3) for the entire sample, we estimate it separately for each decile of academic achievement:

$$m_{id} = \alpha_d + \beta_d' X_{id} + \varepsilon_{id} \quad (4)$$

where d denotes the decile. Thus, rather than obtaining a single coefficient vector, we obtain ten sets of coefficients. For example, β_1 represents the relationship between *X* and *m* for students in the first decile of academic achievement. Importantly, in equation (4), the distribution of match is conditioned on X_i.

4.4 Unconditional Quantile Regression

Campbell et al. (2022) employ Unconditional Quantile Regression (UQR) to estimate match gaps at fixed points of the overall match distribution. Under CQR, men are compared only to men and women only to women, since individuals are ranked within gender-specific conditional distributions. In contrast, UQR ranks men and women relative to the entire sample, allowing gender gaps to be evaluated at the same quantiles of the unconditional match distribution.

We follow Firpo et al. (2009) to compute the UQR coefficients. First, we determine the value of match at the chosen quantile,[5] then estimate the kernel density of match at that quantile.[6]

The third step is to calculate the recentered influence function (RIF) for the *τ-th* quantile of match:

$$RIF(m_i, q_\tau, F_m) = q_\tau + \frac{\tau - 1\{m_i \leq q_\tau\}}{f_m(q_\tau)} \quad (5)$$

[5]That is, the cutoff point in the distribution of match such that a fraction τ of the sample lies below it.
[6]This involves applying a kernel function that assigns higher weights to observations closer to the quantile value and lower weights to those further away.

where $q\tau$ denotes the value of match at the τ-*th* quantile, $1\{m_i \leq q\tau\}$ is an indicator equal to 1 if $m_i \leq q\tau$ and 0 otherwise, and $f_m(q\tau)$ is the probability density of match evaluated at $q\tau$.

Finally, we estimate the following regression by OLS:

$$RIF(m_i, q_\tau, F_m) = \varphi_\tau + \lambda_\tau' X_i + \nu_i \quad (6)$$

where $\lambda\tau$ is the parameter of interest, capturing the effect of covariates X_i on the unconditional quantile τ of match.

5 Results

5.1 Descriptive Results

Figure 1 presents the kernel density estimate of the match between student's Saber 11 score and the program selectivity. Following the rule proposed by Dillon & Smith (2017) and also implemented by Campbell et al. (2022), we classify students as matched when their match score lies in [−20, 20]. Under this definition, 68.5% of students are correctly matched, while 12.2% are undermatched and 19.2% are overmatched. These shares contrast with the estimates for the UK and the US: in the UK, Campbell et al. (2022) report that 64% of students are matched, 16% are undermatched, and 16% are overmatched, whereas Dillon & Smith (2017) find that in the US 50% of students are matched, 25% are undermatched, and 25% are overmatched. We can also compare our results with the Chilean case: using a closely related methodology, Carpentier et al. (2022) find that 24% of higher-education students are undermatched in Chile.

Figure 1: Density Plot of Match

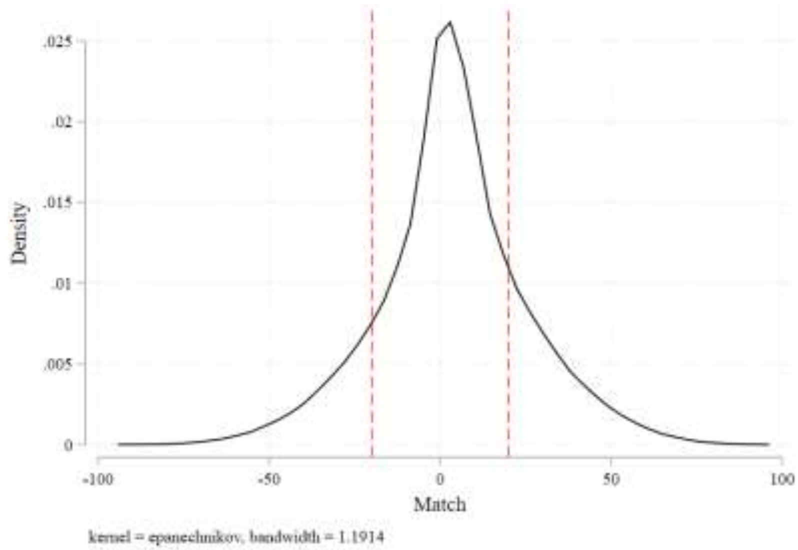
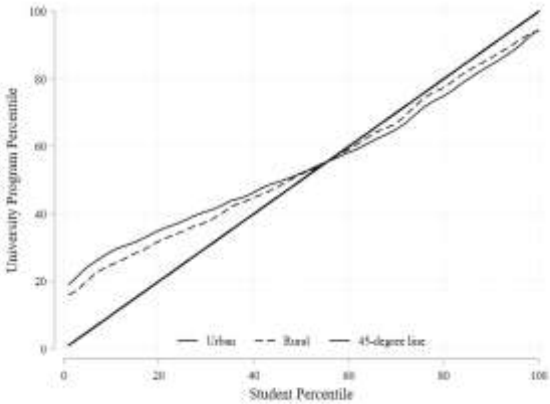


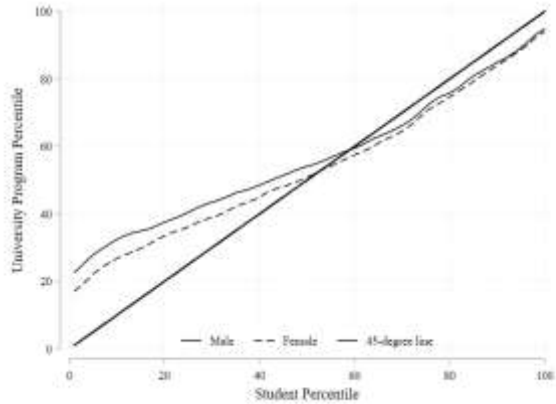
Figure 2 plots students' percentile rank on the Saber 11 exam against the percentile rank of program selectivity. The solid 45° line indicates a perfect match. As expected, given the construction of match, students at the bottom of the Saber 11 distribution are more likely to be overmatched, whereas students at the top are more likely to be undermatched.

Each panel compares match patterns across population groups. Overall, students in urban areas tend to overmatch more than students from rural schools. Among students with above-average Saber 11 scores, rural students tend to undermatch slightly less than their urban counterparts. Male students overmatch more than female students, but this gender gap largely disappears among high-achieving students. Finally, socioeconomic status is strongly related to match: students in stratum 6 are more likely to be overmatched and less likely to be undermatched than students in stratum 1, consistent with previous findings (Dillon & Smith, 2017; Campbell et al., 2022; Carpentier et al., 2022).

