Labor market returns from an elite university and affirmative action effects: Evidence from Brazil*

Fernanda Estevan[a] Gabriel Leite[b] Louis-Philippe Morin[c]

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Abstract

This paper investigates 1) the long-run impact of attending a selective university on individuals' labor market outcomes in Brazil, and 2) the effect of affirmative action (AA) on labor market participation of beneficiaries and non-beneficiaries. We use a unified dataset, which merges detailed administrative data from the State University of Campinas (UNICAMP), with data from the Brazilian formal labor market and companies' shareholding participation. To estimate the returns to attending one of the most selective universities in Brazil, we employ the RD design to circumvent biases from unobservable variables, exploiting the identification of admitted and non-admitted candidates around the university admission cutoffs. Our results suggest that, previously to the AA, there is no difference in aggregated formal labor market participation, shareholding status, or earnings in the formal sector between those barely above and below the cutoffs, from 3 to 9 years after expected graduation. In contrast, we find positive effects in formal labor market participation but negative effects in companies' shareholding status for public high school students. In addition, students enrolled in STEM majors seem to participate more in the formal labor market in the 7th to 9th years after expected graduation. After the introduction of the AA, we observe that enrolling at the university does not affect either the formal labor market participation or the shareholder status from 1 to 4 years after expected graduation for AA and non-AA applicants.

Keywords: *returns to higher education, higher education quality, affirmative action, human capital*

JEL Classifications: I23, I24, I26.

[a]São Paulo School of Economics - FGV, Rua Doutor Plínio Barreto, 365, São Paulo CEP 01313-020, Brazil. E-mail: fernanda.estevan@fgv.br

[b]São Paulo School of Economics - FGV, Rua Doutor Plínio Barreto, 365, São Paulo CEP 01313-020, Brazil. E-mail: gabriel.leite@fgv.edu.br

[c]University of Ottawa, 120 University, Department of Economics, Ottawa ON K1N 6N5, Canada. E-mail: louis-philippe.morin@uottawa.ca

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1 Introduction

In Brazil, access to higher education is widely seen as one of the key elements to social mobility (Bustelo et al., 2017; Telles, 2004). This perception is most pronounced in the context of public flagship universities, which, in the absence of inclusive policies, might be the only option for underprivileged students to pursue an elite education. Nevertheless, little is known about the returns to college education in the Brazilian labor market, especially from the country's most selective universities, and even less about the effects of affirmative action on future outcomes.

This paper intends to answer the following questions: 1) what are the baseline returns to an elite university prior to the implementation of affirmative policies? 2) Do the returns vary across years, socioeconomic groups, and majors? 3) Did the affirmative action policies affect the evolution of earnings of its intended targeted applicants (and non-targeted applicants)?

To answer these questions, we exploit two features of one of the most renowned public universities in Brazil (State University of Campinas - UNICAMP). First, UNICAMP applies a fully objective admission exam for undergraduate studies, which helps us to identify admitted and non-admitted candidates according to a perfectly known rule. Second, UNICAMP was also an early adopter of affirmative action policies in 2005, several years before these programs became mandatory in the federal university system in 2012, which granted bonus points in the admission exam for public high schools and underrepresented minorities. We combine administrative data from UNICAMP applicants with information on all employment relationships in the formal labor market (RAIS), and data on each Corporate Taxpayer ID Number (CNPJ) from the Brazilian IRS, from which we identify the corporate shareholder status from the applicants' database.

The first part of the paper addresses the first two questions, related to the labor market effects in the absence of affirmative action policies. The returns to elite university education have been extensively studied, and in general, studies suggest larger monetary returns from attending a selective rather than a non-selective univer-

sity.[1] These returns seem to differ across different socioeconomic groups and majors.[2][3] However, estimating the causal effects of college quality is still challenging, especially due to unobserved characteristics that affect both university preferences and admission to higher education and might also influence labor market outcomes. As Hoxby (2009) and Dale and Krueger (2014) point out, the selection on non-observable traits tends to generate overestimated returns to university selectivity.

Recently, many articles have attempted to deal with selection issues using regression discontinuity designs. These studies exploit the grade admission cutoffs, relying on the assumption that, close to those grade cutoffs, applicants are "randomly" (and locally) assigned to the university. Hoekstra (2009) finds that attending a large selective university in the United States generates a 20% increase in earnings for students at the admission margin, and Anelli (2020) shows a 30-40 log points increase in earnings around an Italian flagship university cutoff. Saavedra (2009) shows that those just above admission thresholds in an important Colombian university are 16% more likely to be employed after one year of graduation, and Jia and Li (2021) find a 5-10% increase in first job wages in the Chinese admission system. There is also evidence of sizable returns in India (Sekhri, 2020), in the centralized admission system of Chile (Hastings et al., 2013; Zimmerman, 2019) and Norway (Kirkeboen et al., 2016). Overall, these setups find no differences in returns across socioeconomic characteristics but high heterogeneity across majors (Hastings et al., 2013; Kirkeboen et al., 2016).

In Brazil, there is little and mixed evidence regarding the returns to an elite higher education. In similar frameworks as ours, Leite (2018) and Duryea et al. (2023) exploit the admission cutoffs of two of the most selective universities in the country - University of Sao Paulo (USP) and Federal University of Pernambuco (UFPE), respectively - and find that only students who studied exclusively in public schools present positive returns. In the first case, returns increase by 15-18 p.p. after 10-20 years from the application, and in the second case, by 23-35 p.p. after 10-11 years from the application. However, these papers estimate the returns to an elite university using only data on

[1] For example, Brewer et al. (1999) use a selectivity-corrected outcome model, Black and Smith (2006) and Long (2010) construct proxies for university quality and student ability, and Behrman et al. (1996b) use a sample of twins in an attempt to control for unobservables.

[2] Loury and Garman (1995) and Behrman et al. (1996a) control for observed academic performance and find that, while positive for all groups, the returns are significantly larger for minority students. Dale and Krueger (2002, 2014), comparing individuals admitted to the same institutions, show that only minority students have long-lasting returns from attending a relatively more selective university.

[3] Loury and Garman (1993), for instance, show that minority students benefit relatively more than non-minority students in Engineering and Economics rather than in Humanities and Social Sciences. However, Gelbgiser and Alon (2016), Griffith (2010), and Price (2010) show that minority students drop out more frequently from math-intensive and STEM majors, which may account for some of the observed differences in minority versus non-majority returns.

the formal labor market dimension.

We add to this literature, employing the same methodology to investigate the effects of a renowned public university in Brazil. Building upon the previous works, we contrast not only participation and wages in the formal labor market but also shareholding outcomes among applicants around the university's multiple cutoffs.

Previously to affirmative action, we find that, from 3 to 9 years after expected graduation, there is no difference in aggregated formal labor market participation, shareholding status, or earnings in the formal sector between those who enroll at the flagship university and those who did not enroll, around the admission cutoff.

In contrast, the heterogeneity analysis shows positive effects in formal labor market participation but negative effects in terms of companies' shareholding status for students who studied exclusively in public high schools. This negative effect on shareholder status is mainly driven by very small companies (individual firms only), which may suggest different patterns of outside options, occupations, or earnings prospects between public high school students barely below and above the admission cutoff. For this group, we find positive but imprecise effects on our earnings measures in the formal sector. We find no sizable labor market effects within the group of private high school students.

In addition, students enrolled in STEM majors seem to participate more in the formal labor market between the 7th and 9th years after expected graduation. However, we do not find heterogeneous effects from attending UNICAMP in the formal sector earnings or shareholding status within STEM and non-STEM groups.

The second part of the paper addresses the third question, related to affirmative action effects on the labor market. Only a few studies have looked directly at the effects of these policies on earnings. Arcidiacono (2005) constructs a structural model of the college decision-making process and simulates a ban on affirmative action. He shows that removing race-based affirmative action has little effect on future earnings since it impacts only the quality of college individuals attend and returns to college quality are estimated to be quite low.

Bertrand et al. (2010) study the impact of a quota-based affirmative action policy targeting lower caste individuals in an Indian engineering school and find that the income gains of students admitted under the policy are smaller than the income losses of the displaced students. In the United States, Black et al. (2023) study the introduction of the Texas Top Ten Percent rule policy – which increased the probability of admission to students from disadvantaged backgrounds. The authors find that for those

highly ranked students from disadvantaged high schools, who gained access to more-selective colleges under the policy, college enrollment and graduation increased. In contrast, those students who lost access, which were the less highly ranked students at more advantaged schools, were not affected in terms of college enrollment, graduation, and earnings, despite being admitted to less selective colleges.[4]

In Brazil, Francis-Tan and Tannuri-Pianto (2018) estimate the returns to a public flagship university that adopted quotas for racial minorities – the University of Brasilia (UnB). They find that quota applicants experiment larger gains than non-quota applicants in years of education after application, and labor market returns are higher in more selective majors (although significantly positive only for men).

At another renowned public university, the State University of Rio de Janeiro (UERJ), Machado et al. (2022) study the impact of quotas for racial minorities and applicants from public high schools. They find that the policy led to an increase only in early-career earnings for targeted students but caused a large and persistent decrease in earnings for the university's most highly-ranked students. Exploiting the same policy, Ribeiro and Estevan (2019), even though not addressing the impacts on labor market outcomes, show that being admitted at UERJ positively affects the likelihood of passing the bar exam (OAB) for quota students, but not for non-quota (privileged) students.

At UNICAMP, we employ the RDD after the introduction of the affirmative action policy to see the effects of enrolling at the university separately among targeted and non-targeted students. After the implementation of the affirmative action policy, we observe that enrolling at the university does not affect either the formal labor market participation or the shareholder status 1 to 4 years after expected graduation within AA candidates (which is the group of public high school students in the period) and non-AA eligible candidates.

The remainder of the article is organized as follows: Section 2 provides a brief institutional background of the UNICAMP and details the university admission system. In Section 3, 4 and 5 we describe our data, the summary statistics of our sample, and the empirical strategy, respectively. Section 6 describes the validity of the regression discontinuity design in our setting. Section 7 reports our main findings. Section 8 discusses the interpretation of our results and gives more details on the outside options. Section 9 shows robustness checks for the empirical strategy and alternative estimations. Lastly, Section 10 concludes.

[4]Other studies address the "mismatch hypothesis". See, for example, Arcidiacono et al. (2016), Dillon and Smith (2017) and Rothstein and Yoon (2008).

2 The Admission System and Cutoff Grade

Every year, students interested in attending UNICAMP must take an admission exam composed of Phase 1 and Phase 2 tests. The format varied through the period, but the most important feature is that, upon registry, candidates rank up to three majors. Until 2003, applicants should order the majors within groups (which is typically just one major taught in different periods), and since 2004, majors could be ranked freely.

The final grade in the exam is composed of Phase 1 and Phase 2 exams and might include an Aptitude Test for some majors (e.g. Architecture & Urban Studies and Music) or ENEM grades if candidates give permission. Until 2003, There was only one final (standardized) grade, and from 2004 onwards, there was one final (standardized) grade for each major choice made by the applicant. Each major has its own defined priority disciplines, which could be weighted differently in the final standardized grade.

Candidates are ranked in decreasing order of final (standardized) grade and are accepted based on the availability of slots of each major, respecting the preference rank of the applicant and performance on priority disciplines by major.[5] Although applicants could be admitted in the second and third options, about 90% of approvals at UNICAMP occur in the first major choices.

Since 2005, students who studied exclusively in public high schools can opt for the affirmative action policy (PAAIS). Eligible applicants receive 30 additional points to the final standardized grades. If they additionally declare themselves to be black, brown, or native, they receive another 10 points. From this year onwards, we can address the differences in returns in the labor market outcomes among AA-eligible and non-eligible applicants.

Considering this framework, we construct the relevant cutoff grade as the final standardized grade of the last applicant enrolled in the candidate's first major choice. In other words, even though candidates could have up to three final standardized grades (by major choice), especially after 2003, every individual faces just one cutoff grade, related to his or her first major choice, from which we identify the discontinuity in the probability of enrollment.

[5]The priority disciplines were already considered in the calculation of the final standardized grade.

3 Data

The paper uses combined data from UNICAMP applicants. The database contains information on all the university candidates and allows us to observe the applicants from the moment they registered for the UNICAMP admission exam to years later in the Brazilian labor market. Additionally, for enrolled students, we can follow them throughout their undergraduate studies.

The first UNICAMP source of data is the admission exam data, provided by *Comissão Permanente para os Vestibulares* (COMVEST), the university admission office. It includes detailed administrative information on all individuals who registered to take UNICAMP's entrance exam regardless of their admission status from 1987 to 2022. This dataset contains all the grades for each applicant in Phase 1 of the admission exam and the standardized grades for those who reached Phase 2, ENEM scores, as well as information on whether the applicant was accepted and enrolled (and in which major) and their major choices. For this study, we restrict the sample to applicants from 1996 to 2004 in the period previous to the introduction of the affirmative action (AA), and from 2005 to 2009 after the AA was implemented.[6]

This rich dataset also includes a range of candidates' socioeconomic characteristics at the time of exam registration, such as age, sex, race, city/state of residence, household status, parents' education, income and occupation, the high school attended, and if they took the exam as trainees or started another university. The socioeconomic information is self-reported by applicants when they register for the admission exam at UNICAMP.

We restrict the sample to applicants who took the exam for the first time excluding trainees (to consider just one observation per candidate) and passed Phase 1 (since final grades, i.e., after Phase 2, define admission). Observations of candidates who applied to majors requiring aptitude tests are dropped, because those majors do not have deterministic cutoff grades (ie., do not define admission solely on final grades).[7] Before the AA, our main sample has 51,046 observations, and after the introduction of AA, 31,913 observations (6,292 eligible and 25,621 not eligible for the policy).

The second source is the data on the students' undergraduate records, provided

[6]We use these periods for two reasons: (1) to guarantee that we estimate the effects for the same cohorts in the labor markets and (2) to ensure that all applicants in the sample have labor market outcomes after the same years from expected graduation. This is a necessary restriction since we have the labor market outcomes from 2002 to 2018. We explain the RAIS dataset below.

[7]We keep those applicants who opted for Dentistry in the first major choice because the aptitude test, in this case, is not binding.

by UNICAMP's academic office (*Diretoria Acadêmica*). This dataset contains information on academic achievement throughout the undergraduate program for enrolled students. For each student, the data has information on course grades and attendance and an indicator variable of degree completion. From this database, we recover the ideal expected graduation time for each major, which is merged back to the data on all applicants, considering the first major choice registered before taking the exam.

The third source is RAIS (*Relação Anual de Informações Sociais*), administered by the Ministry of Labor, between 2002 and 2018. This data provides information on all employment relationships in the formal labor market and must be filled annually by every tax-registered firm in the country. For each employment relationship, there is information on the period of formal contract, occupation, and different measures of earnings, as well as sex, race, and educational level of the employee.

For future earnings, we calculate, for each given year, the (1) annual earnings, which sums up the average monthly wages including all contracts; (2) hourly wages for the main contract (the one generating the higher monthly income), and (3) December total earnings including all contracts. All measures are adjusted to 2002 *reais* by the Consumer Price Index (IPCA). For participation in the formal labor market, we code dummy variables related to at least 1, 6, and 12 months employed, for each applicant-year. UNICAMP and RAIS databases are merged using the unique social security number when it is available and by name-date of birth when it is not available.

The fourth source is the dataset of the shareholders by Corporate Taxpayer ID Numbers (in Portuguese, CNPJ) from the Brazilian IRS (*Receita Federal*). We restrict this dataset to the same period of RAIS. This database includes information on the companies' shareholders in Brazil, which can be merged back into the applicants' and RAIS data. For shareholder status, we code a dummy equal to 1 if the applicant is a partner of some company in a given year. We also analyze a more comprehensive margin of participation, combining the shareholder status with each of the formal labor market participation dummies.

Considering the periods of available information in RAIS and the cohorts restriction, our main estimates consider the impact of attending UNICAMP between the 3rd and 9th year from the ideal expected graduation before the AA, and between the 1st and 4th year from the ideal expected graduation during the AA period.

4 Empirical Strategy

To evaluate the returns of the elite university and deal with identification threats, we benefit from the fact that UNICAMP, like most Brazilian public universities, bases its admission decisions on objective test scores. Thus, we employ a Fuzzy Regression Discontinuity approach, which identifies and contrasts those candidates marginally above and below the strict admission cutoff grades. Since not every applicant above the cutoff grades enrolls, the following equation estimates a local "intent-to-treat" effect:

$$Y_{imy} = \gamma_0 + \alpha \mathbb{1}(x_{imy} \geq x^*_{imy}) + \gamma_1 f(x_{imy} - x^*_{imy}) + \gamma_2 f(x_{imy} - x^*_{imy}) * \mathbb{1}(x_{imy} \geq x^*_{imy}) + \eta_{my} + \varepsilon_{imy} \quad (1)$$

where Y_{imy} is the logarithm of earnings measures of individual i applying to major m from admission cohort y, between the 3rd and 9th (or 1st and 4th) year from expected graduation, or the dummies related to the months worked in the formal labor market and shareholding status in a given year. $\mathbb{1}(x_{imy} \geq x^*_{imy})$ is an indicator variable equal to 1 if the running variable x_{imy} (the applicant's final standardized grade) exceeds the cutoff grade faced by the candidate (represented by x^*_{imy}). $f(x_{imy} - x^*_{imy})$ is a polynomial function of the final grade standardized to zero. $f(x_{imy} - x^*_{imy}) * \mathbb{1}(x_{imy} \geq x^*_{imy})$ is the interaction term between the polynomial function and the indicator variable, to allow for flexible polynomials above and below the cutoff. η_{my} is the "cohort-first major choice" fixed effects (which are equivalent to cutoff fixed effects), and ε_{imy} is the error term clustered at the fixed effects level.

To recover the local average treatment effect (LATE) of enrolling at UNICAMP, we must rescale the intent-to-treat effect by the estimate of the discontinuity in enrollment at the cutoff (first stage). The fuzzy regression discontinuity design recovers the enrollment effect for those applicants induced to enroll by being above the cutoff grade, at the margin of admission. We estimate the effects semi-parametrically, using a local linear polynomial approach with a triangular kernel, analogously to the setup of Calonico et al. (2014). The bandwidths are chosen as proposed by Calonico et al. (2020).[8]

[8] In RDD setups with multiple cutoffs, the parameter of interest is interpreted as a weighted average of the LATE's across cutoffs (Cattaneo et al., 2016; Bertanha, 2020).

The "baseline" returns to the elite university will be given by the analysis for the period before 2005. From 2005 onwards, we run the analysis separately, within the AA-eligible and non-eligible groups.

5 Summary Statistics

This section describes the profile of students who apply to UNICAMP across periods.

Table 1 reports the socioeconomic characteristics of applicants across the phases of the exam between 1996 and 2004 (pre-AA). As expected from an elite university in Brazil, applicants who reach Phase 2 (column 2) have more favorable backgrounds than the initial pool of candidates (column 1). In Panel A, we see that the former group has fewer female candidates than the latter (41.3% vs. 48.2%), fewer candidates from public schools (for example, 22.8% vs. 31.6% in public high schools), fewer high school repeaters (3.7% vs. 6.3%) and fewer candidates who work in the year of the exam (16.8% vs. 22.1%). Panel B reports that their families have more favorable income distribution, their parents are more educated and better employed, and they have more access to computers (75.9% vs. 71.3%).[9]

In terms of the mean measures of outcomes, Table 2 shows that those candidates who reach Phase 2 increase their formal participation and shareholding status during the years. For example, participation regarding at least one month in the formal labor market goes from 53% to 66% from the 3rd to 9th year after expected graduation, whereas participation of at least twelve months goes from 37% to 56%. Shareholding status more than doubles, from 8% to 20%. On average, all earnings measures almost double: the annual earnings go from 25k to 48k, and the hourly earnings start at 14 and reach 28 *reais*.

Table 3 reports the socioeconomic characteristics of applicants who reach Phase 2 between 2005 and 2009 (during the AA period), by AA eligibility status. In Panel A we see that the eligible group has more black, brown, and native candidates than the non-eligible group (27.4% vs. 11.3%),[10] has more girls (42.5% vs. 39%), are older (19.2 vs. 17.9 years old), has more candidates coming from public secondary schools (66.1% vs. 10.9%),[11] and more candidates who work in the year of the exam (25.5% vs. 7.9%). In

[9] Top occupations refer to high political or administrative positions and liberal professional or managerial positions.

[10] We have the race information only after 2004, when the AA is implemented.