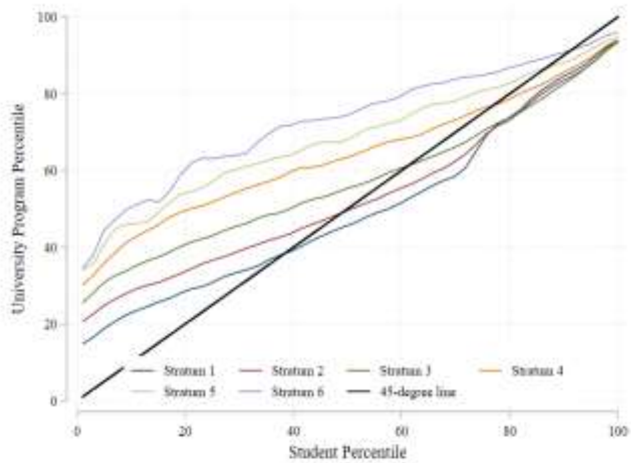
Figure 2: Distribution of Student Achievement and Program Quality by Different Student Characteristics

A) Urban vs Rural *B) By Gender*





C) By Stratum

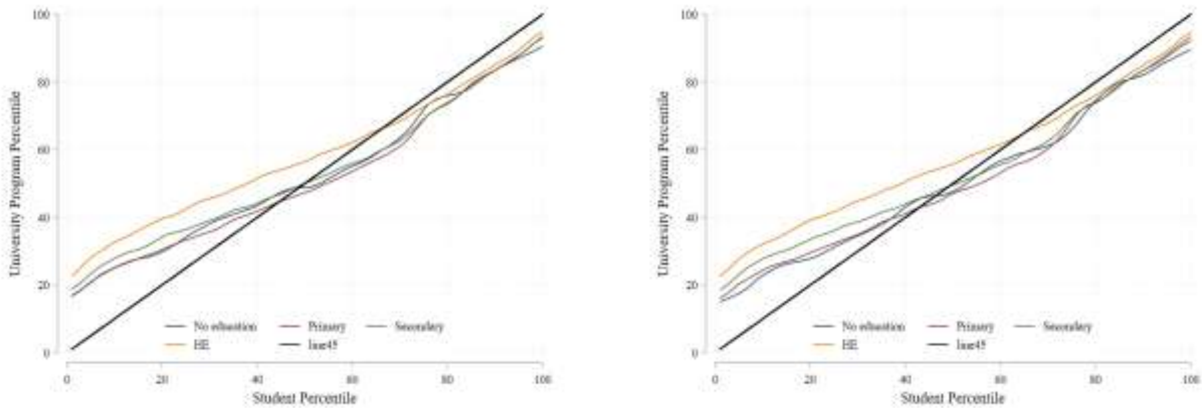


Note: The graphs plot students' percentile rank in the Saber 11 exam against the percentile rank of program quality (see Section 4.1). In panel A solid (dashed) lines correspond to students from urban (rural) schools. In panel B solid (dashed) lines correspond to male (female) students. In Panel C we report the distribution by stratum. Points above (below) the 45° line indicate overmatch (undermatch).

Figure 3 shows differences in match quality by parents' education. Overall, students whose father or mother has higher education are more likely to be overmatched and less likely to be undermatched. However, these gaps narrow among students at the top of the distribution of academic achievement.

Figure 3: Distribution of Student Achievement and Program Quality by Parent's Level of Education

A) Father *B) Mother*



Note: The graphs plot students' percentile rank in the Saber 11 exam against the percentile rank of program quality (see Section 4.1), by parental education. Panel A (B) corresponds to fathers' (mothers') education. Points above (below) the 45° line indicate overmatch (undermatch).

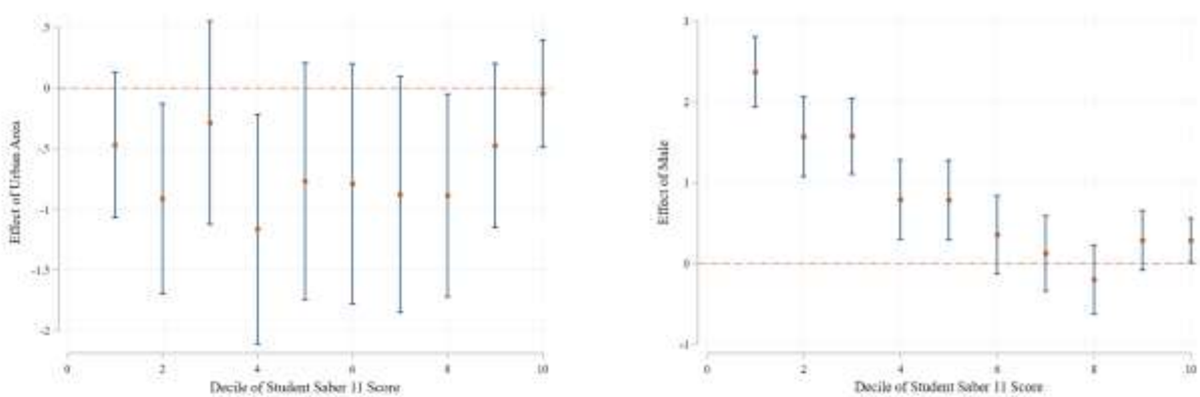
5.2 Conditional Quantile Regressions

Panel A of Figure 4 plots the estimated coefficients on a dummy variable indicating whether the student attended high school in a rural area, by Saber 11 decile. Across the achievement distribution, attending a high school located in an urban area is not strongly associated with the match score.

Now, regarding the role of gender, as it is shown in Panel B of Figure 4, the estimated coefficient on the male indicator is positive and statistically significant up to the 5th decile. This is, male students are better matched to HEIs. However, for students above the median of the achievement distribution, the effect becomes statistically insignificant.

Figure 4: Conditional Quantile Regression Estimates of Match (Urban and Male)

A) Urban school *B) Male*



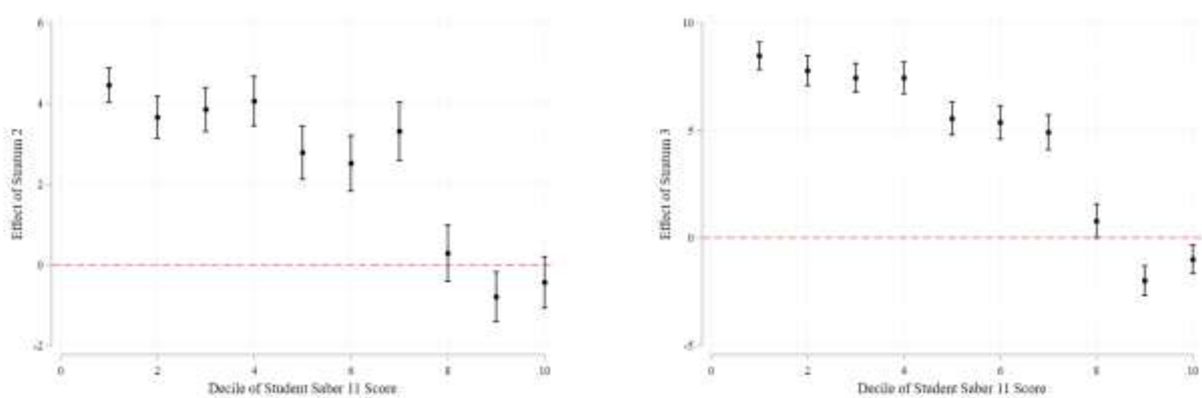
Note: The graphs plot coefficients from conditional quantile regressions using selected covariates. Panel A reports the effect of studying in an urban school on match, and Panel B the effect of being male. Coefficients are shown for each decile of students' academic achievement. We use 95% confidence intervals robust to heteroskedasticity.

With respect to how social stratification affects this match, Figure 5 plots estimated coefficients for each socioeconomic stratum (with stratum 1 as the omitted baseline) in the match regression, by decile of academic performance. For most deciles, belonging to a higher stratum is associated with a higher match score, and these coefficients are statistically significant. However, in the 9th and 10th deciles of academic performance, the coefficients for strata 2, 3, and 4 converge toward zero. In fact, among students in these top deciles, stratum 3 is associated with a lower match score than stratum 1. The coefficients for strata 5 and 6 remain positive and statistically significant up to the 9th decile, but become statistically indistinguishable from zero in the 10th decile of the Saber 11 score rank.