[11] The AA was targeted to public high school students, so we omitted the high school variable from this table.

Panel B, we show that AA-eligible candidates have lower family income, and their parents are less educated and employed in worse positions than non-eligible candidates. In the eligible group, a lower number of candidates have computer access (82.6% vs. 96.6%) and fewer parents own a house (65% vs. 76.9%). At least descriptively, the AA policy seemed to bring applicants from more disadvantaged backgrounds to the last phase of the exam.[12]

Table 4 reports the mean outcomes for the eligible and non-eligible applicants who reached Phase 2. First note that non-eligible candidates (Panel B) have, on average, lower participation in the formal labor market, but higher shareholding status from 1 to 4 years after expected graduation than the eligible ones (Panel A). For example, although the 12-month formal participation of the eligible applicants goes from 29.2% to 51.4% from 1 to 4 years after expected graduation, the same variable goes from 14.6% to 42.1% for the non-eligible group. The shareholding status goes from 3.2% to 6.3% for the AA-eligible group, while goes from 5.4% to 9.4% for the non-eligible group. As we will discuss later in the paper, these patterns may suggest that groups have different opportunities or outside options in the labor market.[13]

6 Validity of RDD

6.1 McCrary and Balancing Tests

There are two ways of assessing the RDD identification hypothesis, which states that applicants barely below the grade cutoffs form an adequate counterfactual group to those applicants barely above them. First, candidates must not be able to manipulate the running variable – the final standardized grade – to increase their probability of admission. Second, candidates should not differ in observable (and non-observable) characteristics potentially correlated with the labor market outcomes.

Figures 1 and 2 plot the density of applicants as a function of the distance of the final grade from the cutoff faced by the applicants. In the first figure, we aggregate

[12] Another way to see this fact is that there are more candidates exempt from paying the exam fee in the eligible group than in the non-eligible group (26.3% vs. 0.4%). This subsidy is exclusively determined by COMVEST, and it is based on their particular socioeconomic criteria. In the same context, Estevan et al. (2019) report that the policy significantly increased the admission probability of public high school applicants and redistributed university admission towards applicants from families with lower socio-economic status.

[13] As we will detail further, we are not able to estimate the effects of attending UNICAMP on earnings for the AA period due to weak first-stage estimates. In this analysis, we will just estimate the effects on the labor market participation variables.

the years before 2005 (pre-AA) of the UNICAMP dataset, whereas the second figure aggregates the years after 2004 (during AA years) for eligible and non-eligible AA applicants.[14] Visually, there is no evidence of manipulation of the running variable, as no jumps in the number of applicants are noticed around the cutoffs (standardized to zero). In Figures 3 and 4 we conduct a formal density test (McCrary, 2008), which confirms the evidence both before and during AA periods. It would be surprising if there were a discontinuity in the density test: the cutoffs vary by year and major, and the exam is one of the most competitive in the country.

Figures 5, 6 and 7 visually show a series of balancing tests in individual pre-determined characteristics which may affect our outcomes of interest, for the pre-AA and during AA periods (by AA eligibility), respectively. These figures illustrate the linear specification and take "cohort-first major choice" into account, around 60 points of the distance from the cutoff. Those variables are related to sex, age, type of school, if applicants work in the exam year, and related to previous degree of preparation (such as prep-courses or if attended another college).[15] Tables 5, 6 and 7 provide all formal balancing tests, considering not only the individual variables but also the family characteristics for the pre-AA and during AA periods.[16]

The tables report that there are no significant jumps in any of those variables either before or after the introduction of AA. This evidence reinforces the validity of our regression discontinuity setup.[17]

6.2 Fuzzy Discontinuity

Now we move to our discontinuities around the cutoffs. In the left, Figure 8 plots the discontinuities in the probability of admission and enrollment as a function of the running variable, pooling cutoffs and years before the introduction of AA, considering a 1-point bin average, around the 60-point window. We see a sizable discontinuity of around 30 percentage points both in admission and enrollment. On the right, we plot just the enrollment discontinuity alone.

It should be remembered that our sample considers the first time that an appli-

[14] In these Figures, each point corresponds to a 1-point local average bin.

[15] Figures A.1, A.2 and A.3 in the Appendix illustrate the balancing test for family pre-determined characteristics, related to family income, educational level of parents and occupation of parents.

[16] The tables also provide the bandwidth and the first-stage enrollment discontinuity estimates for each test.

[17] Despite testing all the variables individually, we could create and test an index of these covariates to account for multiple hypothesis testing (Johnston and Mas, 2018). However, we see that virtually all variables are continuous at the cutoff. In our case, such a test would not bring any additional evidence.

cant took the exam and that our cutoff variable is the final standardized grade of the last applicant enrolled in the candidate's first major choice. In this sense, we must highlight the fuzzy setting: the enrollment share below the cutoff is not zero because individuals who were not admitted in the first attempt could be admitted and enroll at the university in the following years, or enroll in the second major choices. Above the cutoffs, individuals may choose not to enroll at UNICAMP, for instance, because they were admitted to another university.[18]

Figure 9 plots the enrollment discontinuity during the AA years, for the AA-eligible group (left) and for the non-eligible group (right). The discontinuities are also big (around 20 and 30 p.p.) and significant, although the discontinuity for the AA-eligible group is "fuzzier" – this group is substantially smaller than the non-eligible group, which contributes to a lower first-stage.[19]

As the magnitude of discontinuity in enrollment probability may vary across the different labor market outcomes and by group (especially during the AA period), we will provide the F-stat in the results table, to show that, for the outcomes that we are able to estimate, we have strong first-stage estimates.

7 Results

Before estimating the effects of the elite university on wages, we must be aware that participation in the formal labor market could be a concern and lead to important bias. It is possible to imagine a situation where the returns to the elite university are found to be positive but might be capturing an effect in the extensive margin. In other words, our estimates of wage returns in the formal labor market would be biased if attending the university have a positive effect on formal employment participation.[20]

[18]This is the same setup of Kirkeboen et al. (2016). For robustness checks, we re-estimate our results dropping those admitted in later years, as done by Francis-Tan and Tannuri-Pianto (2018). Our results are robust to this restriction. Duryea et al. (2023) keep all exam tries in their main sample, but they use just two years of the UFPE admission system data. In this sense, they opted to cluster the error term at the individual level, instead of the cutoff level. We deal with a much larger span of data and our clustering strategy gives more conservative estimates.

[19]In the Appendix, we also plot the discontinuities by year (Figures A.4 and A.5). The fact that we have lower first-stage estimates for the AA group will be crucial for our analysis in this period – this is the main reason why we are not able to estimate the effects on earnings, but only on participation.

[20]When participation rates are significantly different below and above the cutoffs, we should interpret our effects on earnings cautiously, and conditionally on working in the formal sector.

7.1 1996-2004 – pre-AA period

First, we investigate the results regarding the pre-AA period. We start by showing the effects of attending UNICAMP in our main sample, in an aggregate manner.

Table 8 reports the Fuzzy RD estimates of the effects on participation in the formal labor market for our three constructed variables (at least 1, 6, and 12 months), between 3 and 9 years after expected graduation. Each column (within panels) represents a separate RD coefficient. Although candidates who attend UNICAMP, at the margin of admission, have always higher (punctual) participation rates in the formal labor market (almost all in the range of 1 to 5 p.p. higher than those barely below the cutoff), almost all of the estimates are insignificant at 10% level.

Table 9 reveals the same pattern but considers another dimension of the labor market, the shareholding status. None of the coefficients is statistically significant and all of them are too close to zero. When we combine the formal participation outcomes with the shareholding status, in Table 10, we still do not reject that the effect of attending UNICAMP is zero.

Table 11 reports the estimates of earnings measures.[21] Surprisingly, all of them are punctually negative, but none are statistically significant. Although we could find some negative estimates of about 10-14 p.p., we were not able to reject the hypothesis that attending UNICAMP does not change returns in the labor market.[22]

In summary, our preliminary results suggest that, before the AA introduction, there was no difference in aggregate formal labor market participation, shareholding status, or earnings in the formal sector between those barely above and below the cutoffs, from 3 to 9 years after expected graduation.

7.1.1 1996-2004 – pre-AA period: by type of school

Although we cannot reject the null effects in the whole sample, there may be some hidden heterogeneity in the returns to attending UNICAMP. Some closely related papers document heterogeneous returns to elite universities by some kind of vulnerability status (Duryea et al., 2023; Francis-Tan and Tannuri-Pianto, 2018; Leite, 2018). In the Brazilian context, the type of high school an individual attends is one the most im-

[21] If one is concerned about the covariates unbalance among the candidates who have positive salaries in RAIS, we perform the same balancing tests considering just those individuals with non-missing (3rd and 9th) annual earnings in Appendix Tables A.1 and A.2.

[22] We also tested the effects on growth measures, as well as on mean and maximum earnings measures during periods (3-6, 6-9, 3-9 years after expected graduation). We still do not find any sizable effects.

portant predictors of one's social and economic background. We investigate if such heterogeneity is present in our setup by estimating the participation and earnings in the labor market separately for the sample of students from public and private high schools before the AA is implemented.[23]

Table 12 reports the effects of attending the University in the formal labor market participation by public and private high schools.[24] First, note that all RD coefficients are very large for public high school students – above 10 p.p. – but close to zero for private students. Although we could not reject the null hypothesis for public high school students in the 3rd and 4th year after expected graduation, we find sizable and significant coefficients from the 5th to the 8th year. According to the magnitudes, this means that public high school students induced to enroll at UNICAMP participate 23-37 p.p. more than those from the same group who were below the cutoff and did not enroll, around the cutoff.[25] The effect is equivalent to 34-40% of the group's average barely below the cutoff for at least 6-month participation and 40-60% for at least 12-month participation.

On the other hand, Table 13 shows that, despite not being statistically significant at the usual levels, the impact on shareholding status is (punctually) much more negative for public high school students. This impact is sufficiently strong to offset all the positive effects in the formal labor market participation when we combine both outcomes (Table 14).

If we assume that the effect in the shareholding status is negative but we did not have sufficient power to detect it, we could go further and investigate what kind of companies are driving those results. Table 15 shows that the negative effect on shareholding status for public students comes from very small companies (specifically, from those which have zero employees – just the individual himself) – a reduction of about 7-15 percentage points.[26] All other effects in the table (in particular, for the private students' sample) are too close to zero and not significant.

Table 16 reports the earnings estimates for each group, conditional on working. Despite the fact that the coefficients for the public high school sample are positive and much larger than the coefficients in the private high school sample, we could only

[23] Figure A.6 illustrates the first-stage enrollment discontinuity for heterogeneity groups we analyze.

[24] We exclude from the public high school group the applicants who studied in technical high schools. Once these schools are highly comparable to private ones, excluding them refines the vulnerability group we are interested in.

[25] We omit the results regarding at least one month in the formal labor market, but the results for this variable are the same.

[26] The categorization of companies' size is not arbitrary. It is important to note that the majority of companies in Brazil are small: roughly 25% of them have more than 3 employees.

reject the null on 3 out of 21 occasions. Public high school students participate more in the formal labor market, but conditioning on participation, we could not reject the null that the University does not affect earnings.[27]

Taken together, these four tables suggest that, compared to their peers barely below the cutoff, public high school applicants just above the cutoff are employed more in the formal sector and work less in self-employed firms. Attending a selective university does not affect any sort of participation of students from private high schools. Although the University increases formal participation for public high school students, they do not experiment higher earnings (conditional on working). We need further investigation to understand if these results are beneficial or not for public high school students.[28] Figures A.7-A.11 in the Appendix illustrate the effects reported in the Tables.

7.1.2 1996-2004 – pre-AA period: by type of major

Another potential source of heterogeneity documented in the literature relates to returns to different types of majors (Hastings et al., 2013; Kirkeboen et al., 2016). As a large and renowned public university in Brazil, there is a huge variety of fields offered by UNICAMP. We address this possibility by estimating the returns to attending UNICAMP separately by applicants who chose to apply for STEM and non-STEM majors before the AA is implemented.

Table 17 reports the participation in the formal labor market by type of major. The results show that attending the University significantly increases at least 6-month formal participation between 7-8 years after expected graduation and increases at least 12-month participation between 7-9 years for the candidates enrolled at STEM majors, but it does not affect participation at the beginning of their careers. Additionally, the University does not affect formal participation for non-STEM majors. The RD coefficients indicate that, around the cutoff, applicants who were induced to enroll in STEM majors at UNICAMP participate 13-21 p.p. more than their peers barely below the cutoff and who would have enrolled if they had the chance. The effect is equivalent to 26-32% of the group average barely below the cutoff for at least 6-month participation and 22-34% for at least 12-month participation.

However, attending the university does not increase the shareholding status (in

[27] We also estimated the effects on growth, average, and maximum measures of earnings (under request). If anything, attending UNICAMP increases public high school students' maximum hourly wage in 23 *reais*, between the 6th and the 9th year after expected graduation.

[28] In terms of welfare, it should highly depend on the distribution of occupations by major.

both groups). Table 18 reports that, although the coefficients for the STEM group are always positive (and always negative for the non-STEM group), none are statistically significant at the 10% level. Besides, when we combine formal participation with shareholding status (Table 19), the coefficients that were significant in Table 17 become smaller and less significant. When we split the shareholding status by companies' size, we do not see any difference regarding the STEM and non-STEM groups (Table 20).

Table 21 reports the results by type of major in our three measures of earnings. We see that our estimates are too imprecise or substantially close to zero. Hence, conditional on working, there are no heterogenous monetary returns to attending UNICAMP by type of major.[29]

In summary, attending UNICAMP increases formal employment for those who chose and enrolled in STEM majors, relative to their peers barely below the cutoff that did not have the chance to enroll. We do not find any impact on shareholding status or earnings (conditionally on working) for either group. Figures A.12-A.16 in the Appendix illustrate the effects reported in the Tables.[30]

7.2 2004-2009 – during AA period

Now we proceed to the results we can estimate during the AA period. As we mentioned earlier, the sample for the AA period is smaller. Although we are not able to carry out the heterogeneity exercises that we have done for the pre-AA period, the separate analysis within AA and non-AA eligible candidates is not only useful in terms of educational policy but also gives a glimpse of how attending an elite university affects the disadvantaged applicants in more recent years. Note that the AA group is roughly the same group of public high school students that we analyzed in the previous section in the absence of AA.

Table 22 shows the formal labor market participation by AA eligibility status. First, we note that almost all coefficients are negative but insignificant. However, for the AA group, the magnitudes can be as high as 30 p.p. in at least 6-month participation (3

[29] We also estimated the effects on growth, average, and maximum measures of earnings (under request). If anything, attending UNICAMP decreases in 14 p.p. the annual earnings growth for the non-STEM sample between the 6th and 7th years and marginally increases in 10 p.p. the hourly wage growth for the STEM group between the 7th and the 9th year after expected graduation.

[30] One may wonder whether there is any evidence on the labor market returns by major selectivity, instead of major types. We ran the same regressions splitting the sample into 1st and 3rd terciles of competitiveness, considering the mean ranking of cutoff grades over the years, and we do not find any premium of attending UNICAMP for either group (results under request).

and 4 years after expected graduation) and 25 p.p. in at least 12-month participation (4 years after expected graduation). Note that the AA group is much smaller than the non-eligible group, and the standard deviations are huge. This may indicate statistical power issues, so we might not reject the null hypothesis of no effects of attending the University even in the presence of negative effects for the AA group.

In terms of shareholding status, Table 23 reports positive coefficients for the AA-eligible group and negative ones for the non-eligible group. However, the magnitudes are too small and standard deviations too high to reject a null hypothesis of no effects. Similar to Table 22, the same patterns occur when we combine formal participation outcomes with the shareholding status in Table 24.

Figures A.17-A.19 illustrate the difference in magnitudes of the coefficients and standard deviation among the groups.

In summary, although it seems that the AA-eligible candidates induced to enroll at UNICAMP participate less in the formal market than the AA candidates barely below the cutoff who did not have the chance to enroll, we could not draw any statistical conclusions. Within the non-eligible group, by contrast, the results indicate a well-estimated zero effect of attending UNICAMP.

Finally, note that the F-stat for the eligible applicants still indicates a strong first-stage in all tables, despite being much smaller than the other analysis we have done so far. However, we lose it when we try to estimate the effects of attending UNICAMP on earnings for the AA group.[31]

8 Outside Options

Our main estimates suggest that there are no positive returns in the labor market in the aggregated sample, but it varies according to the type of school and major (in particular, in terms of employment in the labor market). However, we are estimating the labor market premium of attending UNICAMP against a bundle of possible alternatives, which possibly vary according to the vulnerability status and professions' prospects in the labor market.

To further understand the outside options, we try to assess two possibilities regarding our counterfactual group – i.e., the candidates on the left of the cutoff grades: (1) are they admitted to other universities? If so, where did they go? (2) if they did not go

[31] In fact, we did estimate an ITT version of the main specification, and the effects were essentially zero for both groups but hard to interpret.

to other universities - did they go directly to the labor market? Note that, depending on the outside option, we could not easily interpret our results as the "university quality" effect. This interpretation would be more plausible if the counterfactual group indeed went to other universities.

Probably, our counterfactual group is composed of both situations. Part of it pursues a higher education degree in other universities and part of it goes directly to the labor market. To understand to what extent one or the other occurs, we first provide a descriptive analysis considering only the UNICAMP applicants on the left of the cutoff grade (-50 points) who never enrolled at the University in Figures 10 and 11.

Interesting patterns emerge. Before AA, 8-15% of applicants on the left who never enrolled at UNICAMP worked during the four years after taking the exam. These numbers are strikingly different between types of school attended: 21-32% of public high school students work in the four years following the exam, but only 3-9% of private high school students do so. The differences between STEM and non-STEM applicants on the left are not that impressive.

We also observe similar patterns in terms of admission to other flagship universities in the State of Sao Paulo – the University of Sao Paulo (USP) and the State University of Sao Paulo (UNESP). Note that 24% of applicants on the left were ever admitted at USP and 8% were ever admitted at UNESP. However, only 16% of public high school students were admitted at USP versus 26% of private high school students. The differences are not that huge for UNESP admission and also not that relevant among STEM and non-STEM applicants.[32]

After the introduction of AA, the gap between AA eligibility groups is also impressive. While just 7-13% of not eligible applicants on the left work in the following four years after the exam, 31-39% of the eligible do so. The non-eligible group also gets more admission at USP: 32% versus 22% of the eligible ones.[33]

Those figures do not imply causal claims, but they might suggest, at least anecdotally, that more vulnerable groups have different restrictions in the set of outside options, not only in terms of pursuing other higher education degrees but also in terms of anticipating the labor market entry.

One may wonder if those factors could hamper our empirical strategy, but it is important to note that neither the early entry into the labor market nor the admission to other flagship universities of Sao Paulo interfere with our estimates, neither before

[32]Before the AA period, the data refers to admission at USP and UNESP between 1999 and 2004.
[33]After the introduction of AA, we do not have the admission data for UNESP.

nor after the AA is implemented: (1) Tables 25-28 report that crossing the UNICAMP cutoff grade does not affect participation in the formal labor market in the four years following the exam application (in the whole sample and within groups), and (2) Figures 12-14 indicate that, around the UNICAMP cutoff grades, the rates of admission in these two alternative universities are balanced not only in the aggregate sample but also within the heterogeneity groups and AA eligibility status.[34]

Considering this section's discussion about the outside options, we still need to argue why we interpret the impact of attending UNICAMP as a "quality effect", rather than an impact of a university education degree on labor market outcomes. In this direction, the more straightforward sample restriction we impose is dropping all applicants without a higher education degree, as reported in the employment contracts from RAIS.

Tables A.3-A.6 provide the aggregate RD estimates for this sample, before the AA period. Similar to our main estimates, we do not find any overall evidence of labor market premium, both in terms of participation and earnings in the formal sector.[35]

This sample restriction does not affect the overall results regarding heterogeneity analysis. If anything, Tables A.7-A.11 show that public high school students enrolled in UNICAMP participate 20-30 p.p. more in the formal labor market (5-8 years after expected graduation) and have less shareholding status (guided by reductions in individual firms), relative to public high school students barely below the cutoff that did not have the chance to enroll. Conditionally on working, we still find little (if any) positive earnings premium for this group, and no effects at all within the group of private high school students.[36] However, the magnitudes of all RD estimates regarding STEM majors decrease (Tables A.12-A.15), and we could not infer any statistically significant premiums in terms of major heterogeneity.

[34]We also estimated the main results splitting the sample into majors with above and below median enrollment rates (conditional on admission) at UNICAMP. We assumed that majors with higher enrollment rates have fewer outside options, and then we tested if the returns for these majors were positive. However, we did not find any difference between these groups. Results under request.

[35]We provide the balancing tests for this sample in Appendix Table A.34.

[36]We still find positive and significant estimates for the maximum hourly wage for public high school students. Around the cutoff, those who enroll increase in 20 *reais* the hourly wage in the main contract (under request).

9 Robustness Checks

One may worry if our fuzzy discontinuity setup is defining the appropriate compliers group since we are considering the threshold-crossing variable of the first attempt as an instrument for UNICAMP "ever-enrollment", similar to Kirkeboen et al. (2016). In this sense, we re-estimate our results for the sample that drops who did not enroll in the year of the first attempt but eventually did it in later years, which provides an analogous analysis to Francis-Tan and Tannuri-Pianto (2018).

Tables A.16-A.24 reports that our main results persist. For the public high school group, attending UNICAMP increases formal participation in 16-25 p.p. between 5 and 8 years after expected graduation and decreases the shareholding status (again, guided by reductions in individual firms between the 5-9th year). We observe little (if any) effects on earnings conditionally on working in the formal sector, but nothing is observed for the private high school students group. For applicants enrolled in STEM majors, we observe an increase of 14-20 p.p. in formal employment, but no implications in terms of shareholding status and earnings.

Another possible concern regards the major offering over the period considered. It may be the case that the creation (or exclusion) of majors during the years coincide with the periods that we find evidence of the heterogeneity effects. We restrict the sample to those who apply for majors that are offered in the whole period of analysis and our main qualitative conclusions still hold (Tables A.25-A.33).

Additionally, we ran two more robustness exercises, which we provide under request. First, we considered the sample of the last attempt of applicants. The aggregate and heterogeneity results persist in meaning and magnitudes, although we highlight that the balancing tables are indisputably worse than our the balancing tests for our main sample. Second, we consider an alternative cutoff – the grade of the last admitted in the applicant's first major choice from the second call list. We lose the first-stage strength for the heterogeneity analysis, but the aggregate results hold.[37]

Finally, we provide balancing tests around the cutoff for all restricted samples in Tables A.34-A.36 to check the validity of these robustness exercises.

[37] We used the second call list because it is the furthest list of admitted applicants among all the years (1996-2004).

10 Conclusion

This paper investigates (1) the baseline returns to an elite university in Brazil, previously to the implementation of affirmative policies, and how these returns vary across years, socioeconomic groups, and majors and (2) if the introduction of the affirmative action policy affects the evolution of labor market outcomes of targeted applicants and non-targeted applicants.

We exploit two features of one of the most renowned public universities in Brazil – UNICAMP. First, UNICAMP applies a fully objective admission exam for undergraduate studies, which helps us to identify the admitted and non-admitted candidates according to a perfectly known rule. Second, UNICAMP was also an early adopter of affirmative action policies in 2005, which granted bonus points in the admission exam for public high schools and underrepresented minorities.

We combine administrative data from UNICAMP applicants with information on all employment relationships in the formal labor market (RAIS), and include novel data for each Corporate Taxpayer ID Number (CNPJ) from the Brazilian IRS, from which we identify the corporate shareholder status from the applicants' database.

Our RD analysis suggests that, previously to affirmative action, there is no difference in aggregated formal labor market participation, shareholding status, or earnings in the formal sector between those who enrolled at the flagship university and those who did not enroll, around the admission cutoff, from 3 to 9 years after expected graduation.

In contrast, the heterogeneity results shows positive effects in formal labor market participation but negative effects in terms of companies' shareholding status for students who studied exclusively in public high schools. This negative effect on shareholding is mainly driven by very small companies (individual firms), which may suggest different patterns of outside options, occupations, or earnings prospects between public high school students barely below and above the admission cutoff. We find no sizable labor market effects within the group of private high school students. In addition, students enrolled in STEM majors seem to participate more in the formal labor market between the 7th and 9th years after expected graduation. However, we do not find heterogeneous effects from attending UNICAMP in the formal sector earnings or shareholding status within STEM and non-STEM groups.

After the introduction of affirmative action, we separately analyze the effects of attending UNICAMP on participation in the labor market between the 1st and 4th

year after expected graduation, among AA and non-AA eligible candidates. We were not able to reject that, compared to their peers barely below the cutoff and did not have the chance to enroll, the enrolled applicants do not benefit from the elite university – regardless of AA eligibility status.

We contribute to the growing literature in the field by adding evidence on returns to university selectivity, not only on the traditionally tested outcomes but also by being the first paper to address an overlooked dimension, which is the shareholding market. Still, we are not able yet to understand the implications of the shareholding status to the long-run earnings, especially of public high school students, which need further investigation. We also discuss the importance of the outside options, which are substantially underestimated in closely related papers. Nevertheless, we think that both features must be addressed in more detail to advance the understanding of higher education selectivity returns.

References

M. Anelli. The returns to elite university education: A quasi-experimental analysis. *Journal of the European Economic Association*, 18(6):2824–2868, 2020.

P. Arcidiacono. Affirmative action in higher education: How do admission and financial aid rules affect future earnings? *Econometrica*, 73(5):1477–1524, 2005.

P. Arcidiacono, E. M. Aucejo, and V. J. Hotz. University differences in the graduation of minorities in stem fields: Evidence from california. *American Economic Review*, 106 (3):525–562, 2016.

J. R. Behrman, J. Constantine, L. Kletzer, M. McPherson, and M. Schapiro. The impact of college quality on wages: Are there differences among demographic groups? *Williams Project on the Economics of Higher Education, Discussion Paper*, 38, 1996a.

J. R. Behrman, M. R. Rosenzweig, and P. Taubman. College choice and wages: Estimates using data on female twins. *The Review of Economics and Statistics*, pages 672–685, 1996b.

M. Bertanha. Regression discontinuity design with many thresholds. *Journal of Econometrics*, 218(1):216–241, 2020.

M. Bertrand, R. Hanna, and S. Mullainathan. Affirmative action in education: Evidence from engineering college admissions in india. *Journal of Public Economics*, 94 (1-2):16–29, 2010.

D. A. Black and J. A. Smith. Estimating the returns to college quality with multiple proxies for quality. *Journal of labor Economics*, 24(3):701–728, 2006.

S. E. Black, J. T. Denning, and J. Rothstein. Winners and losers? the effect of gaining and losing access to selective colleges on education and labor market outcomes. *American Economic Journal: Applied Economics*, 15(1):26–67, 2023.

D. J. Brewer, E. R. Eide, and R. G. Ehrenberg. Does it pay to attend an elite private college? *The Journal of Human Resources*, 34(1):104–123, 1999.

M. Bustelo, S. Duryea, L. Freitas, L. M. Garcia, C. Piras, B. S. Y. G. Sampaio, and G. R. Sampaio. The role of universities in intergenerational social mobility: Examining mobility at the federal university of pernambuco, brazil. *Technical Note BID*, (1322), 2017.

S. Calonico, M. D. Cattaneo, and R. Titiunik. Robust nonparametric confidence intervals for regression-discontinuity designs. *Econometrica*, 82(6):2295–2326, 2014.

S. Calonico, M. D. Cattaneo, and M. H. Farrell. Optimal bandwidth choice for robust bias-corrected inference in regression discontinuity designs. *The Econometrics Journal*, 23(2):192–210, 2020.

M. D. Cattaneo, R. Titiunik, G. Vazquez-Bare, and L. Keele. Interpreting regression discontinuity designs with multiple cutoffs. *The Journal of Politics*, 78(4):1229–1248, 2016.

S. B. Dale and A. B. Krueger. Estimating the payoff to attending a more selective college: An application of selection on observables and unobservables. *The Quarterly Journal of Economics*, 117(4):1491–1527, 2002.

S. B. Dale and A. B. Krueger. Estimating the effects of college characteristics over the career using administrative earnings data. *Journal of human resources*, 49(2):323–358, 2014.

E. W. Dillon and J. A. Smith. Determinants of the match between student ability and college quality. *Journal of Labor Economics*, 35(1):45–66, 2017.

S. Duryea, R. P. Ribas, B. Sampaio, G. R. Sampaio, and G. Trevisan. Who benefits from tuition-free, top-quality universities? evidence from brazil. *Economics of Education Review*, 95:102423, 2023.

F. Estevan, T. Gall, and L.-P. Morin. Redistribution without distortion: Evidence from an affirmative action programme at a large brazilian university. *The Economic Journal*, 129(619):1182–1220, 2019.

A. Francis-Tan and M. Tannuri-Pianto. Black movement: Using discontinuities in admissions to study the effects of college quality and affirmative action. *Journal of Development Economics*, 135:97–116, 2018.

D. Gelbgiser and S. Alon. Math-oriented fields of study and the race gap in graduation likelihoods at elite colleges. *Social Science Research*, 58:150–164, 2016.

A. L. Griffith. Persistence of women and minorities in stem field majors: Is it the school that matters? *Economics of Education Review*, 29(6):911–922, 2010.

J. S. Hastings, C. A. Neilson, and S. D. Zimmerman. Are some degrees worth more than others? evidence from college admission cutoffs in chile. Technical report, National Bureau of Economic Research, 2013.

M. Hoekstra. The effect of attending the flagship state university on earnings: A discontinuity-based approach. *The review of economics and statistics*, 91(4):717–724, 2009.

C. M. Hoxby. The changing selectivity of american colleges. *Journal of Economic Perspectives*, 23(4):95–118, 2009.

R. Jia and H. Li. Just above the exam cutoff score: Elite college admission and wages in china. *Journal of Public Economics*, 196:104371, 2021.

A. C. Johnston and A. Mas. Potential unemployment insurance duration and labor supply: The individual and market-level response to a benefit cut. *Journal of Political Economy*, 126(6):2480–2522, 2018.

L. J. Kirkeboen, E. Leuven, and M. Mogstad. Field of study, earnings, and self-selection. *The Quarterly Journal of Economics*, 131(3):1057–1111, 2016.

G. G. Leite. Os retornos do ensino superior seletivo: evidências dos admitidos na universidade de são paulo. Master's thesis, Universidade de São Paulo, 2018.

M. C. Long. Changes in the returns to education and college quality. *Economics of Education review*, 29(3):338–347, 2010.

L. D. Loury and D. Garman. Affirmative action in higher education. *The American Economic Review*, 83(2):99–103, 1993.

L. D. Loury and D. Garman. College selectivity and earnings. *Journal of labor Economics*, 13(2):289–308, 1995.

C. Machado, G. J. Reyes, and E. Riehl. The efficacy of large-scale affirmative action at elite universities. *Unpublished Manuscript*, 2022.

J. McCrary. Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics*, 142(2):698–714, 2008.

J. Price. The effect of instructor race and gender on student persistence in stem fields. *Economics of Education Review*, 29(6):901–910, 2010.

A. Ribeiro and F. Estevan. Affirmative action outcomes: evidence from a law school in brazil. *Umplished Manuscript*, 2019.

J. Rothstein and A. H. Yoon. Affirmative action in law school admissions: What do racial preferences do? *The University of Chicago Law Review*, 75(2):649–714, 2008.

J. E. Saavedra. The learning and early labor market effects of college quality: A regression discontinuity analysis. *Investigaciones del ICFES*, 2009.

S. Sekhri. Prestige matters: Wage premium and value addition in elite colleges. *American Economic Journal: Applied Economics*, 12(3):207–25, 2020.

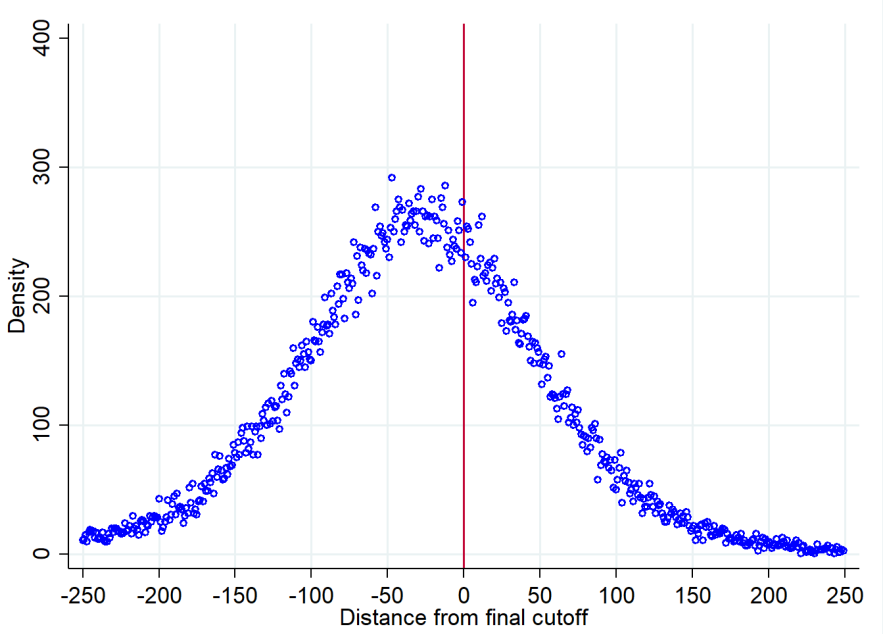
E. E. Telles. *Race in another America: The Significance of Skin Collor in Brazil*. Princeton University Press, 2004.

S. D. Zimmerman. Elite colleges and upward mobility to top jobs and top incomes. *American Economic Review*, 109(1):1–47, 2019.

Figures and Tables

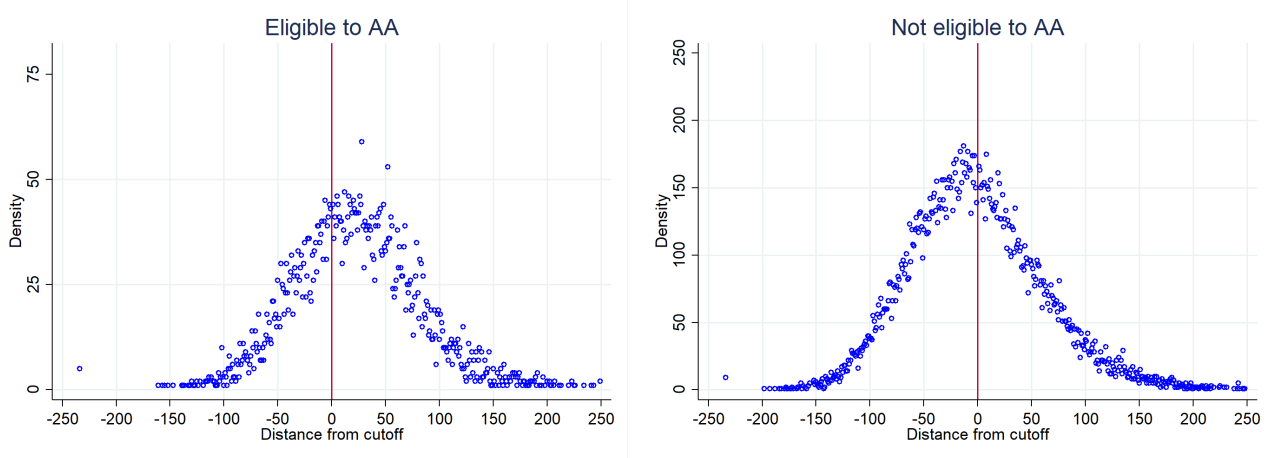
Figures

Figure 1: McCrary Test - pre-AA: 1996-2004



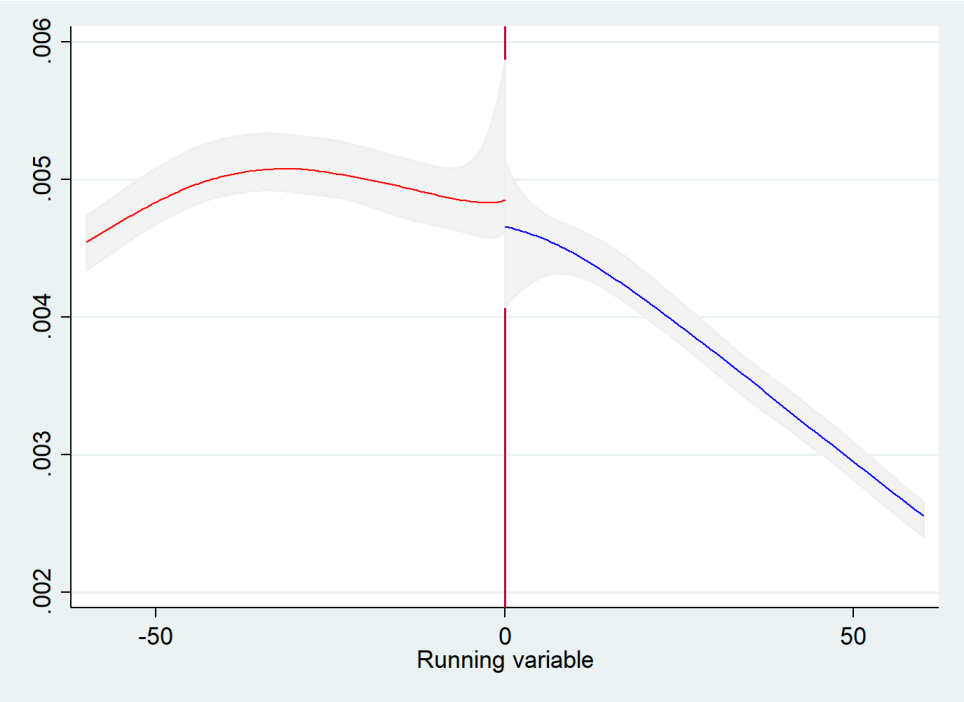
Notes: This figure reports the density of applicants as a function of the running variable (distance from final cutoff), before the implementation of the AA. Each blue dot represents a 1-point local average.

Figure 2: McCrary Test - during AA: 2005-2009



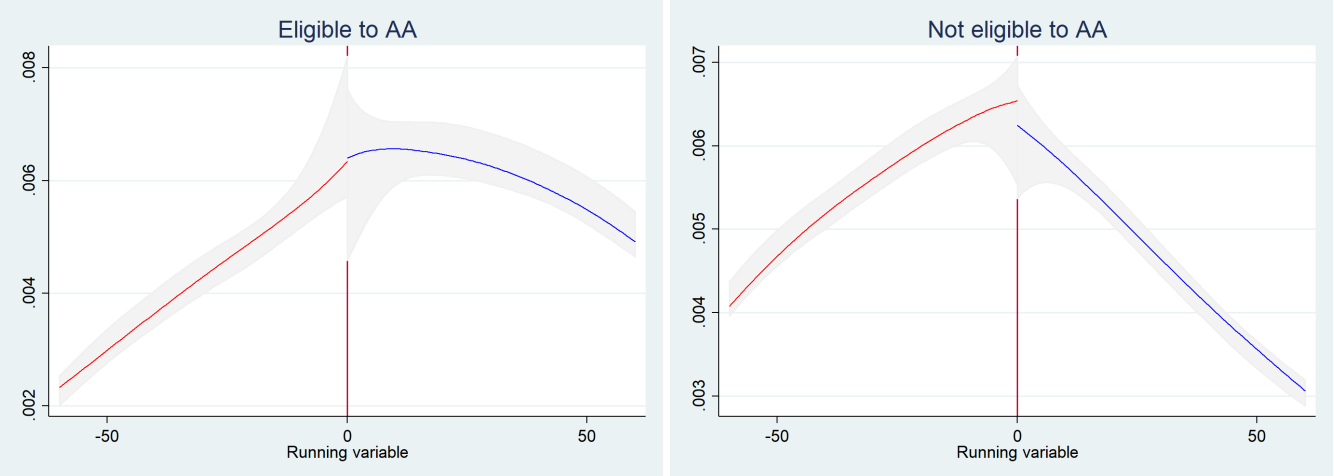
Notes: This figure reports the density of AA (left) and non-AA (right) applicants as a function of the running variable (distance from final cutoff). Each blue dot represents a 1-point local average.