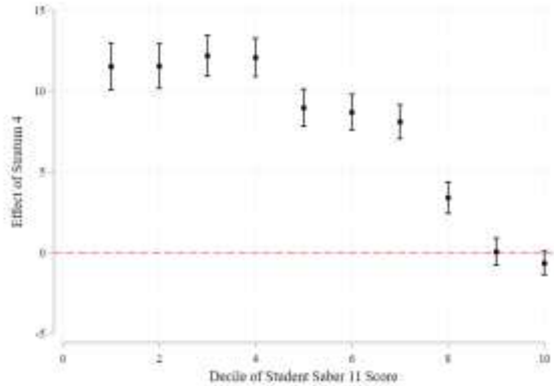
Another important pattern emerges: in general, coefficient magnitudes increase monotonically with stratum. This implies that moving up the socioeconomic ladder is associated with higher match scores, at least for the first seven deciles of the achievement distribution. The coefficients converge only among top-performing students. For example, for a student at the median of the achievement distribution (5th decile), belonging to stratum 2 is associated with about 5 additional match points relative to stratum 1, whereas belonging to stratum 6 is associated with about 15 additional match points relative to stratum 1.

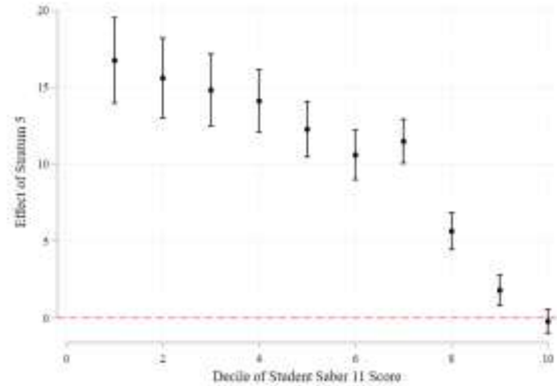
Figure 5: Conditional Quantile Regression Estimates of the Effect of Stratum on Match

A) Stratum 2 *B) Stratum 3*

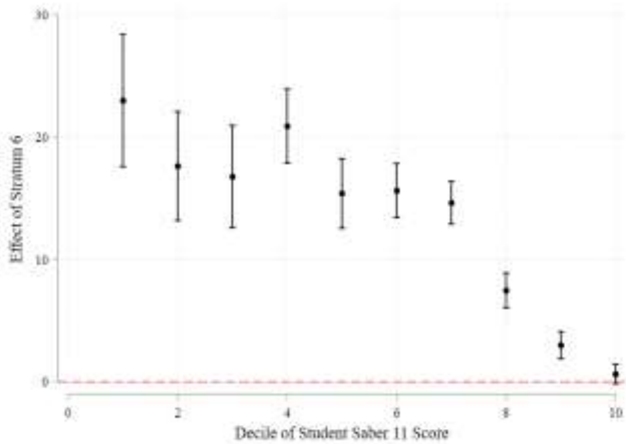


C) Stratum 4 *D) Stratum 5*





E) Stratum 6

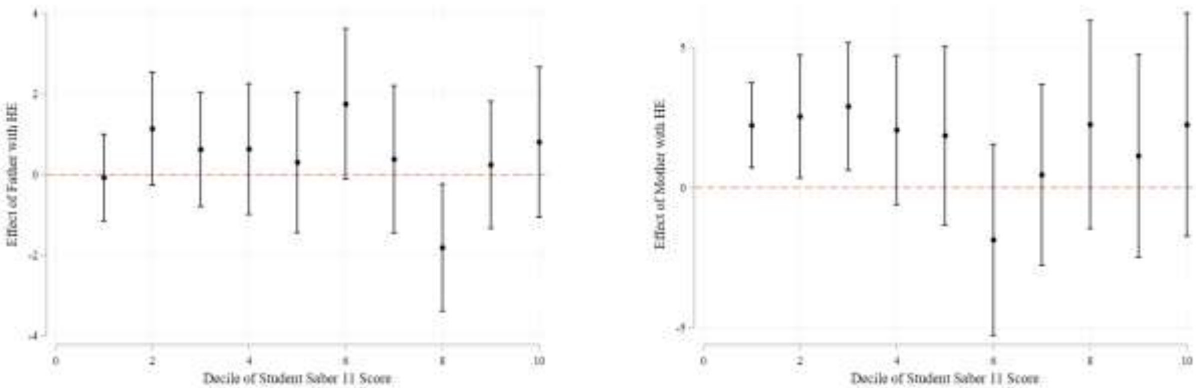


Note: The graphs plot coefficients from conditional quantile regressions where the covariate is stratum. Panels A–E report the effects of strata 2 through 6, respectively, on match. Coefficients are shown for each decile of students' academic achievement. We use 95% confidence intervals robust to heteroskedasticity.

Figure 6 plots estimated coefficients with dummy variables indicating whether the father (Panel A) or the mother (Panel B) has higher education, relative to having no education. Across most deciles of the academic achievement distribution, the estimated effects of fathers' education on student's match are small and not statistically significant. In contrast, for mothers' education the estimated effects are positive and statistically significant for the 1st through 3rd deciles.

Figure 6: Conditional Quantile Regression Estimates of the Effect of Parent's Education on Match

A) Father *B) Mother*



Note: The graphs plot coefficients from conditional quantile regressions where the covariate is parent's level of education. Panel A reports the effect of having a father with HE on match, and Panel B the effect of having a mother with HE. Coefficients are shown for each decile of students' academic achievement. We use 95% confidence intervals robust to heteroskedasticity.

5.3 Unconditional Quantile Regressions

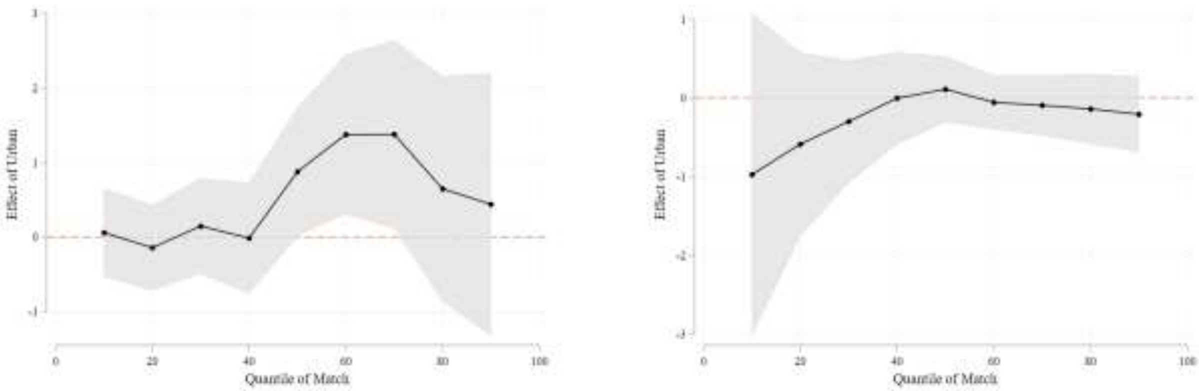
Figure 7 reports the urban–rural[7] gap in match. Panel A focuses on students in the lowest quintile of academic achievement (the bottom 20% of the Saber 11 distribution). Given the construction of the match score, these students tend to be overmatched; accordingly, the x-axis spans deciles of the match distribution from relatively well-matched students (1st decile) to severely overmatched students (9th decile). The estimated urban–rural gap is statistically indistinguishable from zero in most deciles, but at the 6th and 7th deciles students from urban areas exhibit match scores that are about 1.37 points higher on average, and these estimates are statistically significant at the 5% level.

Panel B considers students in the highest quintile of academic achievement (the top 20% of the Saber 11 distribution). These students tend to be undermatched, so the x-axis runs from severely undermatched students (1st decile) to relatively well-matched students (9th decile). In this group, the urban–rural gap is statistically indistinguishable from zero across all deciles of the match distribution.

Figure 7: Unconditional Quantile Regression Estimates of Match: Urban-Rural Gap

A) Bottom Quintile of Saber 11 Distribution *B) Top Quintile of Saber 11 Distribution*

[7] However, one important difference is that as we cluster the standard errors at the school level we cannot use the dummy of rural school; therefore we use the dummy of whether the student lives in an urban area.



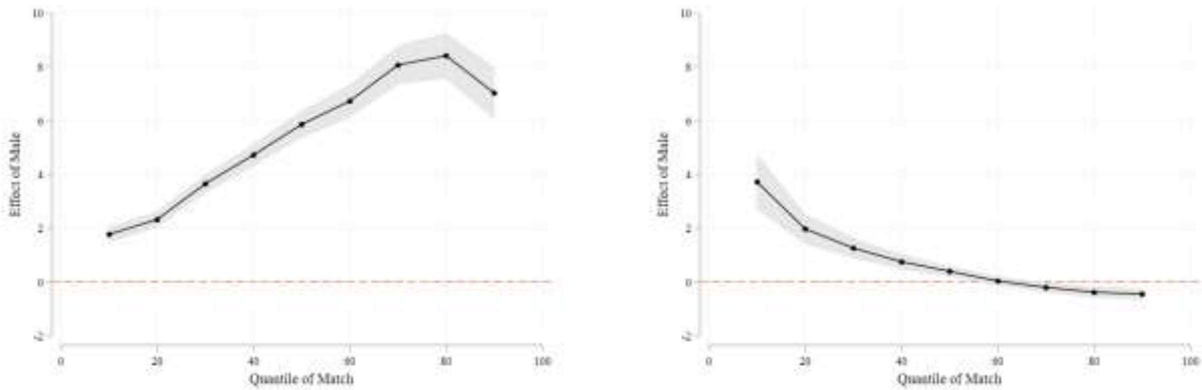
Note: The graphs plot coefficients from unconditional quantile regressions of match on a dummy variable indicating whether the student lives in an urban area, estimated at each decile (1st to 9th) of the match distribution. Panel A (Panel B) reports results for students in the 1st (5th) quintile of the Saber 11 distribution. Coefficients correspond to the effect of the covariate on the match score. Error bars show 95% confidence intervals clustered at the school level.

Figure 8 reports the male–female gap in match. Panel A focuses on students in the lowest quintile of academic achievement. Across all deciles of the match distribution, male students exhibit higher match scores than female students, and the gap widens toward the upper deciles (i.e., among more severely overmatched students). For example, at the 8th decile, male students score about 8.4 points higher on the match scale than female students, and this difference is statistically significant at the 5% level.

Panel B focuses on students in the highest quintile of academic achievement. In this group, male students have statistically higher match scores than female students only in the lower half of the match distribution (i.e., among more severely undermatched students). The gap then narrows and becomes negative at higher deciles, implying that among high-achieving students, females have, on average, slightly higher match scores than males.

Figure 8: Unconditional Quantile Regression Estimates of Match: Male-Female Gap

A) Bottom Quintile of Saber 11 Distribution *B) Top Quintile of Saber 11 Distribution*



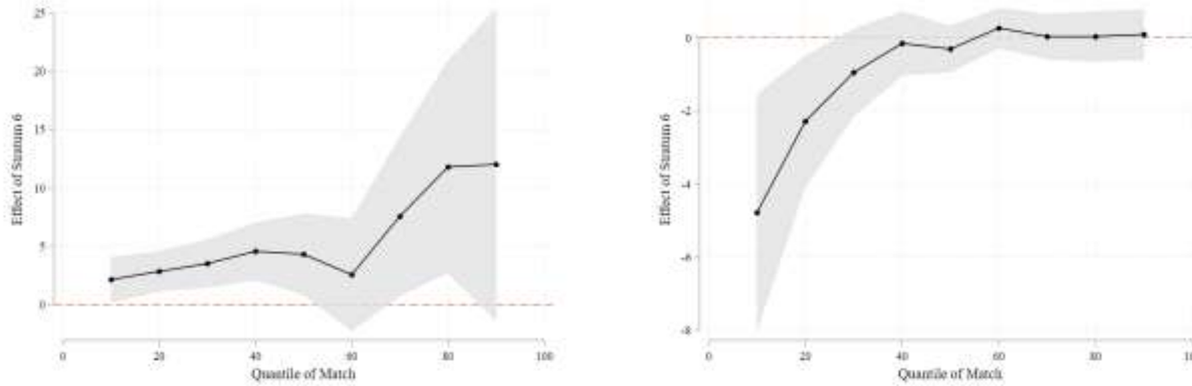
Note: The graphs plot coefficients from unconditional quantile regressions of match on a dummy variable indicating whether the student is male, estimated at each decile (1st to 9th) of the match distribution. Panel A (Panel B) reports results for students in the 1st (5th) quintile of the Saber 11 distribution. Coefficients correspond to the effect of the covariate on the match score. Error bars show 95% confidence intervals clustered at the school level.

Figure 9 reports socioeconomic gaps in match. Panel A focuses on students in the lowest quintile of academic achievement. Across the match distribution, students in stratum 6 exhibit higher match scores than those in stratum 1, and the gap generally widens toward the upper deciles (i.e., among more severely overmatched students), although it is not statistically significant at every decile. At the 8th decile, stratum 6 students score about 11.8 points higher on the match scale than stratum 1 students, and this difference is statistically significant at the 5% level. In other words, among severely overmatched students, those in stratum 6 tend to be more overmatched than those in stratum 1.

Panel B focuses on students in the highest quintile of academic achievement. Somewhat counterintuitively, stratum 6 students have statistically lower match scores than stratum 1 students at the 1st and 2nd deciles of the match distribution (i.e., among more severely undermatched students). The gap then narrows and becomes statistically indistinguishable from zero at higher deciles.

Figure 9: Unconditional Quantile Regression Estimates: SES Gap

A) Bottom Quintile of Saber 11 Distribution *B) Top Quintile of Saber 11 Distribution*



Note: The graphs plot coefficients from unconditional quantile regressions of match on a dummy variable equal to one if the student belongs to stratum 6 (with stratum 1 as the omitted baseline). Estimates are reported for each decile (1st to 9th) of the match distribution. Panel A (Panel B) shows results for students in the 1st (5th) quintile of the Saber 11 distribution. Coefficients capture the effect of the covariate on the match score. Error bars show 95% confidence intervals clustered at the school level.