Figure 3: Density Test pre-AA: 1996-2004



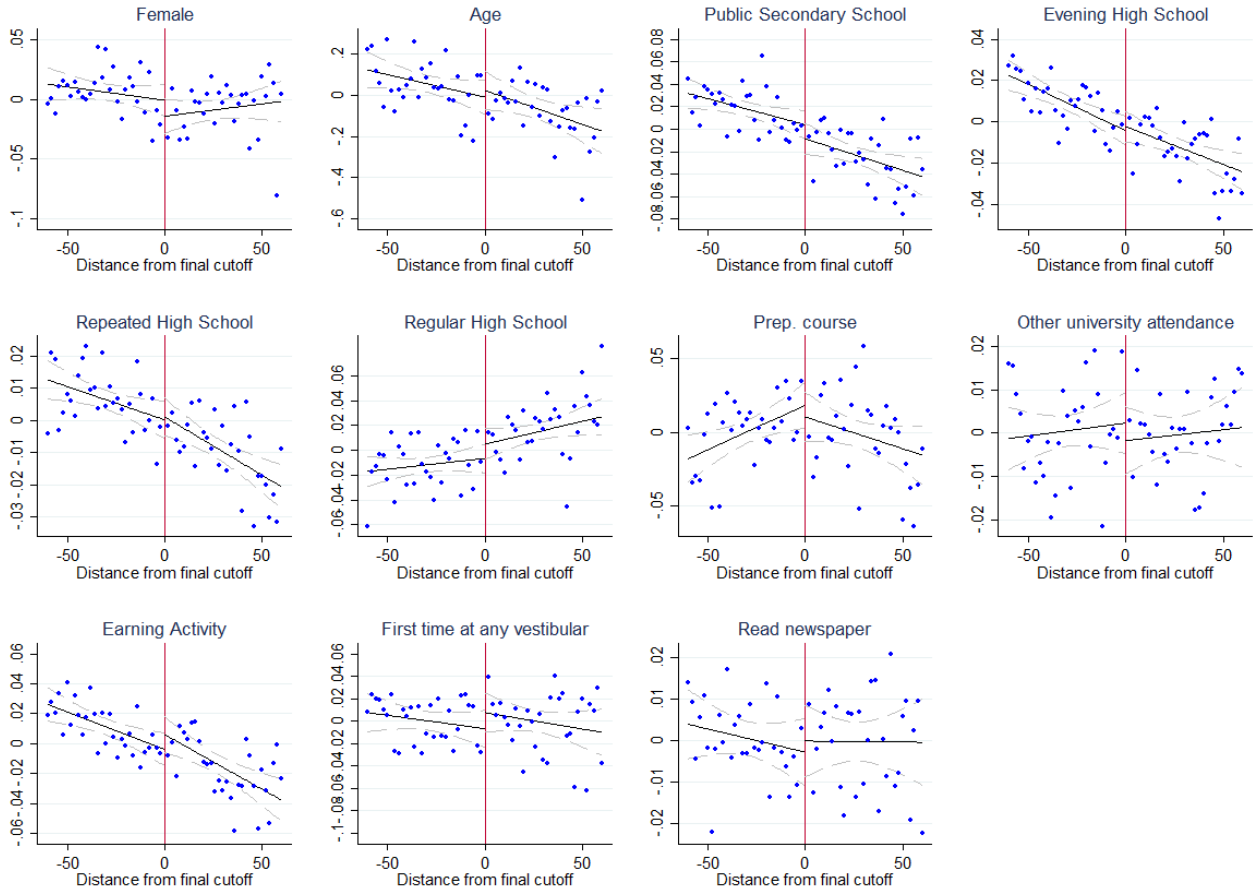
Notes: This figure reports the formal density test at the cutoff, standardized to zero, before the implementation of the AA.

Figure 4: Density Test during AA: 2005-2009



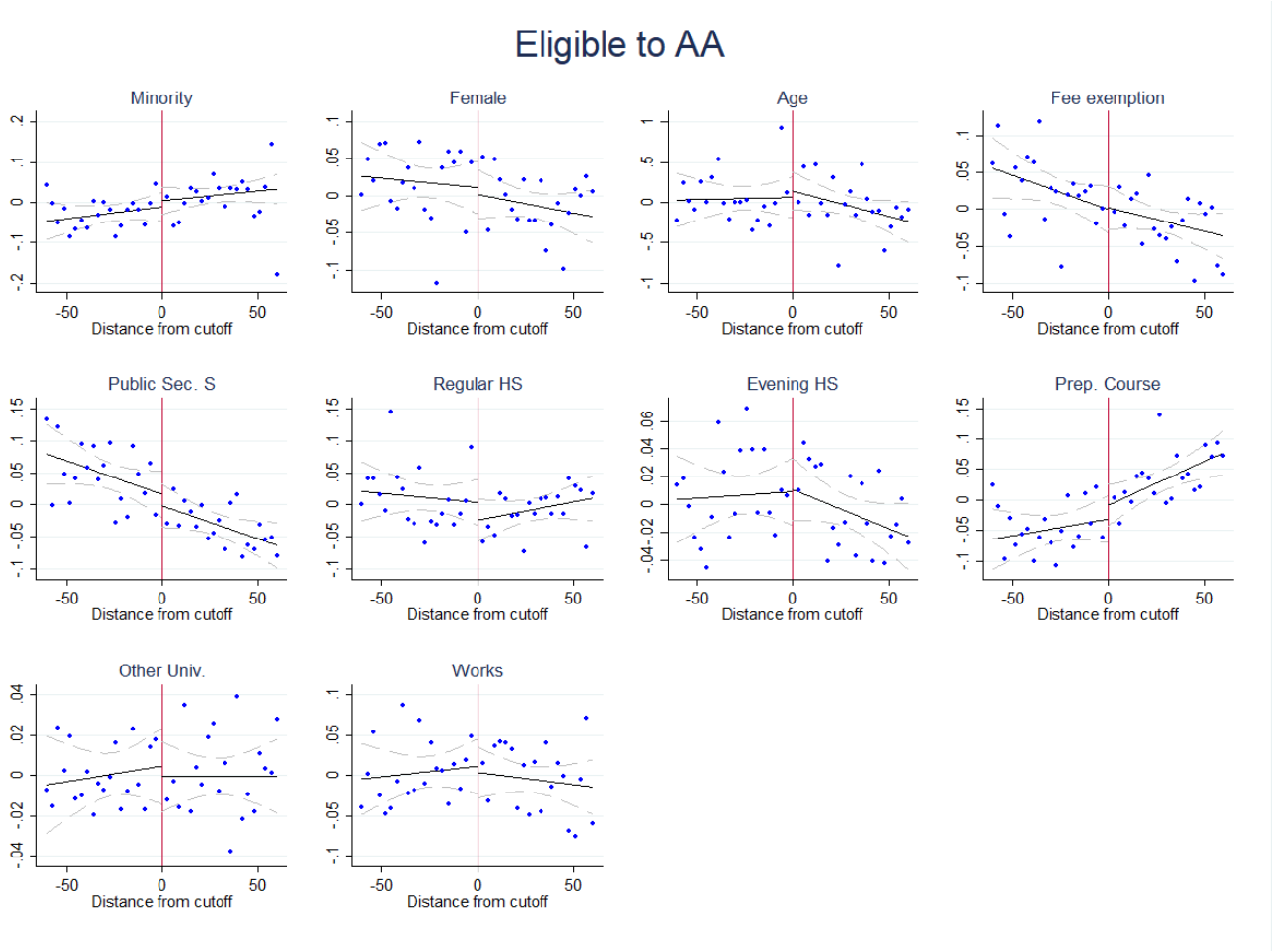
Notes: This figure reports the formal density test for AA (left) and non-AA (right) applicants at the cutoff, standardized to zero.

Figure 5: Balancing Test pre-AA: 1996-2004 - Individual characteristics



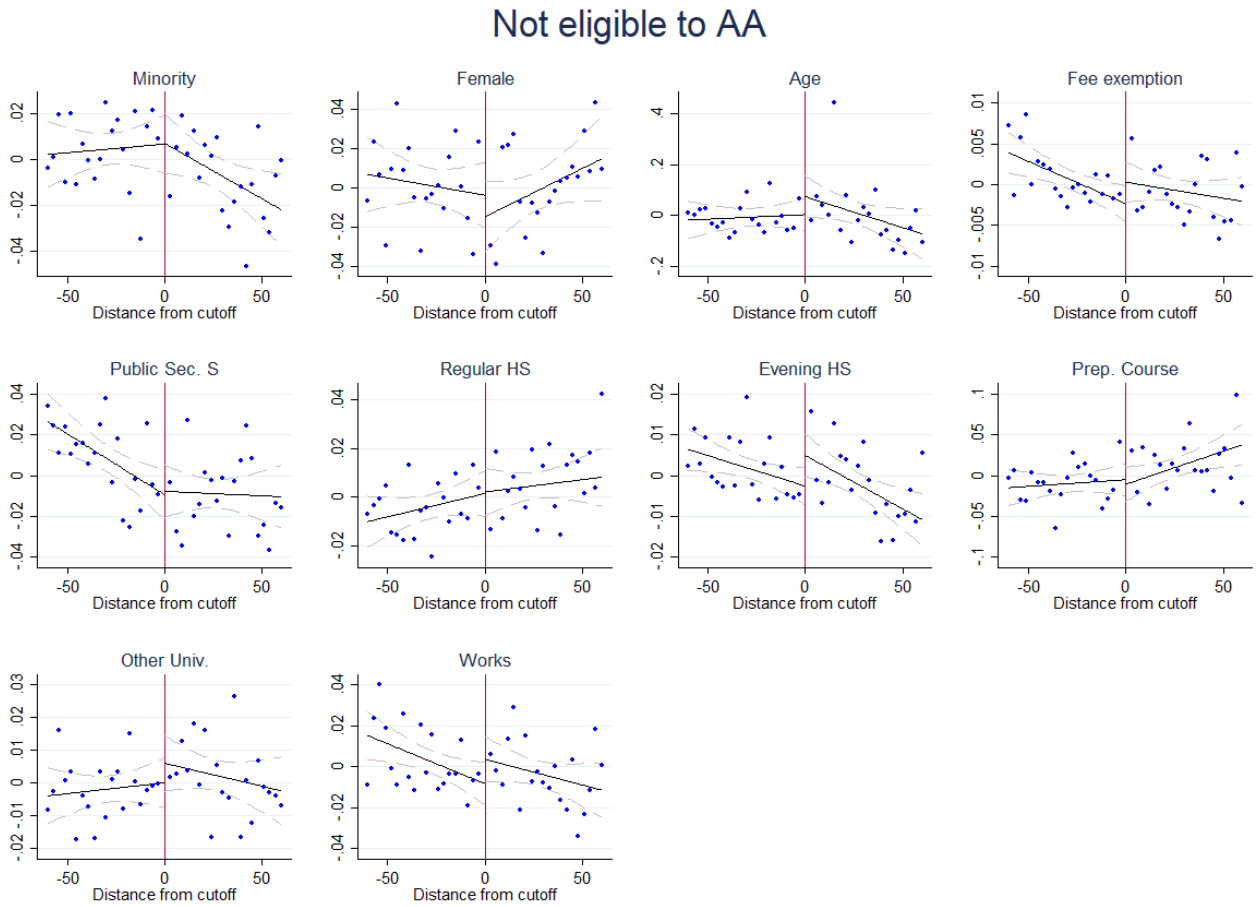
Notes: This figure illustrates the balancing tests for individual characteristics available at the exam registration survey before the introduction of the AA. The window considered is +- 60 points around the cutoff.

Figure 6: Balancing Test during AA: 2004-2009 - Individual characteristics - AA-eligible



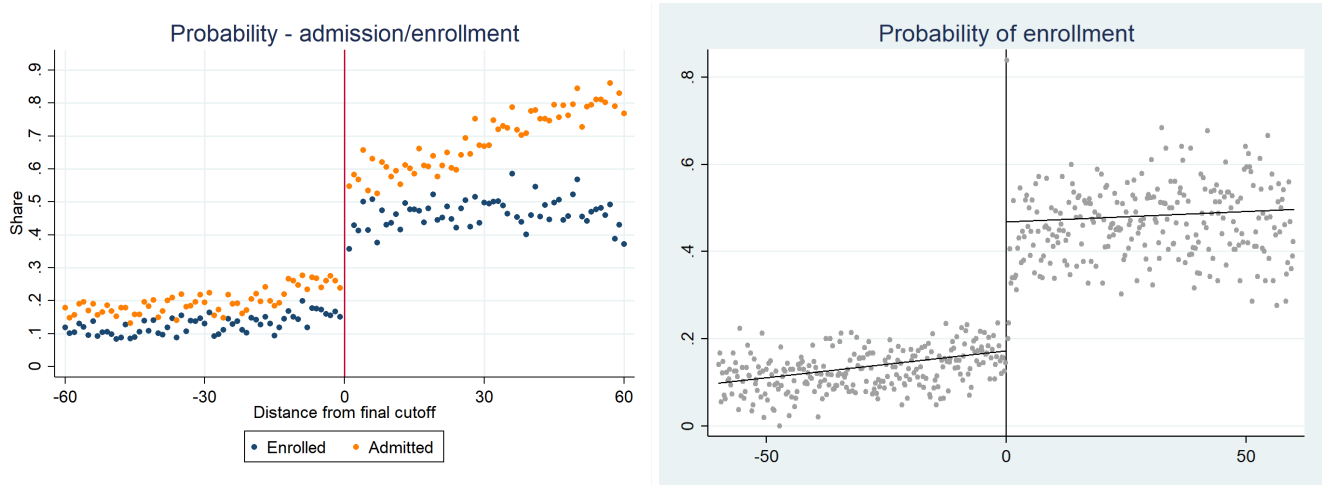
Notes: This figure illustrates the balancing tests for individual characteristics available at the exam registration survey for the AA-eligible group. The window considered is +- 60 points around the cutoff.

Figure 7: Balancing Test during AA: 2004-2009 - Individual characteristics - not eligible to AA



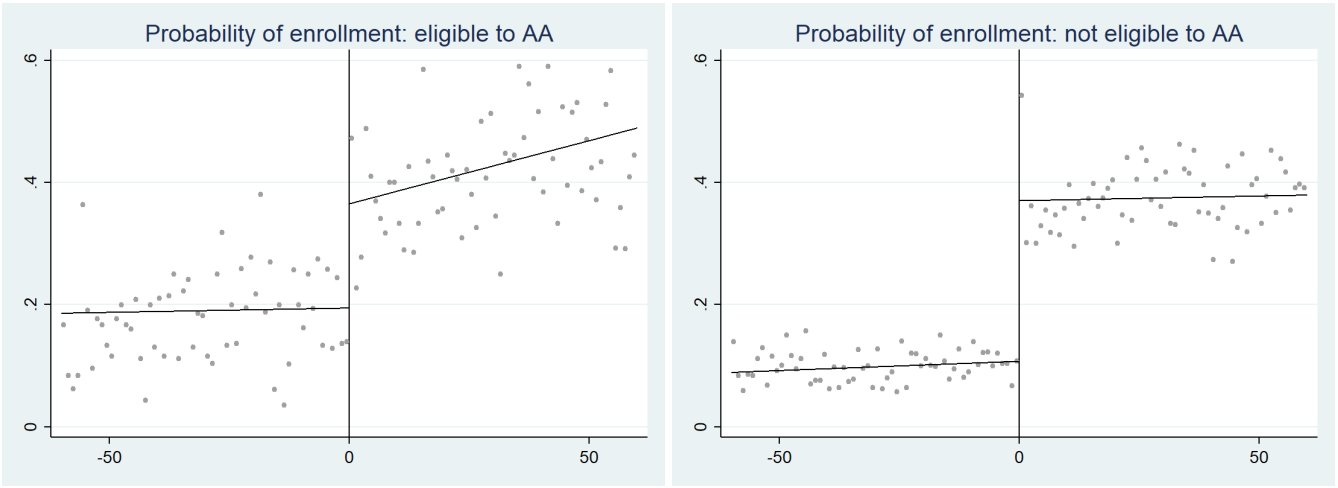
Notes: This figure illustrates the balancing tests for individual characteristics available at the exam registration survey for the group of candidates not eligible to AA. The window considered is +- 60 points around the cutoff.

Figure 8: Discontinuity pre-AA: 1996-2004



Notes: This figure plots the discontinuity graphs before the introduction of AA. On the left, both admission and enrollment are represented. On the right, only the enrollment discontinuity is provided. Both graphs consider a 60-point window from cutoff.

Figure 9: Discontinuity during AA: 2005-2009



Notes: This figure plots the enrollment discontinuity graphs for AA-eligible (left) and non-eligible (right) applicants. Both graphs consider a 60-point window from the cutoff.

Figure 10: Outside Option pre-AA

50 points left	If never enrolled at UNICAMP, worked (at least 1 month) after UNICAMP vestibular			
	1st year	2nd year	3rd year	4th year
Pooled	8.2%	9.8%	12.2%	14.7%
Public HS (exc. tech)	20.9%	23.9%	27.6%	31.8%
Private HS	3.3%	4.6%	6.7%	8.7%
STEM	8.3%	9.5%	11.2%	13.8%
non-STEM	8.2%	10.2%	13.8%	16.3%

50 points left	If never enrolled at UNICAMP...		
	Ever adm. at USP	Ever adm. at UNESP	Ever did other univ.
Pooled	24.0%	8.2%	10.7%
Public HS (exc. tech)	16.7%	10.2%	13.6%
Private HS	26.5%	8.2%	9.0%
STEM	24.4%	8.0%	10.4%
non-STEM	23.3%	8.5%	11.1%

Notes: This Figure provides statistics for those applicants within 50 points below the cutoff, considering the aggregate sample and heterogeneity groups. The variables are related to working at least 1 month in the formal sector and admission at other flagship universities in Sao Paulo, before the introduction of AA.

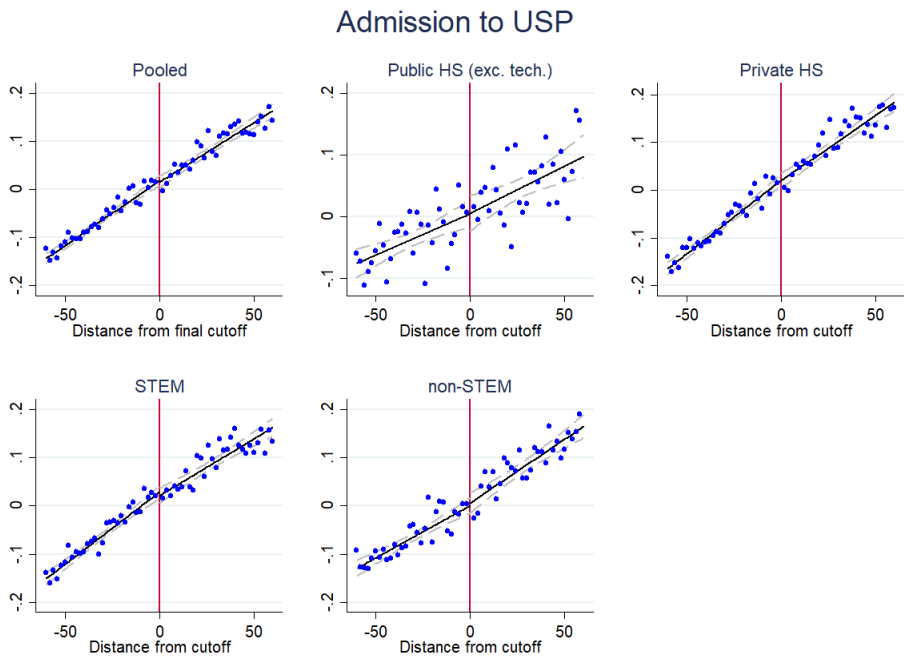
Figure 11: Outside Option during AA

50 points left	If never enrolled at UNICAMP, worked (at least 1 month) after UNICAMP vestibular			
	1st year	2nd year	3rd year	4th year
AA-eligible	31.4%	36.7%	37.2%	39.3%
Not eligible to AA	6.9%	9.1%	10.9%	13.2%

50 points left	If never enrolled at UNICAMP...	
	Ever adm. at USP	Ever did other univ.
AA-eligible	22.7%	12.8%
Not eligible to AA	32.5%	8.9%

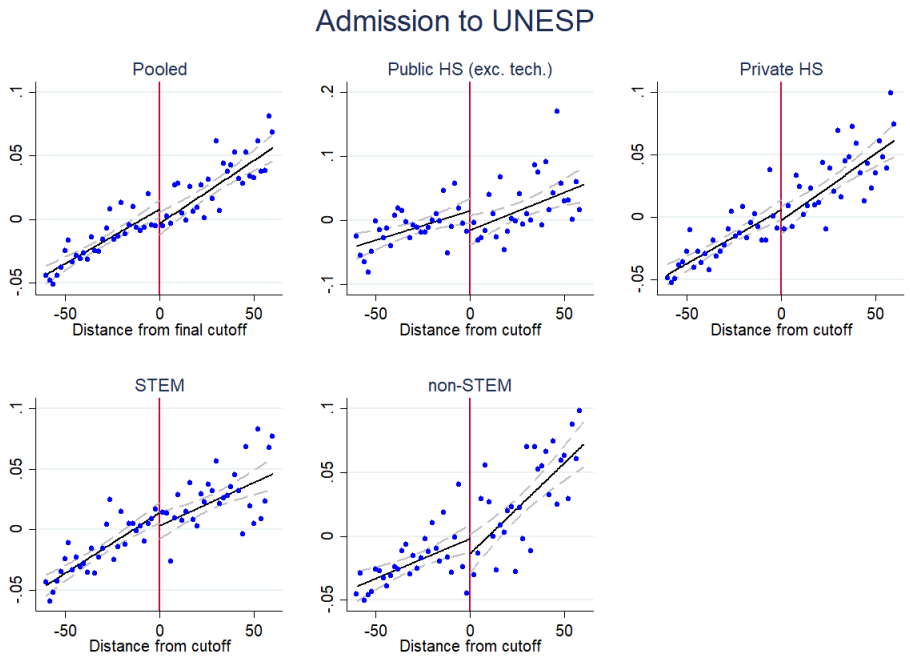
Notes: This Figure provides statistics for those applicants within 50 points below the cutoff, considering the AA eligibility groups. The variables are related to working at least 1 month in the formal sector and admission at another flagship university in Sao Paulo, after the introduction of AA.