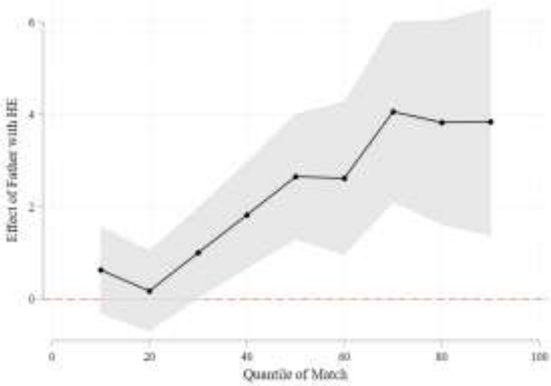
Figure 10 reports gaps in match by parental education. Panels A and C focus on students in the lowest quintile of academic achievement. Across the match distribution, students whose father has higher education exhibit higher match scores than those whose father has no formal education, and the gap widens toward the upper deciles (i.e., among more severely overmatched students). At the 7th, 8th, and 9th deciles, students whose father has higher education score about 3.8 points higher on the match scale than those whose father has no formal education, and these differences are statistically significant at the 5% level. This implies that among severely overmatched students, having a father with higher education is associated with being more overmatched.

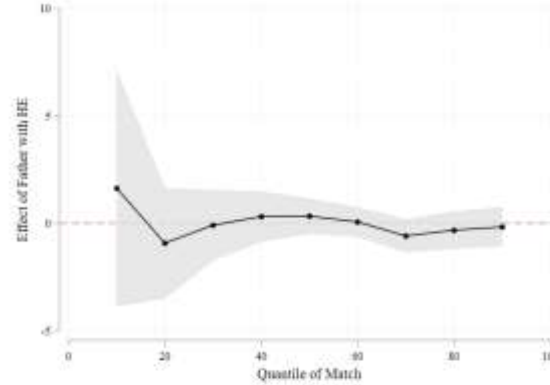
Mother’s education (Panel C) shows a similar pattern: higher maternal education is associated with higher match scores in the upper tail of the distribution (especially the 8th and 9th deciles). At the 9th decile, students whose mother has higher education score about 5.1 points higher on the match scale than those whose mother has no formal education, and this difference is statistically significant at the 5% level.

Panels B and D focus on students in the highest quintile of academic achievement. In this group, there is little evidence that parental higher education affects match scores, including among the most severely undermatched students (lower deciles).

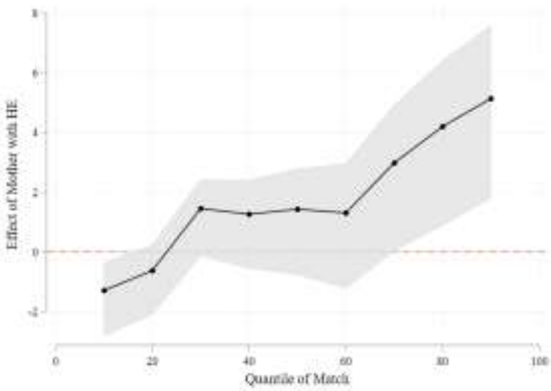
Figure 10: Unconditional Quantile Regression Estimates of Match: Parental Education Gaps

A) Father's HE – Bottom Quintile *B) Father's HE – Top Quintile*

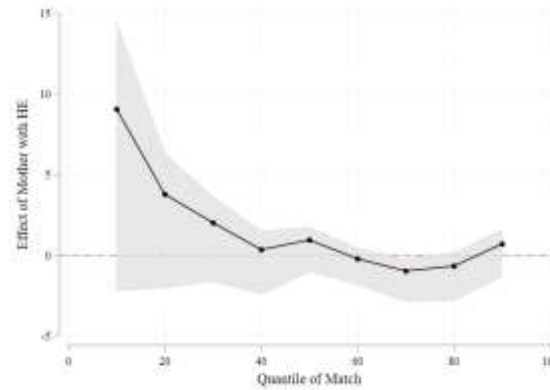




C) Mother's HE – Bottom Quintile



D) Mother's HE – Top Quintile



Note: The graphs plot coefficients from unconditional quantile regressions of match on a dummy variable equal to one if the father (Panels A and B) or the mother (Panels C and D) has higher education (with no education as the omitted baseline). Estimates are reported for each decile (1st to 9th) of the match distribution. Panels A and C (Panels B and D) show results for students in the 1st (5th) quintile of the Saber 11 distribution. Coefficients capture the effect of the covariate on the match score. Error bars show 95% confidence intervals clustered at the school level.

6 Conclusion

In Colombia, higher education (HE) continues to face important challenges as a vehicle for social and economic mobility, and these challenges are intertwined with broader inequalities in the education system that begin early in life (Cárdenas et al., 2021). We show that, according to standard measures, about 12% of HE students are undermatched, that is, they enroll in programs that are less selective or less prestigious than their Saber 11 performance would predict. Undermatch can hinder social mobility by limiting students' access to academic environments that may offer stronger training, networks, and labor-market opportunities. These findings suggest that policy interventions should aim to improve the sorting of students into programs, while also strengthening quality across the HE sector. We now summarize our main findings on the socioeconomic, demographic, and geographic factors associated with the matching of students to higher-education programs.

Urban–rural differences in match. The CQRs suggest that, controlling for the other covariates, residing in an urban area is not systematically associated with the match score across the academic achievement distribution. Consistent with the CQR results, the UQR estimates also indicate no systematic differences in match between students from urban and rural high schools, either among students at the bottom or at the top of the achievement distribution.

Gender differences in match. Male students tend to have higher match scores in the lower half of the Saber 11 distribution, but this gap largely disappears among students above the median of the achievement distribution. In the tails of the match distribution, being male is associated with greater overmatch among the severely overmatched and with smaller undermatch among the severely undermatched. Taken together, these patterns indicate a gender gap at the extremes of the match distribution: male students tend to enroll in more selective programs than their Saber 11 performance would predict.

Socioeconomic status and match. Across most deciles of the Saber 11 distribution, belonging to strata 2 through 6 is associated with higher match scores, with the largest effects for stratum 6. For instance, among students in the 1st decile of Saber 11 performance, those in stratum 6 have match scores around 25 points higher than comparable students in stratum 1, suggesting that high-SES students can access more selective programs despite low test performance. These SES gradients attenuate among very high-achieving students (9th and 10th Saber 11 deciles). In addition, among the severely overmatched, belonging to stratum 6 is associated with even higher overmatch. Somewhat counterintuitively, among the severely undermatched, stratum 6 is associated with lower match scores (i.e., greater undermatch) on average.

Parental education and match. According to the results from UQR, students who are in the bottom quintile of academic achievement have a higher match when their father has higher education. In the case of students having a mother with HE, this increases the match score only for severely overmatched students. Now, parents' level of education does not play any role on match when students are in the top quintile of academic achievement.

This paper is subject to several limitations that open avenues for further research. First, our analysis is based on students who both applied to and enrolled in higher education, which introduces a selection concern. Students who do not enroll (potentially due to financial, informational, or academic constraints) are excluded from the analysis, which may bias the observed distribution of mismatch. Second, the match measure relies on Saber 11 scores as a proxy for both student ability and program selectivity. However, many higher education institutions in Colombia employ holistic admission processes in which test scores are only one component. As a result, the measure may not fully capture institutional selectivity. This limitation is compounded by heterogeneity across fields: programs differ in the relative importance of subject-specific skills, so a single aggregate score may not accurately reflect alignment between student strengths and program requirements.

Third, the analysis does not account for students' preferences over programs and institutions, which are central to enrollment decisions. Observed mismatch may therefore reflect optimal choices given individual preferences, rather than constraints or inefficiencies. In addition, the use of median entrant test scores as a proxy for program quality abstracts from other relevant dimensions such as teaching quality, resources, and labor market outcomes. Finally, the analysis is descriptive and does not identify causal mechanisms. Future research could build on these findings by incorporating richer data on applications, admissions, and financial constraints, and by exploiting policy variation (such as programs that relax credit constraints) to estimate causal effects on match outcomes. Extending the analysis to consider dynamic outcomes, including persistence, graduation, and labor market trajectories, would also provide a more comprehensive understanding of the consequences of mismatch in the Colombian higher education system.