Figure 12: Admission to USP (1999-2004)



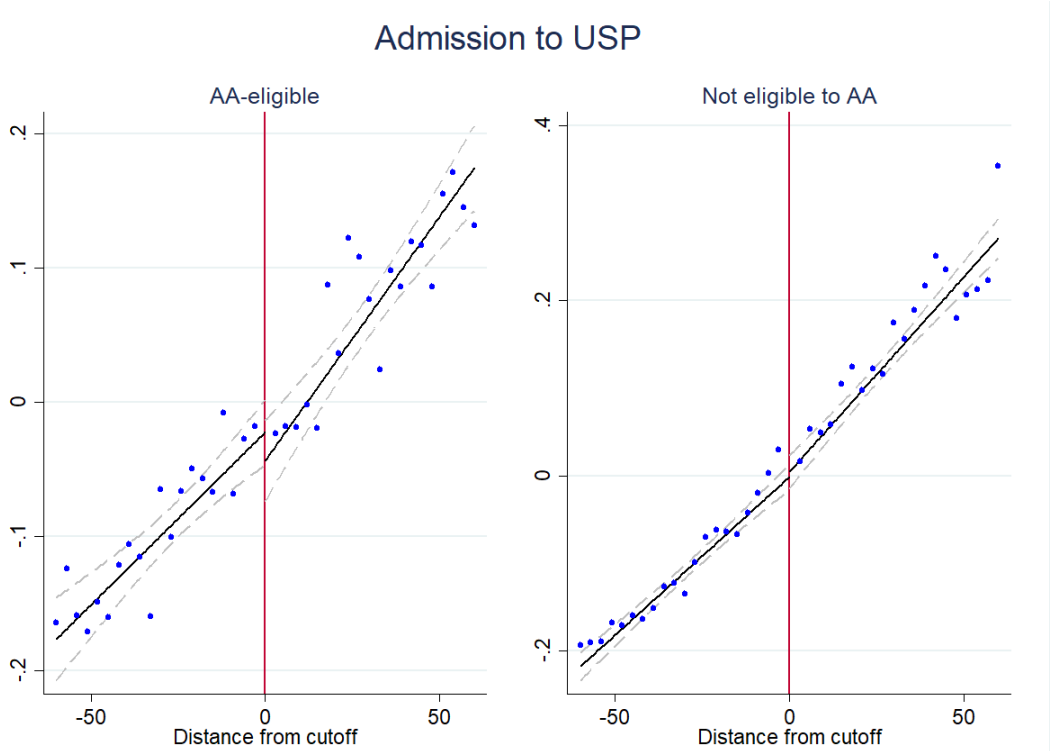
Notes: This figure illustrates the balancing tests for USP admission between 1999-2004. The window considered is +- 60 points around the cutoff.

Figure 13: Admission to UNESP (1999-2004)



Notes: This figure illustrates the balancing tests for UNESP admission between 1999-2004. The window considered is +- 60 points around the cutoff.

Figure 14: Admission to USP (2004-2009)



Notes: This figure illustrates the balancing tests for USP admission between 2004-2009. The window considered is +- 60 points around the cutoff.

Tables

Table 1: Descriptive Statistics: Socioeconomic Characteristics (1996-2004)

	Phase 1	Phase 2
Panel A: Individual characteristics		
Female	0.482	0.413
	(0.50)	(0.49)
Age	18.638	18.340
	(3.12)	(2.76)
Pub. Sec.	0.346	0.245
	(0.48)	(0.43)
Pub. HS	0.316	0.228
	(0.47)	(0.42)
Evening HS	0.109	0.056
	(0.31)	(0.23)
Regular HS	0.783	0.817
	(0.41)	(0.39)
Repeated HS	0.063	0.037
	(0.24)	(0.19)
Prep. Course	0.516	0.526
	(0.50)	(0.50)
First vest.	0.559	0.503
	(0.50)	(0.50)
Other Univ.	0.052	0.055
	(0.22)	(0.23)
Works	0.221	0.168
	(0.42)	(0.37)
Read newsp.	0.929	0.929
	(0.26)	(0.26)
Panel B: Family characteristics		
0-3 m.w	0.050	0.029
	(0.22)	(0.17)
3.5 m.w	0.094	0.061
	(0.29)	(0.24)
5-10 m.w	0.196	0.165
	(0.40)	(0.37)
10-15 m.w	0.155	0.151
	(0.36)	(0.36)
15+ m.w	0.505	0.595
	(0.50)	(0.49)
Father: HS	0.255	0.241
	(0.44)	(0.43)
Mother: HS	0.301	0.297
	(0.46)	(0.46)
Father: Univ.	0.460	0.555
	(0.50)	(0.50)
Mother: Univ.	0.388	0.476
	(0.49)	(0.50)
Father: top occ.	0.427	0.495
	(0.49)	(0.50)
Mother: top occ.	0.190	0.221
	(0.39)	(0.41)
PC at home	0.713	0.759
	(0.45)	(0.43)
Observations	207,270	57,150

Notes: This table reports the descriptive statistics of the exam registration survey before the introduction of AA. In column 1, we provide the averages for all applicants, and in column 2, we provide the averages for those who reach Phase 2. Panel A reports the averages for individual characteristics, while Panel B reports the averages for family characteristics.

Table 2: Descriptive Statistics: Outcome measures (1996-2004)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Panel A: Labor Market Participation							
Formal: 1 month	0.530	0.589	0.627	0.648	0.661	0.665	0.662
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Formal: 6 months	0.468	0.531	0.573	0.601	0.617	0.625	0.623
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Formal: 12 months	0.371	0.436	0.484	0.521	0.543	0.557	0.563
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Shareholding status	0.082	0.100	0.121	0.142	0.164	0.185	0.205
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Panel B: Earnings							
Annual avg. earnings	25203.15	29214.17	33377.68	37824.51	41758.95	45278.77	48441.36
	(115.06)	(126.76)	(139.35)	(153.81)	(169.40)	(180.10)	(192.28)
Hourly wages: main contract	14.67	17.40	19.88	22.34	24.45	26.16	28.12
	(0.09)	(0.14)	(0.18)	(0.19)	(0.23)	(0.19)	(0.24)
December earnings	2661.23	2986.33	3332.16	3712.72	4033.31	4326.57	4603.38
	(12.74)	(13.10)	(14.14)	(15.76)	(16.86)	(17.77)	(19.24)
N	24060	26991	28932	30157	30805	31022	30889

Notes: This table reports the averages of the outcomes measures between the 3rd and 9th year after expected graduation before the introduction of AA, for those who reach Phase 2. Panel A reports the averages for labor market participation variables, while Panel B reports the averages for the earnings measures.

Table 3: Descriptive Statistics: Socioeconomic Characteristics (2005-2009)

	AA eligible	Not eligible to AA
Panel A: Individual characteristics		
Minority	0.274	0.113
	(0.45)	(0.32)
Female	0.425	0.390
	(0.49)	(0.49)
Age	19.271	17.959
	(3.45)	(1.91)
Fee exempt	0.263	0.004
	(0.44)	(0.06)
Pub. Sec.	0.661	0.109
	(0.47)	(0.31)
Regular HS	0.743	0.943
	(0.44)	(0.23)
Evening HS	0.103	0.015
	(0.30)	(0.12)
Prep. Course	0.660	0.442
	(0.47)	(0.50)
Other Univ.	0.061	0.045
	(0.24)	(0.21)
Works	0.255	0.079
	(0.44)	(0.27)
Panel B: Family characteristics		
0-3 m.w	0.265	0.051
	(0.44)	(0.22)
15+ m.w	0.057	0.340
	(0.23)	(0.47)
Father: HS	0.361	0.266
	(0.48)	(0.44)
Mother: HS	0.373	0.289
	(0.48)	(0.45)
Father: Univ.	0.255	0.629
	(0.44)	(0.48)
Mother: Univ.	0.247	0.612
	(0.43)	(0.49)
Father: top occ.	0.207	0.610
	(0.40)	(0.49)
Mother: top occ.	0.114	0.402
	(0.32)	(0.49)
SP metrop.	0.332	0.353
	(0.47)	(0.48)
Owned house	0.650	0.769
	(0.48)	(0.42)
PC at home	0.826	0.966
	(0.38)	(0.18)

Notes: This table reports the descriptive statistics of the exam registration survey variables for AA and non-AA eligible applicants, who reach Phase 2, in columns 1 and 2, respectively. Panel A reports the averages for individual characteristics, while Panel B reports the averages for family characteristics.

Table 4: Descriptive Statistics: Outcome measures (2005-2009)

	(1) 1 y.	(2) 2 y.	(3) 3 y.	(4) 4 y.
Panel A: AA eligible				
Formal: 1 month	0.493	0.585	0.639	0.662
	(0.006)	(0.006)	(0.006)	(0.006)
Formal: 6 months	0.417	0.516	0.569	0.609
	(0.006)	(0.006)	(0.006)	(0.006)
Formal: 12 months	0.292	0.401	0.465	0.514
	(0.006)	(0.006)	(0.006)	(0.006)
Shareholding status	0.032	0.042	0.052	0.063
	(0.002)	(0.003)	(0.003)	(0.003)
Panel B: Not eligible to AA				
Formal: 1 month	0.320	0.453	0.530	0.568
	(0.003)	(0.003)	(0.003)	(0.003)
Formal: 6 months	0.245	0.382	0.466	0.512
	(0.003)	(0.003)	(0.003)	(0.003)
Formal: 12 months	0.146	0.270	0.369	0.421
	(0.002)	(0.003)	(0.003)	(0.003)
Shareholding status	0.054	0.065	0.079	0.094
	(0.001)	(0.002)	(0.002)	(0.002)
N	25621	25621	25621	25621

Notes: This table reports the averages of the outcomes measures between the 1st and 4th year after expected graduation after the introduction of AA, for those who reach Phase 2. Panel A reports the average for the labor market participation variables of AA-eligible applicants, while Panel B reports the same averages for non-eligible candidates.

Table 5: Balancing Tests pre-AA - 1996-2004

	(1) Female	(2) Age	(3) Pub. Sec.	(4) Pub. HS	(5) Ev. HS	(6) Reg. HS	(7) Rep. HS	(8) Prep. course	(9) First vest.	(10) Other univ.	(11) Works	(12) Read news
Panel A: Individual characteristics												
RD coef.	0.022	0.264	0.007	-0.017	0.012	-0.005	0.008	-0.053	0.057	-0.006	0.102*	0.015
	(0.087)	(0.360)	(0.061)	(0.063)	(0.031)	(0.052)	(0.019)	(0.040)	(0.055)	(0.023)	(0.056)	(0.022)
Bandwidth	45.5	80.1	60.9	64.3	65.8	62.3	64.1	78.6	61.1	57.2	54.4	70.1
First stage est.	0.295	0.303	0.295	0.297	0.297	0.296	0.296	0.303	0.292	0.291	0.293	0.298
Observations	21,154	33,300	26,909	28,084	28,631	27,294	27,984	32,579	23,973	25,083	24,476	29,958
	0-3 m.w.	3-5 m.w.	5-10 m.w.	10-15 m.w.	15+ m.w.	Father: HS	Mother: HS	Father: Uni.	Mother: Uni.	Father: Top.occ.	Mother: Top.occ.	PC at home
Panel B: Family characteristics												
RD coef.	0.028*	-0.028	0.004	-0.023	0.014	-0.011	-0.005	-0.010	-0.030	-0.030	-0.020	-0.009
	(0.016)	(0.023)	(0.038)	(0.027)	(0.059)	(0.036)	(0.037)	(0.066)	(0.063)	(0.061)	(0.043)	(0.050)
Bandwidth	85.5	100.3	75.7	89.8	96.5	79.6	76.5	68.6	68.1	74.6	73.1	64.9
First stage est.	0.305	0.310	0.302	0.307	0.309	0.304	0.302	0.300	0.298	0.303	0.301	0.301
Observations	34,355	37,962	31,531	35,494	37,104	32,716	32,020	29,365	29,323	30,891	30,703	24,911

Notes: This table reports the balancing tests before the introduction of AA around the cutoff. In Panel A we test individual characteristics and in Panel B we test family characteristics. All variables come from the exam registration survey. We also report the optimal bandwidth, the first stage estimate and observations for each test. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 6: Balancing Tests during AA - 2005-2009: AA-eligible

	(1) Min.	(2) Female	(3) Age	(4) Fee ex.	(5) Pub. Sec.	(6) Reg. HS	(7) Ev. HS	(8) Prep. course	(9) Other univ.	(10) Works
Panel A: Individual characteristics										
RD coef.	0.018	-0.247	-0.059	-0.018	-0.092	-0.326*	0.051	0.108	-0.009	-0.091
	(0.199)	(0.237)	(1.698)	(0.221)	(0.231)	(0.174)	(0.122)	(0.210)	(0.091)	(0.193)
Bandwidth	38.8	43.0	42.6	49.2	44.2	58.0	62.6	58.9	60.4	60.9
First stage est.	0.189	0.180	0.180	0.173	0.182	0.173	0.171	0.174	0.173	0.174
Observations	2,760	3,077	3,043	3,441	3,093	3,840	4,035	3,870	3,927	3,926
	0-3 m.w.	15+ m.w.	Father: HS	Mother: HS	Father: Uni.	Mother: Uni.	Father: Top.occ.	Mother: Top.occ.	Owned house	PC at home
Panel B: Family characteristics										
RD coef.	0.195	-0.073	0.110	-0.219	-0.028	0.128	-0.080	0.110	0.108	0.058
	(0.232)	(0.099)	(0.206)	(0.219)	(0.197)	(0.189)	(0.164)	(0.131)	(0.208)	(0.172)
Bandwidth	38.9	44.5	48.1	50.6	39.1	57.2	56.3	48.0	46.0	42.2
First stage est.	0.197	0.187	0.178	0.169	0.191	0.167	0.172	0.172	0.179	0.180
Observations	1,671	1,881	3,244	3,394	2,734	3,748	3,670	3,222	3,190	2,927

Notes: This table reports the balancing tests after the introduction of AA, for the AA-eligible applicants around the cutoff. In Panel A we test individual characteristics and in Panel B we test family characteristics. All variables come from the exam registration survey. We also report the optimal bandwidth, the first stage estimate and observations for each test. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 7: Balancing Tests during AA - 2005-2009: not eligible to AA

	(1) Min.	(2) Female	(3) Age	(4) Fee ex.	(5) Pub. Sec.	(6) Reg. HS	(7) Ev. HS	(8) Prep. course	(9) Other univ.	(10) Works
Panel A: Individual characteristics										
RD coef.	0.004	-0.048	0.256	0.013	0.007	-0.003	0.031*	-0.047	0.024	0.064
	(0.037)	(0.127)	(0.290)	(0.008)	(0.042)	(0.032)	(0.016)	(0.070)	(0.027)	(0.039)
Bandwidth	66.5	58.6	57.1	67.1	66.7	64.6	68.3	57.8	74.5	58.9
First stage est.	0.269	0.263	0.263	0.264	0.268	0.267	0.269	0.268	0.268	0.266
Observations	16,309	15,568	15,292	17,053	16,355	15,979	16,581	14,821	17,429	14,925
	0-3 m.w.	15+ m.w.	Father: HS	Mother: HS	Father: Uni.	Mother: Uni.	Father: Top.occ.	Mother: Top.occ.	Owned house	PC at home
Panel B: Family characteristics										
RD coef.	-0.041	-0.029	-0.041	0.050	-0.010	-0.055	-0.059	0.024	-0.052	-0.026
	(0.029)	(0.091)	(0.065)	(0.057)	(0.075)	(0.068)	(0.074)	(0.068)	(0.052)	(0.023)
Bandwidth	51.4	57.6	52.7	65.7	56.6	68.9	68.4	63.0	66.0	61.1
First stage est.	0.290	0.291	0.267	0.268	0.267	0.268	0.267	0.266	0.268	0.267
Observations	8,111	8,892	13,688	16,044	14,468	16,532	16,269	15,479	16,122	15,312

Notes: This table reports the balancing tests after the introduction of AA, for non-AA applicants around the cutoff. In Panel A we test individual characteristics and in Panel B we test family characteristics. All variables come from the exam registration survey. We also report the optimal bandwidth, the first stage estimate and observations for each test. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 8: Pre-AA - 1996-2004: Formal Labor Market Participation

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market - years after expected graduation							
At least 1 month	0.054	0.012	0.039	0.059	0.088*	0.025	0.010
	(0.069)	(0.060)	(0.057)	(0.052)	(0.053)	(0.043)	(0.048)
Bandwidth	68.0	68.3	63.8	66.9	67.4	97.1	68.8
First stage est.	0.300	0.299	0.297	0.299	0.299	0.309	0.299
First stage F-stat.	336.5	339.9	323.0	334.8	336.6	432.6	341.8
Observations	29,463	29,698	28,090	29,204	29,387	37,862	29,828
At least 6 months	0.066	0.037	0.049	0.047	0.104*	0.034	0.027
	(0.069)	(0.066)	(0.059)	(0.049)	(0.056)	(0.052)	(0.050)
Bandwidth	67.4	58.9	63.5	92.1	59.1	64.3	64.6
First stage est.	0.300	0.296	0.297	0.308	0.296	0.297	0.298
First stage F-stat.	334.2	304.3	321.9	417.8	305.2	324.9	325.9
Observations	29,248	26,416	27,992	36,663	26,491	28,288	28,341
At least 12 months	0.014	0.013	0.053	0.041	0.073	0.066	0.056
	(0.065)	(0.066)	(0.060)	(0.055)	(0.057)	(0.054)	(0.050)
Bandwidth	69.0	61.3	65.7	68.2	62.1	60.8	59.6
First stage est.	0.300	0.296	0.298	0.299	0.297	0.296	0.296
First stage F-stat.	340.1	313.6	329.9	339.4	316.9	311.9	307.2
Observations	29,773	27,225	28,778	29,643	27,503	27,066	26,619

Notes: This table reports the RD estimates for participating at least 1,6 and 12 months in the formal sector in the aggregate sample. The optimal bandwidths, the first-stage and F-statistics are reported for each column-panel. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 9: Pre-AA - 1996-2004: Shareholder Status

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Partnership - years after expected graduation							
Shareholder status	0.003	0.002	-0.005	-0.014	-0.005	-0.026	-0.028
	(0.026)	(0.027)	(0.034)	(0.039)	(0.046)	(0.051)	(0.054)
Bandwidth	60.6	60.6	57.8	58.4	56.4	58.3	58.8
First stage est.	0.296	0.296	0.295	0.295	0.295	0.295	0.295
First stage F-stat.	311.1	311.1	300.2	302.3	294.6	301.9	303.7
Observations	26,998	26,998	26,025	26,231	25,453	26,188	26,362

Notes: This table reports the RD estimates for shareholder status in the aggregate sample. The optimal bandwidths, the first-stage and F-statistics are reported in each column. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 10: Pre-AA - 1996-2004: Formal Labor Market Participation or Shareholder Status