References

Alzate, M. C. (2006). La estratificación socioeconómica para el cobro de los servicios públicos domiciliarios en Colombia ¿solidaridad o focalización? Estudios Y perspectivas(14), 101.

Barbosa-Camargo, M.-I., García-Sánchez, A., & Ridao-Carlini, M.-L. (2023). Acceso y elección de educación superior en Colombia: factores socioeconómicos y ayudas públicas de financiamiento. Revista Iberoamericana de Educación Superior, 13(38), 42–62.

Bastedo, M. N., & Flaster, A. (2014). Conceptual and methodological problems in research on college undermatch. Educational Researcher, 43(2), 93–99.

Black, S. E., Cortes, K. E., & Lincove, J. A. (2020). Apply yourself: Racial and ethnic differences in college application. Education Finance and Policy, 15(2), 209–240.

Bowen, W. G., & Bok, D. (2016). The Shape of the River. Princeton University Press.

Bowen, W. G., Chingos, M. M., & McPherson, M. S. (2009). Crossing the finish line. Princeton University Press.

Camacho, A., Messina, J., & Uribe, J. P. (2026). The expansion of higher education in Colombia: Bad students or bad programs? The World Bank Economic Review, 40(1), 146–171.

Cameron, S. V., & Heckman, J. J. (2001). The dynamics of educational attainment for Black, Hispanic, and White males. Journal of Political Economy, 109(3), 455–499.

Campbell, S., Macmillan, L., Murphy, R., & Wyness, G. (2022). Matching in the dark? Inequalities in student to degree match. Journal of Labor Economics, 40, 807–850.

Card, D., & Krueger, A. B. (2005). Would the elimination of affirmative action affect highly qualified minority applicants? Industrial & Labor Relations Review, 58(3).

Cárdenas, J. C., Fergusson, L., & García Villegas, M. (2021). La quinta puerta. Bogotá: Ariel.

Carpentier, S., Arias, P., & Rodrigo Román. (2022). ¿Emparejamiento dispar en la educación superior? Determinantes del mismatch en Universidades chilenas. Revista ESS, 34(1), 800–828.

Cortes, K. E., & Lincove, J. A. (2019). Match or mismatch? Educational Evaluation and Policy Analysis, 41(1), 98–123.

de Silva, T. (2025). Determinants of college mismatch in a rule-based admission system: The case of Sri Lanka. International Journal of Educational Development, 118, 103405.

Deutschlander, D. (2017). Academic undermatch. Sociological Forum, 32(1), 162–185.

Dillon, E. W., & Smith, J. A. (2017). Determinants of the match between student ability and college quality. Journal of Labor Economics, 35, 45–66.

Dinarte-Diaz, L., Ferreyra, M. M., Melguizo, T., & Sanchez-Diaz, A. (2024). The value added of short-cycle higher education programs. Economics of Education Review, 101, 102563.

Fergusson, L., & Flórez, S. A. (2021). Desigualdad educativa en Colombia. In Cárdenas et al. (Eds.), La quinta puerta (pp. 81–114). Bogotá: Ariel.

Firpo, S., Fortin, N. M., & Lemieux, T. (2009). Unconditional quantile regressions. Econometrica, 77(3), 953–973.

González-Espitia, C. G. (2023). Diferencias por género en el acceso a la educación superior en Colombia (2001–2019). Revista Colombiana de Educación(88), 185–210.

Hoxby, C. M., & Avery, C. (2012). The missing "one-offs": The hidden supply of high-achieving, low-income students (NBER Working Paper No. 18586).

Kane, T. J. (1994). College entry by Blacks since 1970. Journal of Political Economy, 102(5), 878–911.

Koenker, R., & Bassett, G. (1978). Regression quantiles. Econometrica, 46(1), 33–50.

Kozman, E., & Sanders, M. (2019). Examining the potential for nudges to tackle undermatch. Journal of Behavioral Economics for Policy, 3(SI), 13–15.

Londoño-Vélez, J., Rodríguez, C., & Sánchez, F. (2020). Upstream and downstream impacts of college merit-based financial aid for low-income students. American Economic Journal: Economic Policy, 12(2), 193–227.

MacLeod, W. B., Riehl, E., Saavedra, J. E., & Urquiola, M. (2017). The big sort. American Economic Journal: Applied Economics, 9(3), 223–61.

Maragkou, K. (2020). Socio-economic inequality and academic match among post-compulsory education participants. Economics of Education Review, 79, 102060.

Melguizo, T., Sanchez, F., & Velasco, T. (2016). Credit for low-income students and access to higher education in Colombia. World Development, 80, 61–77.

Ministerio de Educación Nacional de Colombia. (2010). Decreto 869 de 2010. Diario Oficial de la República de Colombia. Retrieved from https://www.mineducacion.gov.co/1621/articles-221588 archivo pdf decreto 869.pdf

Ministerio de Educación Nacional de Colombia. (2018). Resolución 00175 de 2018. Diario Oficial de la República de Colombia. Retrieved from https://www.mineducacion.gov.co/1759/articles-364611_archivo_pdf.pdf

Ministerio de Educación Nacional de Colombia. (2023). Reglamento operativo. Generación E. Retrieved from https://www.colombiaaprende.edu.co/sites/default/files/filespublic/2023-06/Reglamento excelencia unificado.pdf

Ministerio de Educación Nacional de Colombia. (2025). Resumen de educación superior: Información nacional 2014–2024. SNIES.

Ovink, S., Kalogrides, D., Nanney, M., & Delaney, P. (2018). College match and undermatch. Research in Higher Education, 59(5), 553–590.

Smith, J., Pender, M., & Howell, J. (2013). The full extent of student-college academic undermatch. Economics of Education Review, 32, 247–261.

Appendix

A.1 Tables

Table A.1: Descriptive Statistics

Variable	Mean	SD	Observations
-Characteristics of schools			
Proportion of students from Co-ed schools	0.90	0.30	438,530
Proportion of students from only academic schools	0.60	0.49	437,179
Proportion of students from bilingual schools	0.03	0.17	397,665
Proportion of students from public schools	0.57	0.50	438,530
Proportion of students from calendar A	0.95	0.22	438,530
Proportion of students from morning shift	0.50	0.50	438,530
Proportion of students from rural schools	0.08	0.27	438,530
-Characteristics of family			
Proportion of students with father with HE	0.44	0.50	420,187
Proportion of students with mother with HE	0.48	0.50	431,418
Proportion of students with self-employed father	0.03	0.18	436,711
Proportion of students with self-employed mother	0.09	0.28	436,883
-Characteristics of students			
Proportion of male students	0.39	0.49	438,527
S11 global score	293.92	45.28	438,530
Proportion of students that took Saber Pro (TYT) in 2022	0.23	0.42	438,530
Proportion of students that took Saber 11 in 2017	0.17	0.38	438,530
-Socio-economic characteristics			
Proportion of students in stratum 1	0.23	0.42	435,681
Proportion of students with family income less than 1 MW	0.13	0.34	361,650
Proportion of students that live in urban areas	0.90	0.30	361,642