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market or Shareholder - years after expected graduation							
1 month or Shareholder	0.075	0.017	0.027	0.039	0.066	0.030	0.012
	(0.068)	(0.057)	(0.055)	(0.050)	(0.050)	(0.047)	(0.046)
Bandwidth	67.1	74.7	67.0	73.2	68.1	70.4	70.2
First stage est.	0.300	0.302	0.299	0.301	0.299	0.300	0.300
First stage F-stat.	334.2	361.7	334.9	357.0	338.9	347.5	347.1
Observations	29,150	31,745	29,218	31,247	29,604	30,349	30,285
6 months or Shareholder	0.075	0.043	0.034	0.027	0.066	0.014	0.030
	(0.068)	(0.063)	(0.057)	(0.052)	(0.051)	(0.049)	(0.048)
Bandwidth	68.5	63.3	66.1	69.0	68.5	69.3	69.6
First stage est.	0.300	0.297	0.298	0.300	0.299	0.300	0.300
First stage F-stat.	339.5	321.1	331.7	342.5	340.7	343.7	344.9
Observations	29,621	27,893	28,927	29,912	29,756	30,009	30,086
12 months or Shareholder	0.021	0.024	0.041	0.015	0.052	0.036	0.053
	(0.065)	(0.063)	(0.057)	(0.057)	(0.052)	(0.052)	(0.048)
Bandwidth	73.0	67.6	70.3	60.0	73.5	68.3	69.3
First stage est.	0.302	0.299	0.300	0.296	0.301	0.299	0.300
First stage F-stat.	355.4	337.2	347.3	308.6	358.0	339.8	343.8
Observations	31,081	29,446	30,330	26,768	31,361	29,689	29,990

Notes: This table reports the RD estimates for outcomes that combine participation (at least 1,6 and 12 months) in the formal sector and shareholder status in the aggregate sample. The optimal bandwidths, the first-stage and F-statistics are reported for each column-panel. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 11: Pre-AA - 1996-2004: Earnings

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Earnings - years after expected graduation							
log(annual earnings)	-0.130	-0.051	-0.050	-0.105	-0.126	-0.011	0.092
	(0.169)	(0.158)	(0.156)	(0.161)	(0.176)	(0.150)	(0.153)
Bandwidth	63.7	76.1	73.0	54.1	47.7	68.8	61.7
First stage est.	0.302	0.314	0.305	0.296	0.289	0.305	0.298
First stage F-stat.	227.9	301.9	299.5	232.1	192.2	274.5	243.1
Observations	15,463	19,564	19,984	16,182	14,725	19,953	18,120
log(hourly wage: m. contract)	-0.145	-0.005	-0.061	-0.089	-0.081	-0.025	0.017
	(0.141)	(0.143)	(0.145)	(0.157)	(0.156)	(0.144)	(0.144)
Bandwidth	59.7	58.9	64.6	52.2	54.4	60.8	60.8
First stage est.	0.300	0.305	0.300	0.295	0.290	0.301	0.298
First stage F-stat.	216.1	247.3	272.7	225.8	214.1	247.0	240.0
Observations	14,690	16,087	18,200	15,690	16,534	18,052	17,890
log(december earnings)	-0.063	-0.097	-0.138	-0.122	-0.046	-0.012	-0.008
	(0.157)	(0.150)	(0.151)	(0.146)	(0.154)	(0.139)	(0.144)
Bandwidth	68.3	63.6	55.3	57.1	53.7	66.7	60.1
First stage est.	0.298	0.304	0.293	0.296	0.295	0.304	0.299
First stage F-stat.	222.9	239.7	222.2	223.4	208.1	244.9	222.8
Observations	14,638	15,419	14,644	15,605	15,012	17,869	16,363

Notes: This table reports the RD estimates for our three earnings measures: annual earnings, hourly earnings of the main contract and December earnings in the formal sector for the aggregate sample. The optimal bandwidths, the first-stage and F-statistics are reported for each column-panel. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 12: Pre-AA - 1996-2004: By type of school - Formal Labor Market Participation

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market - years after expected graduation							
6 months - Pub. HS (exc. tech)	0.194	0.139	0.263**	0.244*	0.237*	0.153	0.112
	(0.141)	(0.132)	(0.132)	(0.130)	(0.132)	(0.115)	(0.118)
Bandwidth	66.4	69.4	64.0	60.8	61.1	67.8	65.2
First stage F-stat.	77.8	80.6	75.0	71.9	72.2	78.8	75.7
Observations	3,950	4,134	3,877	3,719	3,732	4,062	3,933
6 months - Priv. HS	0.054	0.037	0.058	0.046	0.089	0.019	0.005
	(0.083)	(0.079)	(0.075)	(0.068)	(0.063)	(0.063)	(0.057)
Bandwidth	71.0	60.3	58.0	62.6	71.1	64.5	72.3
First stage F-stat.	265.9	228.0	219.0	236.7	266.9	243.2	271.5
Observations	20,685	18,255	17,728	18,768	20,744	19,232	21,023
12 months - Pub. HS (exc. tech)	0.137	0.179	0.280**	0.258**	0.378***	0.250*	0.097
	(0.135)	(0.133)	(0.140)	(0.131)	(0.145)	(0.140)	(0.129)
Bandwidth	71.1	70.3	61.7	64.9	60.9	59.8	63.2
First stage F-stat.	82.8	81.4	72.8	75.8	72.0	71.1	73.8
Observations	4,154	4,169	3,768	3,918	3,721	3,668	3,843
12 months - Priv. HS	0.005	0.003	0.049	0.039	0.019	0.046	0.048
	(0.076)	(0.080)	(0.071)	(0.065)	(0.059)	(0.060)	(0.059)
Bandwidth	84.1	65.8	69.7	74.9	95.8	70.8	62.5
First stage F-stat.	307.2	248.0	262.1	278.5	346.4	265.8	237.1
Observations	23,441	19,550	20,441	21,588	25,584	20,673	18,719

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by type of high school attended (public and private high schools). The optimal bandwidths and the first-stage F-statistics are reported for each column-panel. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 13: Pre-AA - 1996-2004: By type of school - Shareholder Status

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Shareholder status - years after expected graduation							
Shareholder - Pub. HS (exc. tech)	-0.019	-0.022	-0.041	-0.060	-0.071	-0.048	-0.082
	(0.058)	(0.061)	(0.064)	(0.066)	(0.069)	(0.072)	(0.077)
Bandwidth	70.8	68.7	68.7	69.9	72.1	72.1	70.7
First stage F-stat.	81.9	79.8	79.8	81.0	83.1	83.1	81.7
Observations	4,186	4,104	4,105	4,153	4,234	4,234	4,185
Shareholder - Priv. HS	-0.005	0.000	-0.004	-0.013	-0.003	-0.033	-0.015
	(0.031)	(0.034)	(0.042)	(0.047)	(0.057)	(0.063)	(0.069)
Bandwidth	69.1	67.4	61.1	64.3	58.3	58.7	56.9
First stage F-stat.	259.9	253.8	231.0	242.5	220.0	221.7	214.6
Observations	20,286	19,916	18,442	19,188	17,798	17,903	17,410

Notes: This table reports the RD estimates for the shareholder status by type of high school attended (public and private high schools). The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 14: Pre-AA - 1996-2004: By type of school - Formal Labor Market Participation or Shareholder status

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market or Shareholder - years after expected graduation							
6 months or sharehold. - Pub. HS (exc. tech)	0.200	0.109	0.154	0.129	0.115	0.082	0.030
	(0.138)	(0.129)	(0.126)	(0.124)	(0.122)	(0.110)	(0.106)
Bandwidth	67.0	69.6	69.9	63.6	67.8	72.7	76.7
First stage F-stat.	79.1	80.7	81.0	74.6	78.8	83.7	87.7
Observations	3,978	4,136	4,154	3,862	4,062	4,261	4,441
6 months or sharehold. - Priv. HS	0.052	0.046	0.037	0.019	0.067	-0.007	0.020
	(0.083)	(0.075)	(0.074)	(0.066)	(0.065)	(0.067)	(0.060)
Bandwidth	67.4	69.4	55.3	66.1	62.5	56.2	67.2
First stage F-stat.	253.7	261.2	208.9	248.9	236.2	212.0	253.6
Observations	19,877	20,373	17,023	19,602	18,738	17,246	19,866
12 months or sharehold. - Pub. HS (exc. tech)	0.121	0.147	0.144	0.125	0.248*	0.109	0.003
	(0.130)	(0.131)	(0.131)	(0.127)	(0.133)	(0.128)	(0.117)
Bandwidth	76.5	70.4	71.5	69.2	68.4	69.1	73.1
First stage F-stat.	88.8	81.6	82.5	80.3	79.5	80.3	84.2
Observations	4,388	4,173	4,210	4,124	4,092	4,120	4,281
12 months or sharehold. - Priv. HS	0.002	0.028	0.044	0.012	0.019	0.017	0.067
	(0.076)	(0.070)	(0.075)	(0.071)	(0.070)	(0.068)	(0.064)
Bandwidth	83.1	106.2	57.3	58.7	57.9	58.7	58.6
First stage F-stat.	304.7	376.5	216.4	221.7	218.5	221.5	221.6
Observations	23,271	27,242	17,548	17,901	17,692	17,886	17,852

Notes: This table reports the RD estimates for outcomes that combine participation (at least 6 and 12 months) in the formal sector and shareholder status by type of high school attended (public and private high schools). The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 15: Pre-AA - 1996-2004: By type of school - Size of Shareholding Companies

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Size of shareholding company (employees) - years after exp. graduation							
zero empl. - Pub. HS (exc. tech)	-0.075*	-0.085*	-0.100*	-0.103**	-0.132**	-0.142**	-0.150**
	(0.045)	(0.048)	(0.052)	(0.052)	(0.055)	(0.056)	(0.061)
Bandwidth	72.2	71.4	72.0	73.6	73.8	73.0	73.8
First stage F-stat.	81.8	80.9	81.4	83.0	83.2	82.0	83.7
Observations	4,217	4,188	4,209	4,278	4,284	4,250	4,278
zero empl. - Priv. HS	-0.004	0.003	-0.005	0.001	0.024	-0.008	-0.007
	(0.027)	(0.030)	(0.036)	(0.040)	(0.047)	(0.050)	(0.055)
Bandwidth	58.3	56.9	58.1	58.6	52.7	56.0	54.8
First stage F-stat.	219.4	213.6	218.0	219.9	198.8	209.7	205.1
Observations	17,718	17,333	17,646	17,744	16,210	17,076	16,755
more than 3 empl. - Pub. HS (exc. tech)	0.023	0.030	0.024	0.018	0.019	0.036	0.038
	(0.020)	(0.022)	(0.023)	(0.024)	(0.025)	(0.027)	(0.028)
Bandwidth	71.6	69.5	72.1	68.2	66.6	66.3	60.8
First stage F-stat.	81.3	79.1	81.5	77.7	76.0	75.4	71.4
Observations	4,196	4,113	4,212	4,057	3,981	3,963	3,691
more than 3 empl. - Priv. HS	0.009	0.007	0.013	0.011	0.006	-0.000	0.004
	(0.011)	(0.012)	(0.013)	(0.014)	(0.012)	(0.016)	(0.017)
Bandwidth	71.4	72.1	71.6	76.9	130.4	74.0	75.4
First stage F-stat.	267.5	268.8	267.0	283.2	436.3	274.2	277.5
Observations	20,743	20,899	20,754	21,914	29,899	21,259	21,513

Notes: This table reports the RD estimates for the outcomes size of shareholding companies by type of high school attended (public and private high schools). The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 16: Pre-AA - 1996-2004: By type of school - Earnings

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Earnings - years after expected graduation							
log(annual earnings) - Pub. HS (exc. tech)	-0.029	0.137	0.186	0.032	0.222	0.355	0.470*
	(0.262)	(0.295)	(0.282)	(0.284)	(0.281)	(0.289)	(0.252)
Bandwidth	73.6	72.8	61.4	64.7	68.1	63.9	60.6
First stage F-stat.	48.7	54.2	52.7	48.1	56.1	58.8	59.4
Observations	2,651	2,856	2,623	2,792	2,952	2,831	2,681
log(annual earnings) - Priv. HS	-0.152	-0.111	0.025	-0.009	-0.104	0.062	0.166
	(0.218)	(0.213)	(0.193)	(0.173)	(0.209)	(0.168)	(0.176)
Bandwidth	47.6	42.8	49.4	57.4	44.8	64.6	58.5
First stage F-stat.	103.9	117.4	135.5	163.3	113.7	172.9	148.4
Observations	7,851	7,939	9,521	11,149	9,112	12,463	11,413
log(hourly wage: m. contract) - Pub. HS (exc. tech)	0.305	0.421*	0.281	0.190	0.237	0.375	0.527**
	(0.236)	(0.244)	(0.226)	(0.228)	(0.224)	(0.240)	(0.230)
Bandwidth	70.5	68.8	66.9	73.8	74.4	62.1	61.3
First stage F-stat.	46.9	51.9	56.5	55.1	60.7	57.3	60.0
Observations	2,574	2,744	2,797	3,079	3,151	2,769	2,716
log(hourly wage: m. contract) - Priv. HS	-0.233	-0.068	-0.110	-0.050	-0.090	0.028	0.030
	(0.158)	(0.157)	(0.172)	(0.174)	(0.175)	(0.135)	(0.161)
Bandwidth	55.3	63.5	49.2	53.2	52.9	101.9	61.4
First stage F-stat.	120.9	177.6	134.9	150.5	135.8	277.4	157.3
Observations	8,936	11,113	9,488	10,437	10,611	17,207	11,844
log(december earnings) - Pub. HS (exc. tech)	0.089	0.272	0.089	0.042	0.127	0.206	0.225
	(0.231)	(0.245)	(0.230)	(0.235)	(0.226)	(0.233)	(0.221)
Bandwidth	74.6	76.2	64.6	68.8	70.3	75.7	72.9
First stage F-stat.	43.7	48.8	51.4	48.1	59.8	60.9	63.6
Observations	2,438	2,673	2,496	2,731	2,829	2,986	2,888
log(december earnings) - Priv. HS	-0.049	-0.126	-0.146	-0.101	0.003	0.004	-0.013
	(0.158)	(0.156)	(0.179)	(0.173)	(0.175)	(0.155)	(0.162)
Bandwidth	89.2	70.8	44.7	44.2	51.0	60.1	56.9
First stage F-stat.	184.2	174.9	110.5	114.6	123.0	145.5	139.1
Observations	11,372	10,838	7,878	8,096	9,369	10,762	10,233

Notes: This table reports the RD estimates for our three earnings measures: annual earnings, hourly earnings of the main contract and December earnings in the formal sector by type of high school attended (public and private high schools). The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 17: Pre-AA - 1996-2004: By type of major - Formal Labor Market Participation

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market - years after expected graduation							
6 months - STEM	-0.005	-0.002	0.029	0.134	0.210**	0.171**	0.118
	(0.091)	(0.090)	(0.085)	(0.086)	(0.086)	(0.081)	(0.079)
Bandwidth	58.3	48.8	45.9	42.0	40.1	42.5	44.8
First stage F-stat.	114.5	100.3	95.2	88.8	86.3	89.7	93.7
Observations	15,997	13,826	13,036	11,989	11,457	12,137	12,744
6 months - non-STEM	0.142	0.071	0.085	0.032	0.049	-0.033	-0.030
	(0.089)	(0.080)	(0.078)	(0.073)	(0.071)	(0.067)	(0.065)
Bandwidth	77.9	116.5	87.3	95.0	94.1	96.4	92.8
First stage F-stat.	314.7	367.9	328.4	340.7	339.4	342.6	337.6
Observations	12,572	15,887	13,535	14,229	14,156	14,355	14,043
12 months - STEM	-0.060	-0.014	0.010	0.118	0.202**	0.184**	0.135*
	(0.089)	(0.085)	(0.087)	(0.090)	(0.094)	(0.085)	(0.079)
Bandwidth	62.0	61.5	45.9	42.2	39.9	40.9	43.3
First stage F-stat.	120.5	121.4	95.2	89.2	86.0	87.4	91.1
Observations	16,782	16,813	13,036	12,061	11,387	11,696	12,368
12 months - non-STEM	0.097	0.061	0.123	0.043	0.009	0.012	0.008
	(0.079)	(0.080)	(0.077)	(0.069)	(0.070)	(0.068)	(0.064)
Bandwidth	84.4	100.0	91.8	96.0	96.9	96.3	83.7
First stage F-stat.	324.1	347.5	336.0	341.9	343.1	342.4	323.0
Observations	13,252	14,657	13,964	14,312	14,393	14,336	13,176

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by type of major (STEM and non-STEM choices). The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 18: Pre-AA - 1996-2004: By type of major - Shareholder Status

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Shareholder status - years after expected graduation							
Shareholder - STEM	0.029	0.049	0.049	0.045	0.037	0.011	0.006
	(0.045)	(0.048)	(0.057)	(0.063)	(0.063)	(0.068)	(0.068)
Bandwidth	51.8	49.5	45.8	43.7	47.7	46.6	51.1
First stage F-stat.	105.3	101.5	95.1	91.6	98.3	96.4	104.2
Observations	14,544	13,992	13,023	12,486	13,548	13,247	14,380
Shareholder - non-STEM	-0.003	-0.023	-0.030	-0.024	-0.016	-0.032	-0.044
	(0.020)	(0.024)	(0.038)	(0.050)	(0.064)	(0.075)	(0.082)
Bandwidth	109.5	107.2	113.8	108.1	122.7	86.0	80.0
First stage F-stat.	359.6	356.6	365.0	357.8	374.0	326.2	317.3
Observations	15,417	15,235	15,721	15,300	16,275	13,393	12,798

Notes: This table reports the RD estimates for the shareholder status by type of major (STEM and non-STEM choices). The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 19: Pre-AA - 1996-2004: By type of major - Formal Labor Market Participation or Shareholder Status

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market or Shareholding Status - years after expected graduation							
6 months or sharehold. - STEM	0.031	0.029	0.036	0.090	0.159**	0.112	0.086
	(0.092)	(0.085)	(0.080)	(0.075)	(0.079)	(0.074)	(0.075)
Bandwidth	53.9	54.8	50.1	53.1	43.2	47.6	46.5
First stage F-stat.	108.0	110.0	102.6	107.3	90.7	98.1	96.5
Observations	14,941	15,302	14,143	14,851	12,348	13,516	13,213
6 months or sharehold. - non-STEM	0.129	0.063	0.046	0.004	0.028	-0.033	-0.003
	(0.083)	(0.077)	(0.075)	(0.070)	(0.069)	(0.067)	(0.066)
Bandwidth	87.4	101.7	96.0	97.7	96.2	99.7	96.1
First stage F-stat.	328.5	349.7	342.0	344.3	342.3	347.2	342.2
Observations	13,543	14,787	14,317	14,466	14,336	14,634	14,322
12 months or sharehold. - STEM	-0.033	0.016	0.019	0.055	0.184**	0.141*	0.122
	(0.092)	(0.090)	(0.083)	(0.082)	(0.087)	(0.078)	(0.078)
Bandwidth	56.2	49.4	51.5	53.6	43.5	46.3	44.4
First stage F-stat.	111.7	101.3	104.8	108.0	91.2	96.0	92.8
Observations	15,535	13,974	14,475	14,981	12,427	13,181	12,639
12 months or sharehold. - non-STEM	0.081	0.048	0.087	0.003	-0.003	-0.006	0.030
	(0.074)	(0.075)	(0.072)	(0.066)	(0.070)	(0.071)	(0.067)
Bandwidth	91.3	100.4	96.5	99.9	99.9	100.4	96.9
First stage F-stat.	335.2	348.1	342.6	347.4	347.4	348.1	343.2
Observations	13,919	14,694	14,355	14,651	14,653	14,693	14,396

Notes: This table reports the RD estimates for outcomes that combine participation (at least 6 and 12 months) in the formal sector and shareholder status by type of major (STEM and non-STEM choices). The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 20: Pre-AA - 1996-2004: By type of major - Size of Shareholding Companies

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Partnership: size (Number of employees) - years after exp. graduation							
zero empl. - STEM	0.010	0.028	0.009	0.023	0.038	0.008	0.007
	(0.036)	(0.040)	(0.045)	(0.049)	(0.050)	(0.052)	(0.048)
Bandwidth	53.9	49.4	47.9	46.2	48.2	51.1	63.9
First stage F-stat.	108.4	100.8	98.1	95.3	99.6	104.6	125.0
Observations	15,004	13,918	13,538	13,059	13,598	14,288	17,153
zero empl. - non-STEM	0.006	-0.010	-0.020	-0.017	-0.012	-0.027	-0.036
	(0.015)	(0.019)	(0.030)	(0.037)	(0.046)	(0.053)	(0.057)
Bandwidth	103.2	108.7	106.1	108.7	104.7	102.6	103.3
First stage F-stat.	353.6	360.0	356.7	360.4	355.1	351.9	354.8
Observations	14,838	15,256	15,048	15,237	14,920	14,733	14,793
more than 3 empl. - STEM	0.004	0.005	0.015	0.016	0.003	-0.004	-0.006
	(0.014)	(0.016)	(0.018)	(0.020)	(0.020)	(0.020)	(0.021)
Bandwidth	62.5	55.4	47.3	51.8	56.3	62.0	62.4
First stage F-stat.	122.7	110.2	97.0	104.9	112.7	122.3	122.8
Observations	16,948	15,363	13,366	14,459	15,553	16,793	16,850
more than 3 empl. - non-STEM	0.010	0.009	0.009	0.008	0.005	0.006	0.004
	(0.009)	(0.010)	(0.011)	(0.012)	(0.014)	(0.015)	(0.016)
Bandwidth	90.5	94.4	94.6	101.6	94.3	95.0	95.0
First stage F-stat.	335.8	341.7	341.7	351.3	341.1	341.5	343.5
Observations	13,764	14,091	14,096	14,665	14,059	14,108	14,097

Notes: This table reports the RD estimates for the size of shareholding companies by type of major (STEM and non-STEM choices). The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 21: Pre-AA - 1996-2004: By type of major - Earnings

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Earnings - years after expected graduation							
log(annual earnings) - STEM	-0.278	-0.123	-0.254	-0.008	-0.010	0.005	0.092
	(0.221)	(0.223)	(0.237)	(0.242)	(0.258)	(0.220)	(0.234)
Bandwidth	56.4	46.6	45.0	41.0	39.8	46.2	43.6
First stage F-stat.	93.8	86.9	83.0	74.2	68.4	81.2	70.4
Observations	9,368	8,542	8,648	8,028	7,874	9,089	8,500
log(annual earnings) - non-STEM	0.179	0.200	0.270	-0.042	-0.038	0.100	0.178
	(0.200)	(0.204)	(0.210)	(0.196)	(0.220)	(0.207)	(0.200)
Bandwidth	73.0	100.8	99.7	91.2	106.5	117.9	104.0
First stage F-stat.	195.8	255.1	262.9	260.6	244.0	266.7	265.4
Observations	5,688	7,929	8,485	8,506	9,486	10,062	9,410
log(hourly wage: m. contract) - STEM	-0.132	-0.089	-0.273	-0.180	-0.116	-0.058	0.062
	(0.190)	(0.179)	(0.198)	(0.212)	(0.207)	(0.186)	(0.200)
Bandwidth	54.0	52.5	46.4	40.3	40.4	51.6	46.5
First stage F-stat.	90.4	96.3	85.3	73.2	69.1	90.3	74.5
Observations	9,018	9,526	8,883	7,876	7,998	10,040	9,013
log(hourly wage: m. contract) - non-STEM	-0.088	0.166	0.163	0.149	0.120	0.087	0.049
	(0.191)	(0.221)	(0.233)	(0.243)	(0.247)	(0.230)	(0.222)
Bandwidth	69.8	84.1	75.2	96.8	100.9	80.7	80.6
First stage F-stat.	191.9	240.0	239.5	265.3	238.9	230.2	244.9
Observations	5,515	7,172	7,169	8,780	9,204	8,113	8,087
log(december earnings) - STEM	-0.063	-0.084	-0.284	-0.227	0.014	0.007	0.039
	(0.215)	(0.211)	(0.224)	(0.225)	(0.224)	(0.208)	(0.212)
Bandwidth	46.4	41.6	40.6	37.8	38.0	44.3	45.7
First stage F-stat.	76.3	72.0	67.7	64.9	61.8	69.6	68.3
Observations	7,166	7,007	7,143	6,863	6,954	8,019	8,158
log(december earnings) - non-STEM	0.161	0.043	0.135	0.096	0.042	0.065	0.057
	(0.196)	(0.191)	(0.193)	(0.193)	(0.208)	(0.192)	(0.184)
Bandwidth	91.4	99.4	90.1	111.3	87.4	126.9	103.7
First stage F-stat.	174.2	224.8	246.8	252.7	234.9	260.4	249.7
Observations	5,716	6,960	7,206	8,596	7,745	9,515	8,607

Notes: This table reports the RD estimates for our three earnings measures: annual earnings, hourly earnings of the main contract and December earnings in the formal sector by type of major (STEM and non-STEM choices). The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 22: During AA - 2005-2009: By AA eligibility - Formal Labor Market Participation

	(1) 1 y.	(2) 2 y.	(3) 3 y.	(4) 4 y.
Formal Labor Market - years after expected graduation				
6 months - AA Eligible	-0.062	-0.081	-0.302	-0.300
	(0.241)	(0.236)	(0.230)	(0.211)
Bandwidth	41.8	41.9	42.2	59.6
First stage F-stat.	30.9	30.9	30.8	34.1
Observations	2,981	2,989	3,024	3,974
6 months - Not Eligible to AA	-0.062	-0.002	-0.028	-0.027
	(0.068)	(0.084)	(0.083)	(0.084)
Bandwidth	61.6	63.1	77.8	81.9
First stage F-stat.	231.9	234.9	257.6	264.2
Observations	16,103	16,420	18,614	19,120
12 months - AA Eligible	-0.207	-0.108	-0.126	-0.250
	(0.232)	(0.223)	(0.231)	(0.225)
Bandwidth	41.5	40.2	44.8	53.1
First stage F-stat.	30.9	30.9	30.7	31.8
Observations	2,960	2,902	3,176	3,678
12 months - Not Eligible to AA	-0.068	-0.065	-0.040	0.015
	(0.052)	(0.073)	(0.081)	(0.084)
Bandwidth	61.4	69.3	71.7	74.5
First stage F-stat.	231.6	244.6	247.9	252.5
Observations	16,082	17,407	17,752	18,162

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by AA eligibility status. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 23: During AA - 2005-2009: By AA eligibility - Shareholder Status

	(1) 1 y.	(2) 2 y.	(3) 3 y.	(4) 4 y.
Shareholder - years after expected graduation				
Shareholder - AA Eligible	0.016	0.006	0.068	0.012
	(0.070)	(0.084)	(0.093)	(0.122)
Bandwidth	41.6	48.3	45.4	46.0
First stage F-stat.	30.9	30.9	30.7	30.7
Observations	2,961	3,383	3,223	3,271
Shareholder - Not Eligible to AA	-0.042	-0.031	-0.031	-0.062
	(0.028)	(0.030)	(0.036)	(0.043)
Bandwidth	66.0	66.0	64.1	69.9
First stage F-stat.	239.9	239.9	236.8	245.4
Observations	16,884	16,887	16,570	17,482

Notes: his table reports the RD estimates for the shareholder status by AA eligibility status. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 24: During AA - 2005-2009: By AA eligibility - Formal Labor Market Participation or Shareholder Status

	(1) 1 y.	(2) 2 y.	(3) 3 y.	(4) 4 y.
Formal Labor Market or Shareholder - years after expected graduation				
6 months or sharehold. - AA Eligible	-0.076	-0.143	-0.337	-0.287
	(0.242)	(0.235)	(0.228)	(0.204)
Bandwidth	42.9	42.4	42.5	57.8
First stage F-stat.	30.7	30.8	30.8	33.4
Observations	3,054	3,034	3,038	3,907
6 months or sharehold. - Not Eligible to AA	-0.101	-0.012	0.003	-0.021
	(0.067)	(0.082)	(0.079)	(0.078)
Bandwidth	62.4	66.6	81.5	79.4
First stage F-stat.	233.6	240.7	263.4	260.0
Observations	16,277	16,947	19,075	18,821
12 months or sharehold. - AA Eligible	-0.193	-0.127	-0.136	-0.265
	(0.232)	(0.222)	(0.214)	(0.206)
Bandwidth	43.0	42.2	56.6	59.4
First stage F-stat.	30.7	30.8	32.8	34.0
Observations	3,058	3,026	3,860	3,963
12 months or sharehold. - Not Eligible to AA	-0.096*	-0.070	-0.019	0.004
	(0.055)	(0.073)	(0.079)	(0.078)
Bandwidth	62.4	70.1	75.3	80.8
First stage F-stat.	233.5	245.6	253.6	262.2
Observations	16,272	17,535	18,269	18,975

Notes: This table reports the RD estimates for outcomes that combine participation (at least 6 and 12 months) in the formal sector and shareholder status by AA eligibility status. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 25: Pre-AA - 1996-2004: Early entry into the Labor Market

	(1) 1 y.	(2) 2 y.	(3) 3 y.	(4) 4 y.
Formal Labor Market - during the years enrolled at the university				
At least 1 month	-0.035	-0.027	-0.024	0.023
	(0.065)	(0.058)	(0.058)	(0.059)
Bandwidth	49.9	70.9	68.6	79.7
First stage est.	0.282	0.294	0.302	0.300
First stage F-stat.	88.9	163.0	209.4	277.6
Observations	8,700	14,706	17,899	23,558
At least 6 months	-0.020	0.017	-0.032	-0.000
	(0.050)	(0.047)	(0.049)	(0.052)
Bandwidth	61.2	65.5	67.8	75.5
First stage est.	0.287	0.292	0.302	0.299
First stage F-stat.	107.7	152.3	207.5	269.1
Observations	10,218	13,928	17,754	22,731
At least 12 months	-0.014	0.012	-0.022	-0.009
	(0.035)	(0.035)	(0.038)	(0.042)
Bandwidth	57.3	70.7	66.5	74.3
First stage est.	0.285	0.294	0.301	0.299
First stage F-stat.	100.6	162.7	204.4	266.8
Observations	9,745	14,693	17,509	22,488

Notes: This table reports the RD estimates for participating at least 1,6 and 12 months in the formal sector in the aggregate sample in the following four years after application. The optimal bandwidths, the first-stage and F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 26: Pre-AA - 1996-2004: Early entry into the Labor Market - by type of school

	(1) 1 y.	(2) 2 y.	(3) 3 y.	(4) 4 y.
Formal Labor Market - during the years enrolled at the university				
6 months - Pub. HS (exc. tech)	-0.266	-0.110	-0.022	0.001
	(0.174)	(0.166)	(0.165)	(0.169)
Bandwidth	42.7	52.5	61.5	58.1
First stage F-stat.	17.4	27.1	40.5	46.0
Observations	1,221	1,730	2,372	2,614
6 months - Priv. HS	0.005	0.026	-0.024	0.022
	(0.026)	(0.032)	(0.030)	(0.033)
Bandwidth	48.5	45.3	57.0	62.1
First stage F-stat.	68.1	84.1	137.9	185.3
Observations	5,815	7,136	10,713	13,543
12 months - Pub. HS (exc. tech)	-0.125	-0.182	0.022	0.046
	(0.123)	(0.127)	(0.145)	(0.148)
Bandwidth	51.2	58.8	59.3	57.1
First stage F-stat.	21.5	30.2	39.1	45.5
Observations	1,406	1,922	2,304	2,575
12 months - Priv. HS	-0.012	0.012	-0.008	0.009
	(0.017)	(0.022)	(0.021)	(0.025)
Bandwidth	46.5	54.1	62.0	63.1
First stage F-stat.	65.6	97.5	149.7	188.0
Observations	5,627	8,275	11,402	13,721

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by type of high school attended (public and private high schools) in the following four years after application. The optimal bandwidths, the first-stage and F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table 27: Pre-AA - 1996-2004: Early entry into the Labor Market - by type of major

	(1) 1 y.	(2) 2 y.	(3) 3 y.	(4) 4 y.
Formal Labor Market - during the years enrolled at the university				
6 months - STEM	-0.028	0.023	-0.006	-0.024
	(0.091)	(0.079)	(0.080)	(0.092)
Bandwidth	55.0	58.5	57.1	54.9
First stage F-stat.	35.7	55.2	70.9	83.3
Observations	5,822	7,913	9,608	11,069
6 months - non-STEM	-0.021	0.012	-0.068	0.005
	(0.045)	(0.049)	(0.058)	(0.059)
Bandwidth	61.3	72.1	71.8	70.9
First stage F-stat.	112.3	127.1	167.8	206.6
Observations	3,888	5,627	7,040	8,264
12 months - STEM	-0.030	0.028	0.013	-0.007
	(0.061)	(0.060)	(0.060)	(0.073)
Bandwidth	62.6	65.4	88.0	57.3
First stage F-stat.	41.6	61.0	100.7	86.1
Observations	6,436	8,623	13,276	11,459
12 months - non-STEM	0.004	-0.009	-0.053	-0.020
	(0.027)	(0.041)	(0.041)	(0.047)
Bandwidth	48.7	56.0	70.9	78.3
First stage F-stat.	93.9	103.1	166.5	217.5
Observations	3,290	4,722	6,970	8,828

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by type of major (STEM and non-STEM choices) in the following four years after application. The optimal bandwidths, the first-stage and F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

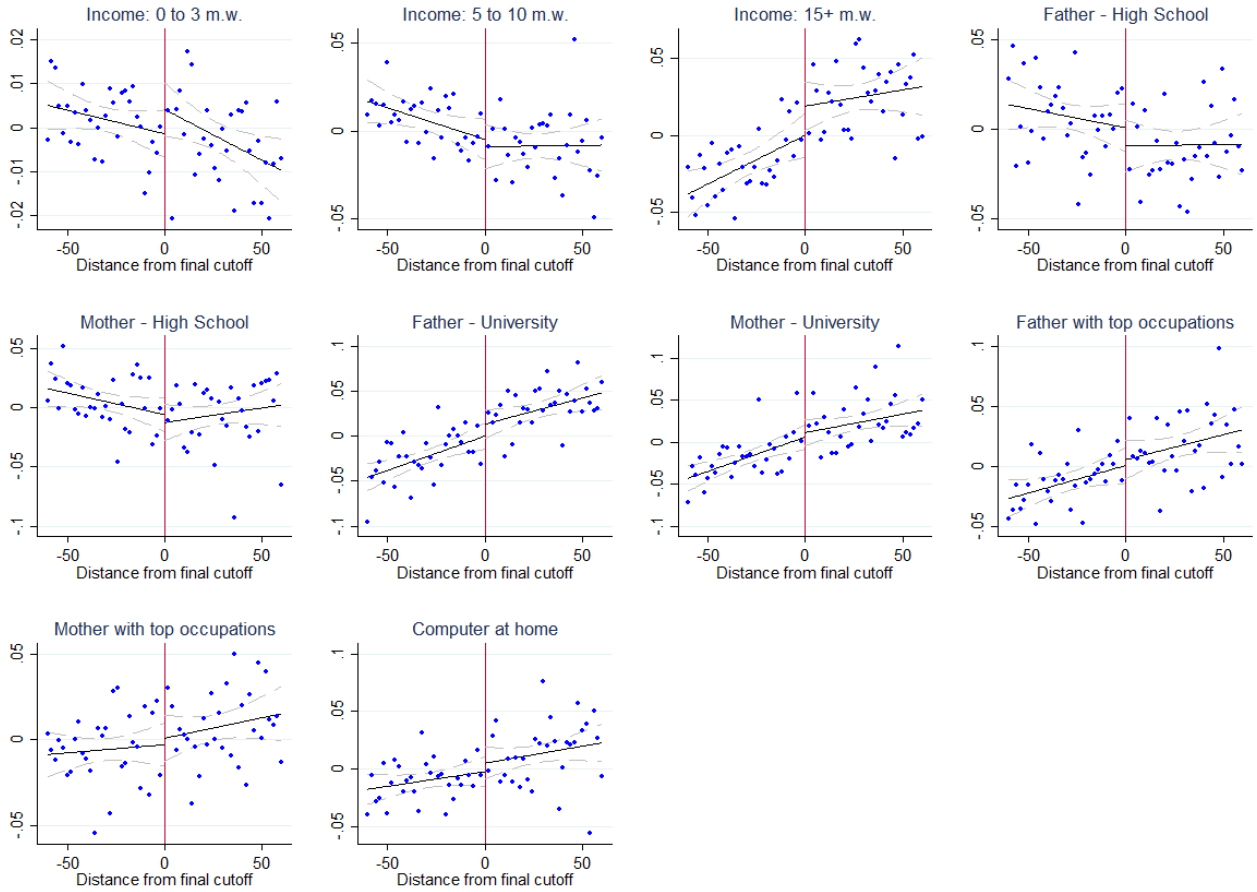
Table 28: During AA - 2004-2009: Early entry into the Labor Market - by AA eligibility

	(1) 1 y.	(2) 2 y.	(3) 3 y.	(4) 4 y.
Formal Labor Market - during the years at the university				
6 months - AA Eligible	0.240	-0.105	-0.418*	-0.356
	(0.202)	(0.203)	(0.232)	(0.239)
Bandwidth	46.1	67.3	42.9	43.8
First stage F-stat.	30.7	36.5	30.7	30.7
Observations	3,273	4,286	3,057	3,108
6 months - Not Eligible to AA	-0.008	-0.009	0.005	-0.013
	(0.029)	(0.036)	(0.041)	(0.044)
Bandwidth	52.8	52.7	50.9	68.4
First stage F-stat.	215.1	215.0	211.0	243.2
Observations	14,343	14,337	13,938	17,235
12 months - AA Eligible	0.069	0.026	-0.313	-0.315
	(0.143)	(0.164)	(0.192)	(0.206)
Bandwidth	54.7	45.5	44.4	42.9
First stage F-stat.	32.2	30.7	30.7	30.7
Observations	3,745	3,227	3,150	3,058
12 months - Not Eligible to AA	0.029	0.014	-0.001	-0.009
	(0.019)	(0.025)	(0.029)	(0.030)
Bandwidth	44.2	58.4	61.9	71.1
First stage F-stat.	195.1	226.3	232.6	246.9
Observations	12,553	15,534	16,155	17,684

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by AA eligibility status in the following four years after application. The optimal bandwidths, the first-stage and F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