Notes: MW = Minimum wage

Serie Documentos de Trabajo

Facultad de Economía - Universidad Externado de Colombia

N.º	Autor	Título	Año
1	Juan Santiago Correa	Urbanismo y transporte: el tranvía de Medellín (1919-1950)	2002
2	Álvaro H. Chaves C. yHelmuth Y. Arias G.	Cálculo de la tasa interna de retornos educativos en Colombia	2002
3	Fernando Bernal C.	Gobernanza pública, violencia y políticas de alivio a la pobreza. Laampliación del marco conceptual del Programa Familias en Acción	2003
4	Sandra L. Guerrero	Evaluación de la racionalidad del plan de descontaminación del ríoBogotá a partir del análisis de costo mínimo y tasa retributiva	2003
5	Humberto Bernal Castro yByron Ortega	¿Se ha desarrollado el mercado secundario de acciones colombianodurante el período 1988-2002?	2004
6	Liliana Chicaíza	Valoración de primas de reaseguro para enfermedades catastróficasutilizando el modelo de Black-Scholes	2005
7	Rosaura Arrieta, AuraGarcía y Elsa Doria	Movilidad social en el asentamiento subnormal de Ranchos del Inat2004	2005
8	Álvaro H. Chaves C.	Evolución de la productividad multifactorial, ciclos y comportamientode la actividad económica en Cundinamarca	2005
9	Liliana López C. y Fabio F.Moscoso	La eficiencia portuaria colombiana en el contexto latinoamericano y susefectos en el proceso de negociación con Estados Unidos	2005
10	Andrés F. Giraldo P.	La neutralidad del dinero y la dicotomía clásica en la macroeconomía	2005
11	Diego Baracaldo, Paola Garzón y Hernando Vásquez	Crecimiento económico y flujos de inversión extranjera directa	2005
12	Mauricio Pérez Salazar	Mill on Slavery, Property Rights and Paternalism	2006
13	Fabio F. Moscoso y Hernando E. Vásquez	Determinantes del comercio intraindustrial en el Grupo de los tres	2006
14	Álvaro H. Chaves C.	Desestacionalización de la producción industrial con la metodología x-12 arima	2006
15	Ómar Fernando Arias	El proceso de fluctuación dinámica de la economía colombiana:reconsideraciones teóricas sobre un fenómeno empírico	2006
16	Homero Cuevas	La empresa y los empresarios en la teoría económica	2007

17	Álvaro H. Chaves C.	Ventajas comparativas del sector agropecuario colombiano en el marcode los recientes acuerdos comerciales	2007
18	William Lizarazo M.	La controversia del capital y las comunidades científicas	2007
19	Mario García y EdnaCarolina Sastoque	Pasiones e intereses: la guerra civil de 1876-1877 en el Estado Soberanode Santander	2007
20	José Gil Díaz	Ministerio de Finanzas: funciones, organización y reforma	2007
21	Mauricio Pérez Salazar	Economía y fallos constitucionales: la experiencia colombiana desde lavigencia de la Carta Política de 1991 hasta 2003	2007
22	Mauricio Rubio y	Análisis de series de tiempo del secuestro en Colombia	2007
23	Luis Felipe Camacho	Reflexiones de economía política: la justicia social en la obra de LéonWalras	2008
24	Óscar A. Alfonso R.	Economía institucional de la intervención urbanística estatal	2008
25	Mauricio Rubio	Palomas y Sankis. Prostitución adolescente en República Dominicana	2008
26	Helmuth Yesid Arias Gómez	La descentralización en Colombia y las autonomías en España	2009
27	Andrés Mauricio Vargas P. y Camilo Rivera Pérez	Controles a la entrada de capitales y volatilidad de la tasa de cambio: ¿daño colateral? La experiencia colombiana	2009
28	Óscar A. Alfonso R.	Economía institucional de la ocupación del suelo en la región metropolitana de Bogotá	2009
29	Álvaro Hernando Chaves Castro	Dinámica de la inflación en Colombia: un análisis empírico a partir de la curva de Phillips neokeynesiana (nkpc)	2010
30	Diliana Vanessa Cediel Sánchez	Determinantes del recaudo tributario en los municipios del departamento de Cundinamarca	2010
31	Óscar A. Alfonso R.	Impactos socioeconómicos y demográficos de la metropolización de la población colombiana y de los mercados de trabajo y residenciales	2010
32	Mauricio Rubio	Entre la informalidad y el formalismo: La acción de tutela en Colombia	2011
33	Óscar A. Alfonso R.	La geografía del desplazamiento forzado reciente en Colombia	2011
34	Yasmín L. Durán B.	Impacto impositivo en las decisiones de inversión y armonización tributaria. Caso de estudio: la Unión Europea	2011
35	Ernesto Cárdenas y Jaime Lozano	Economía experimental: una medición de confianza y confiabilidad	2011
36	Helmuth Arias Gómez	Tendencias de la industria regional	2011
37	Isidro Hernández Rodríguez	Tributación en Colombia y los orígenes de su brecha impositiva, 1821-1920	2011
38	Óscar A. Alfonso R.	Polimetropolitanismo y fiscalidad, Colombia 1984-2010	2012
39	Álvaro Hernando Chaves Castro	Acuerdos comerciales y posibilidades de desarrollo regional: el caso dela economía del Meta	2012
40	Óscar A. Alfonso R	El enigma del método y el inconformismo radical: crítica y alternativas a los procedimientos de investigación con sujeto ausente	2012
41	José Gil-Díaz	Grecia, West Virginia y el ajuste	2012
42	Darío Germán Umaña Mendoza	La propiedad intelectual y la salud	2013
43	Mauricio Rubio	Los sospechosos secuestros de la delincuencia común en Colombia,	2013

		1990-2003	
44	Darío Germán Umaña Mendoza	El Tratado de Libre Comercio con los Estados Unidos y sus efectos sobre la inversión y las políticas públicas	2013
45	Álvaro Martín Moreno Rivas	Teorías y modelos del ciclo político de los negocios	2013
46	Carlos A. Garzón R. y Anna Preiser	Multidimensional well-being inequality social evaluation Gini functionfor Colombia 2012	2014
47	Óscar A. Alfonso R.	De la Korima a Mottainai. Modos de vida alternativos para enfrentar el desperdicio de alimentos y restaurar la soberanía del consumidor	2014
48	Juan Pablo Roa B.	Equivalencia ricardiana: una evaluación empírica para la economíacolombiana 1985-2010	2014
49	Karla Bibiana Mora Martínez	Un modelo econométrico del mercado laboral y la elección ocupacional del empleo calificado en Colombia	2014
50	Manuel Andrés Rincón Gómez	Determinantes de financiación de firmas manufactureras: evidenciaempírica para Colombia 1999-2006	2014
51	Óscar A. Alfonso R.	Observatorio MetroMun. Índice alternativo de desarrollomunicipal 2013. Un estudio a partir de las fragilidades y resistencias del territorio colombiano	2015
52	Óscar A. Alfonso R.	Observatorio Hambre Cero. La cadena de las pérdidas de valor de los alimentos y las pérdidas de área sembrada en Colombia, 2007-2012	2015
53	Óscar A. Alfonso R.	Observatorio MetroMun. Ruralidades. Aportes para laconstrucción de una visión comprehensiva del campo colombiano	2016
54	Óscar A. Alfonso R.	Observatorio Hambre Cero. El diseño de instituciones contra la pérdida y el desperdicio de alimentos.	2016
55	Julián Arévalo B.	State capacity and support for democracy: challenges and opportunities for post conflict Colombia	2016
56	Saira Samur Pertuz	La disparidad fiscal en Colombia en el período del sistema general de participaciones	2016
57	Óscar A. Alfonso R., Laura Amézquitay Sandra Coral	Observatorio MetroMun. Análisis económico-espacial de la mortalidad empresarial en épocas de ralentización de la economía metropolitana de Bogotá	2016
58	Óscar A. Alfonso R., Rafael Barrera yPedro I. Bernal	Observatorio MetroMun. El modo de vida popular y la regularización barrial en Bogotá	2017
59	David Rodríguez	Simulación de políticas públicas con modelos de equilibrio general computable	2018
60	Óscar A. Alfonso R.	Observatorio MetroMun. Aproximación a la historia de la fragmentación jurisdiccional del territorio colombiano	2018
61	Pedro I. Bernal	La teoría económica de la regulación. Una lectura fundamentada en los problemas de información	2018
62	Óscar A. Alfonso R.	Observatorio MetroMun. Coyuntura metropolitana y municipal índice alternativo de desarrollo municipal 2017	2018
63	Óscar A. Alfonso R., Diana CarolinaCamargo y Laura Camila Garzón	Observatorio MetroMun. Coyuntura metropolitana y municipal Aporocidio la deconstrucción de la mal llamada “limpieza social” y una aproximación a los modos, medios, tiempos y lugares en Bogotá	2019
64	Óscar A. Alfonso R.	Observatorio MetroMun. Coyuntura metropolitana y municipal Glifosato. Ineficacia estructural y probabilidad de daño a la	2019

		salud debido a su uso en la aspersión aérea de los cultivos del arbusto de coca, Colombia 1998-2017	
65	Óscar A. Alfonso R., Mariana BenítezR., Andrés Castro C., Andrea Constantin C., David Gaona R., Catherine Lis C. y Valeria Rivera C.	Coalición Estudios - Laboratorio de Usos Legales de los Alcaloides. La industria encapsulada. El potencial de los usos médicos y científicos del alcaloide de la coca en el contexto dela fiscalización internacional a su circulación.	2019
66	Andrés Camacho, Jairo Méndez, Henry Laverde	The role of science-oriented workers on innovation: the case of the accommodation industry in Colombia	2020
67	Federico Corredor, Paola Ríos, DavidRodríguez	The effect of COVID-19 and emergency policies on Colombian households' income	2021
68	Óscar A. Alfonso R. et al.	Aportes a la política para prevenir la pérdida y el desperdicio de alimentos en Colombia	2021
69	Óscar A. Alfonso R	La desigualdad y la pandemia en Bogotá: Las brechas socioespaciales como determinantes de la probabilidad del contagio y de la letalidad del SARS-CoV-2	2021
70	Juan Carlos Castro	Big Recessions and Slow Recoveries	2022
71	Juan Carlos Castro	Financial Crises and Expectation-driven Recessions	2022
72	Óscar A. Alfonso R. et al.	La metropolización planetaria y sus escalas en Colombia	2022
73	Tatiana Gélvez, Carol Martínez y Laura Molina	Análisis de la situación socioeconómica de las mujeres rurales en Colombia 2022-2023	2023
74	Óscar A. Alfonso R.	Asediados por la muerte Mortalidad precoz y longevidad, Colombia 2019-2021	2023
75	Michel Bruni, Tatiana Gélvez Rubio, Carol Martínez Algarra, María Alejandra Suárez, María Camila Hernández Vargas, Federico Rincón Ariza y Sara Otavo Peña	Análisis de la transición demográfica, el mercado laboral y la migración. Proyecciones para Colombia	2024
76	Óscar A. Alfonso R.	Observatorio Metromun Generación Li. Un ensayo especulativo sobre el surgimiento del SARS-CoV-2 en China	2024
77	Óscar A. Alfonso R., Nara Sofía Quintana Castro, Santiago Rojas Gómez y María Alejandra Suárez Fernández	Observatorio Metromun La transparencia del velo de la ignorancia. Análisis de la brecha cognitiva en educación y sus determinantes socioespaciales en Bogotá 2023	2024
78	Andrés Camacho-Murillo Omar Vanegas	Does theft crime influence international students' choices among destinations? The case of credit mobility studies	2024
79	Diana Pérez-Arango Andrés Camacho-Murillo	Education and sustainable behavior A case study	2024
80	Natalia Arango-Ramírez Andrés Camacho-Murillo	Transforming Lives: The Positive Impact of School Retention Strategies on the Probability of Students' Dropout in Medellin	2024
81	Óscar A. Alfonso R. Mónica A. Gómez C.	Sembrando bajo fuego. La violencia homicida en la frontera agrícola del Macizo Colombiano y su entorno, y el Estado como generador de conflictos en torno a la tierra	2025
82	Óscar A. Alfonso R., Andrés F. Anzola B., Juan F. Araque Z., Juan P. Ariza G., Mariana	Cuando el sudor de la frente es insuficiente. Análisis del acoso laboral con énfasis en la *doble exposición*	2025

	Barreiro M., Juliana Castaño L., Sara L. Castillo C., Daniela C. Contreras L., Sergio Cortés B., Valentina Duarte M., Nicolás Franco G., Carlos A. Jiménez S., Sara D. Lemus S., Laura S. Martínez T., Juan J. Mayor T., Simón C. Muñoz F., Sara M. Nossa H., Nicolás Novoa G., Juan D. Osorio T., Sebastián C. Quecan R., Julián Rodríguez V., Ted M. Sierra N., Mariana Suaza A., Yeison R. Vargas H. y Juliana Velandia B		
83	Andrés Camacho-Murillo, Rukmani Gounder y Sam Richardson	Assessing The Impact of Politically Motivated Violence on International Tourists' Choice of Colombia	2025
84	Óscar A. Alfonso R.	Hambre, desigualdad e ilegalidad. El circuito perverso del rezago social cocalero y la estigmatización del Macizo Colombiano	2025
85	Óscar A. Alfonso R.	El Índice de Desarrollo Humano Alternativo -IDH.AUna medida de las brechas territoriales en Colombia 2	2025
86	Santiago Rojas Gómez. y Andrés Camacho Murillo	Elasticidad – Ingreso de la Demanda de Turismo Interno en Colombia: Moviendo las maletas	2025
87	Carolina Liévano Liévano	Los vínculos espaciales de la inclusión financiera y la reducción de la pobreza en Bogotá	2025
88	Óscar A. Alfonso R.	Del dogma pedagógico al *apartheid* educativo. El sesgo clasista de la brecha cognitiva en la educación media en Bogotá	2025
89	Camilo Morales-Neira, Andrés Camacho-Murillo	Learning by doing: How a real access to credit products influence people's financial knowledge in Colombia	2026
90	María Camila Jaramillo Gutiérrez y Andrés García Trujillo	Buenas intenciones, promesas incumplidas y expectativas frustradas: Un análisis de los "efectos inesperados" en los beneficiarios del programa de restitución de tierras en cinco municipios de Córdoba	2026
91	Tatiana Gélvez Rubio Jesús Moreno Portilla Claudia Pinzón Casallas Juan Esteban Londoño	Alianzas y estrategias para el fortalecimiento de las economías de subsistencia en Colombia. *Un análisis espacial del programa "Tienda a tienda Pamplona"*	2026
92	David A. Ortiz Escobar Anderson Tami-Patiño Omar D. Vanegas-Virguez	Higher education mismatch: a descriptive analysis from Colombia	2026

Universidad Externado de Colombia

FACULTAD DE ECONOMÍA

DOCUMENTOS de TRABAJO

www.uexternado.edu.co/economia