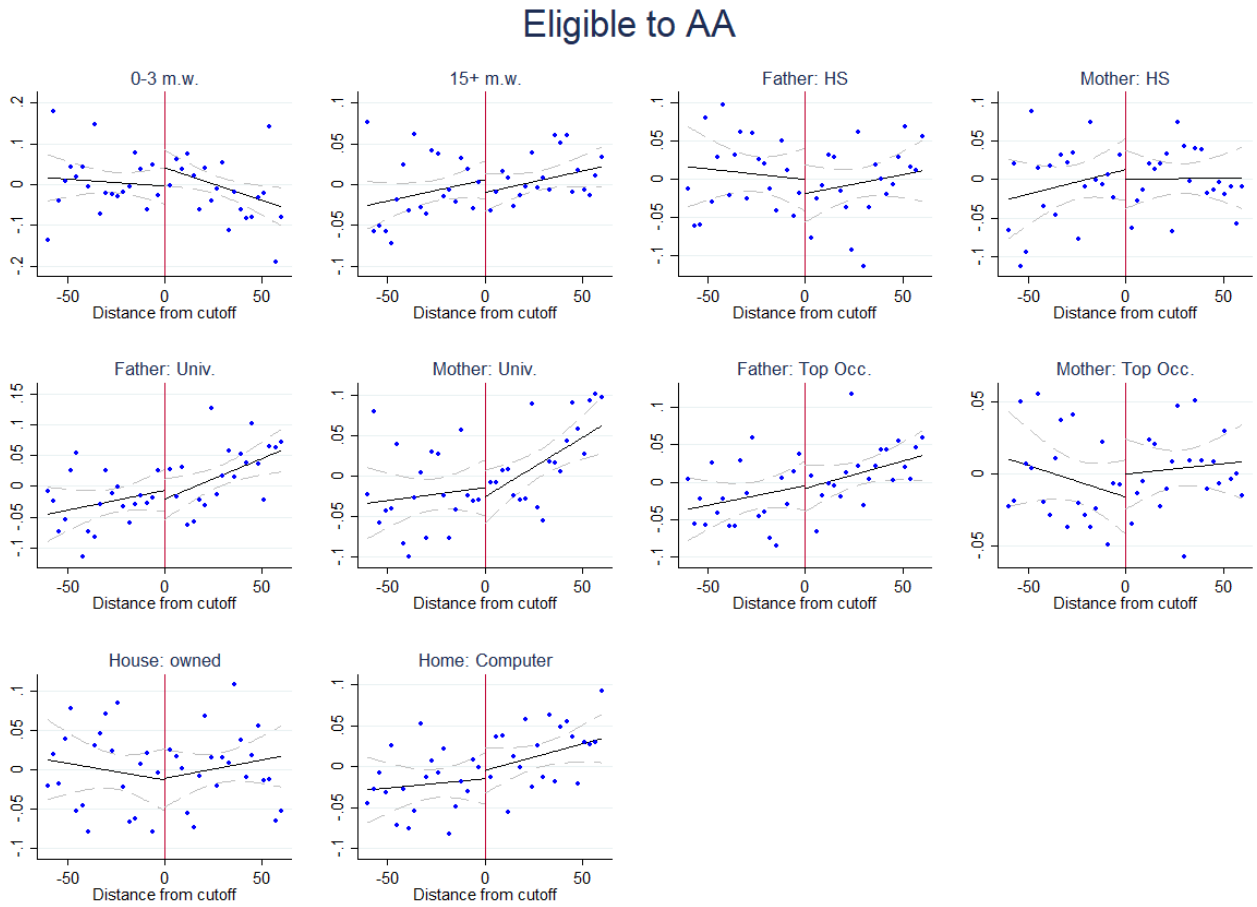
A Appendix

Figure A.1: Balancing Test pre-AA: 1996-2004 - Family characteristics



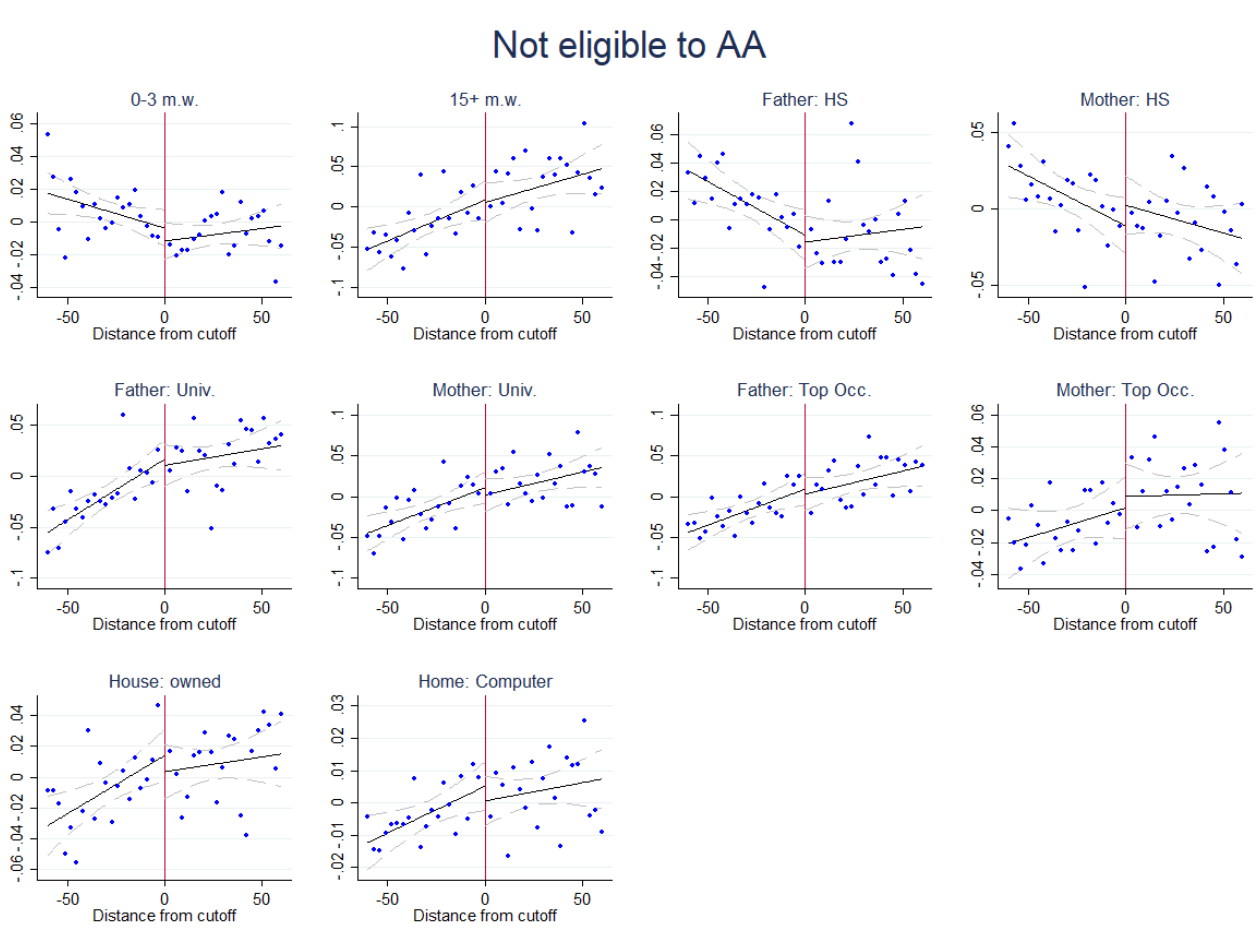
Notes: This figure illustrates the balancing tests for family characteristics available at the exam registration survey before the introduction of the AA. The window considered is +- 60 points around the cutoff.

Figure A.2: Balancing Test during AA: 2004-2009 - Family characteristics - AA-eligible



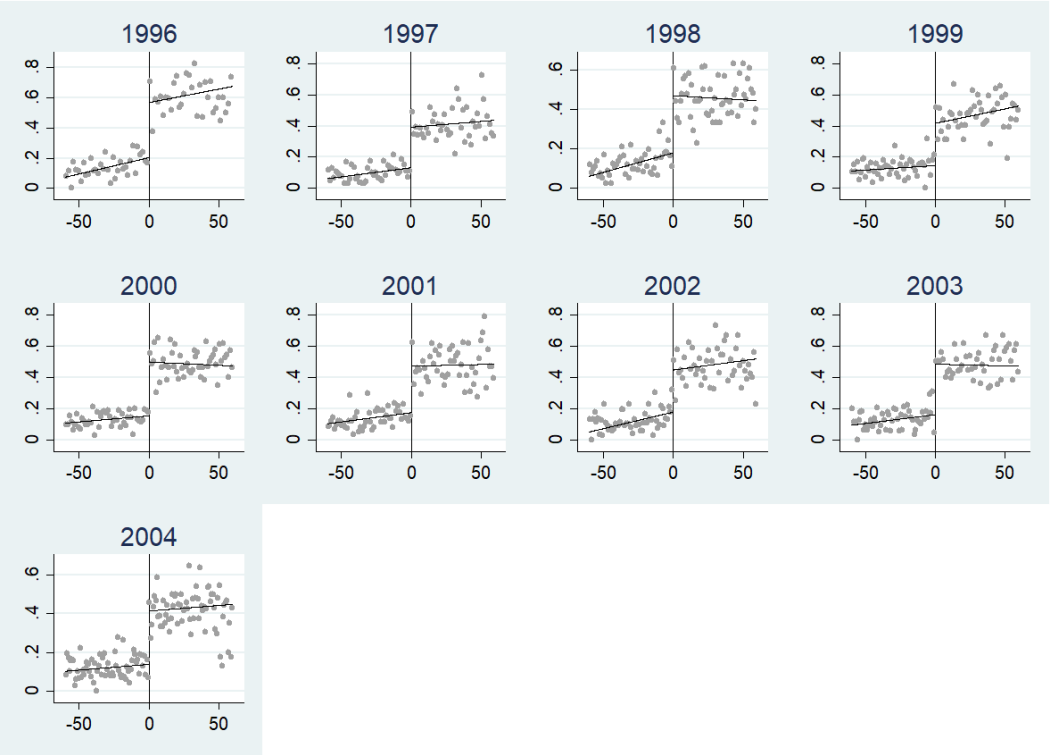
Notes: This figure illustrates the balancing tests for family characteristics available at the exam registration survey for the AA-eligible group. The window considered is +- 60 points around the cutoff.

Figure A.3: Balancing Test during AA: 2004-2009 - Family characteristics - not eligible to AA



Notes: This figure illustrates the balancing tests for family characteristics available at the exam registration survey for the group of candidates not eligible to the AA. The window considered is +- 60 points around the cutoff.

Figure A.4: Enrollment Discontinuity by year pre-AA: 1996-2004

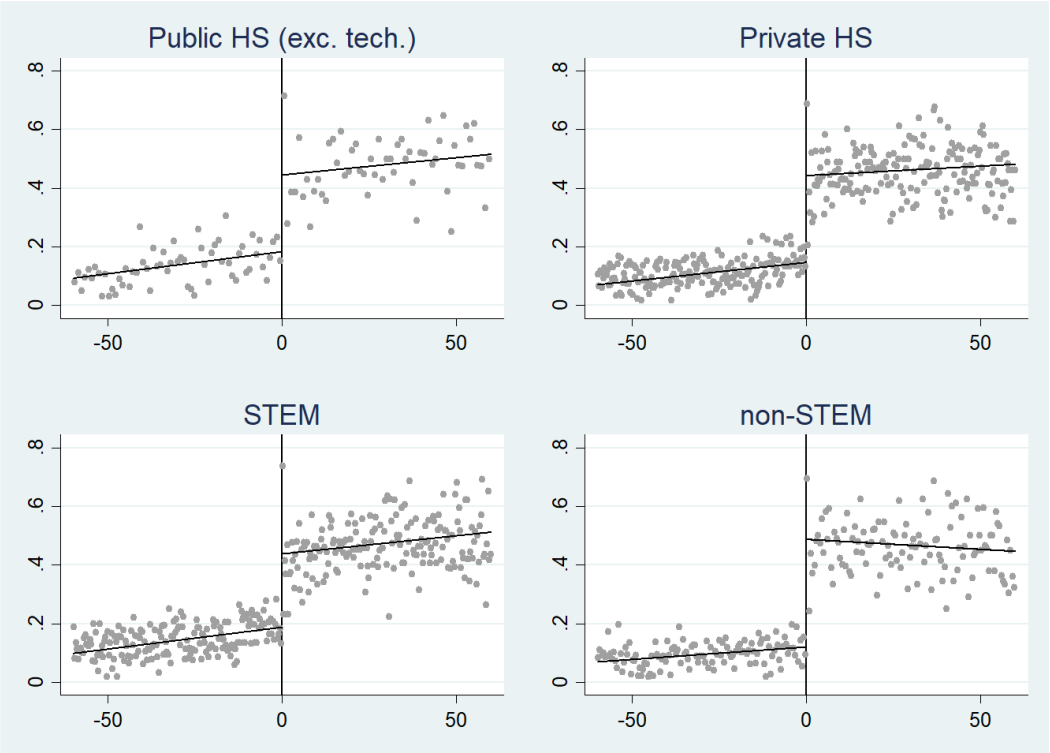


Notes: This figure plots the enrollment discontinuity graphs by year, before the introduction of AA. The window considered is +- 60 points around the cutoff.

Figure A.5: Enrollment Discontinuity by year during AA: 2005-2009

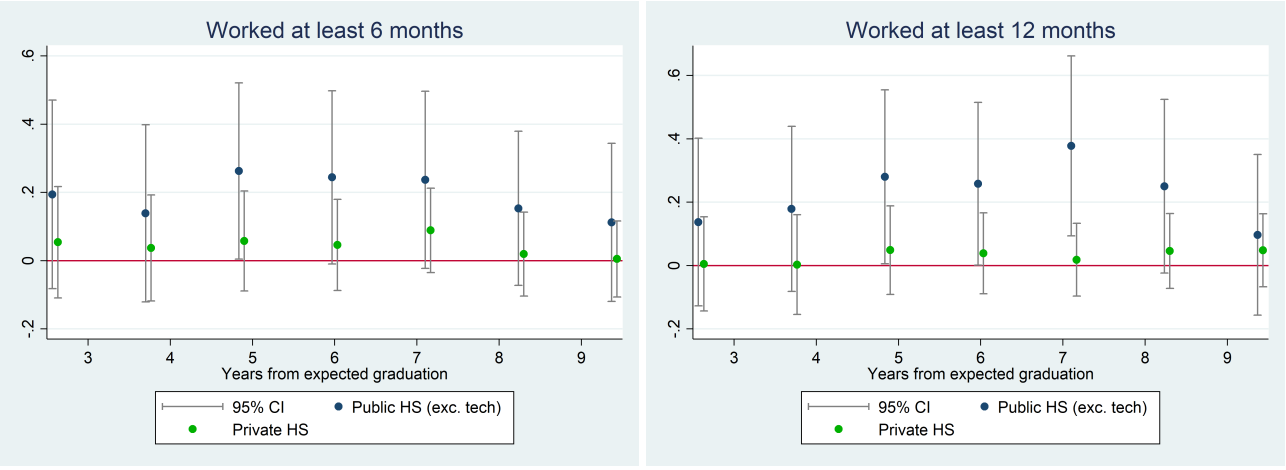
Notes: This figure plots the enrollment discontinuity graphs by year, for AA-eligible (left) and non-eligible (right) applicants. Both graphs consider a 60-point window from the cutoff.

Figure A.6: Enrollment Discontinuity by heterogeneity group - Pre-AA: 1996-2004



Notes: This figure plots the enrollment discontinuity graphs by heterogeneity group, before the introduction of AA. The graphs consider a 60-point window from the cutoff.

Figure A.7: Pre-AA - 1996-2004: By type of school - Formal Labor Market Participation

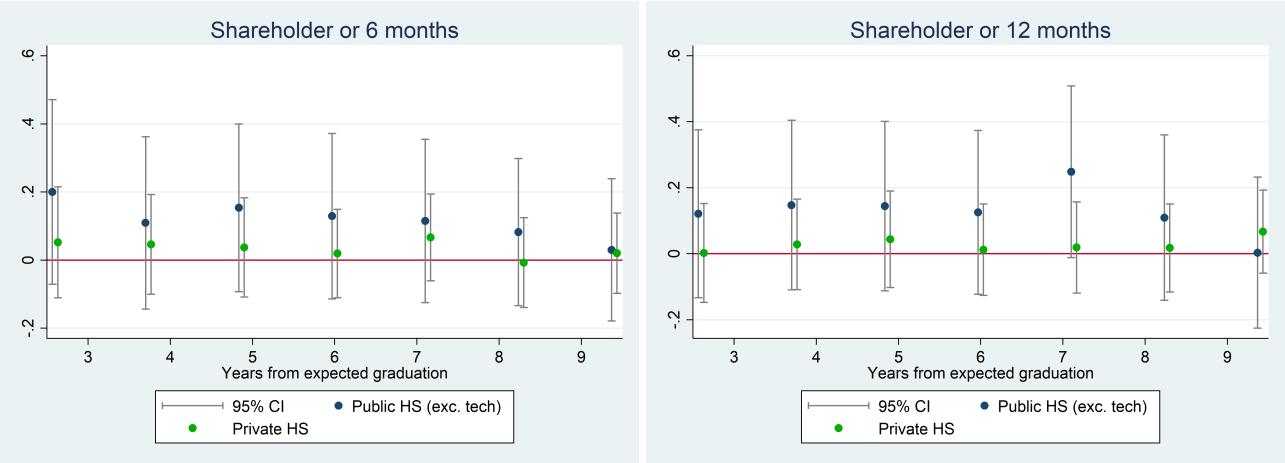


Notes: This figure plots the main RD estimates for at least 6 and 12 months of participation in the formal sector (left and right, respectively) over the years after expected graduation, by type of high school attended. Each dot represents a different RD coefficient.

Figure A.8: Pre-AA - 1996-2004: By type of school - Shareholder Status

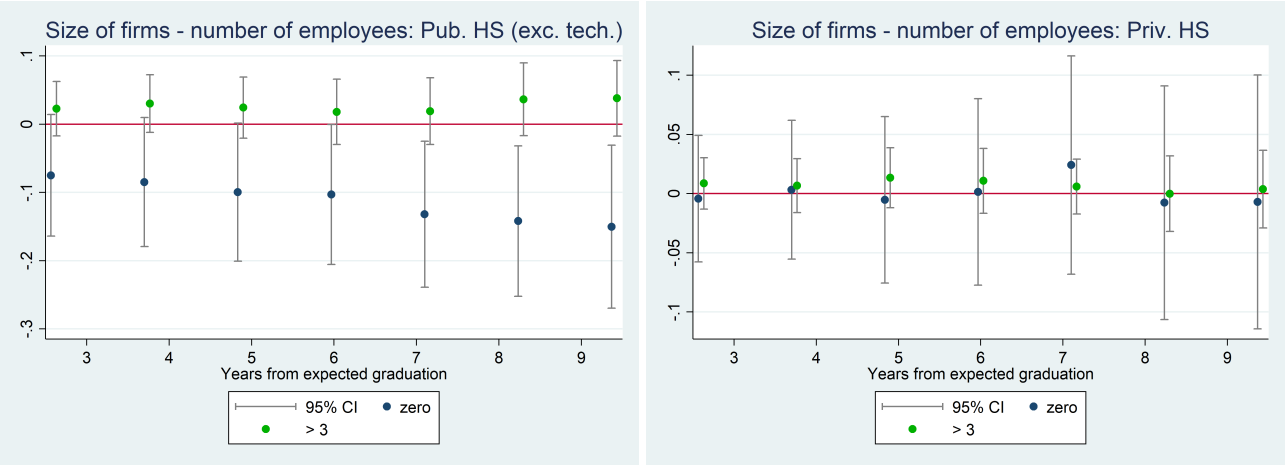
Notes: This figure plots the main RD estimates for shareholder status over the years after expected graduation, by type of high school attended. Each dot represents a different RD coefficient.

Figure A.9: Pre-AA - 1996-2004: By type of school - Formal Labor Market Participation or Shareholder Status



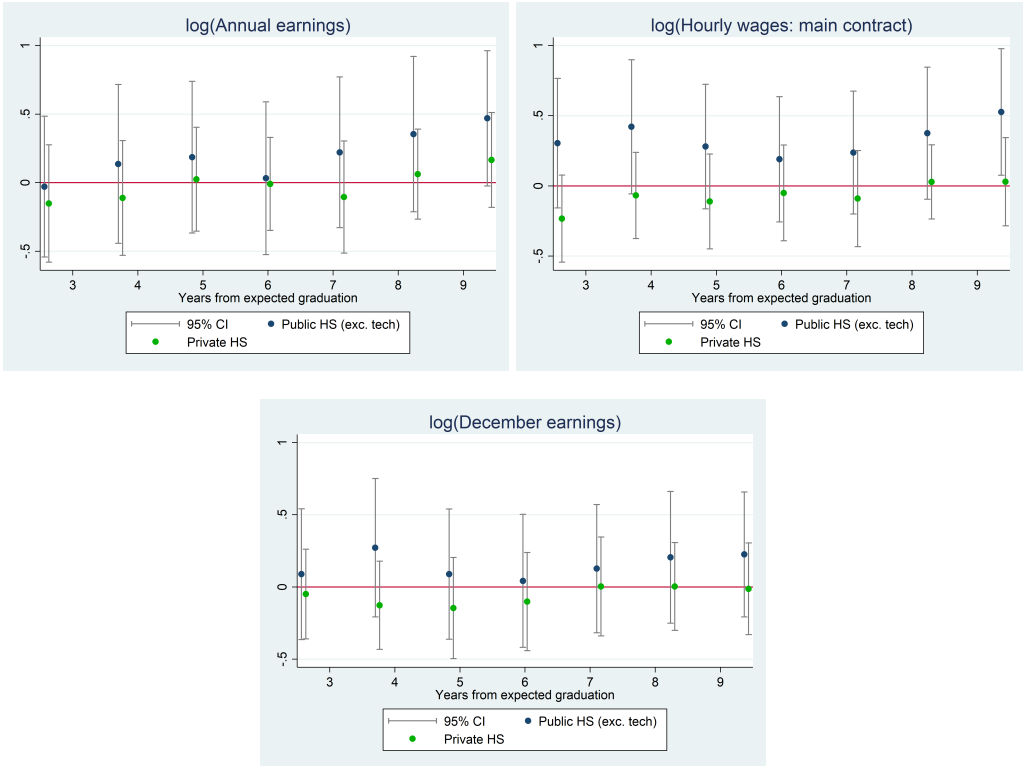
Notes: This figure plots the main RD estimates for the outcomes that combine at least 6 and 12 months of participation in the formal sector with the shareholding status (left and right, respectively) over the years after expected graduation, by type of high school attended. Each dot represents a different RD coefficient.

Figure A.10: Pre-AA - 1996-2004: By type of school - Size of Shareholding Company



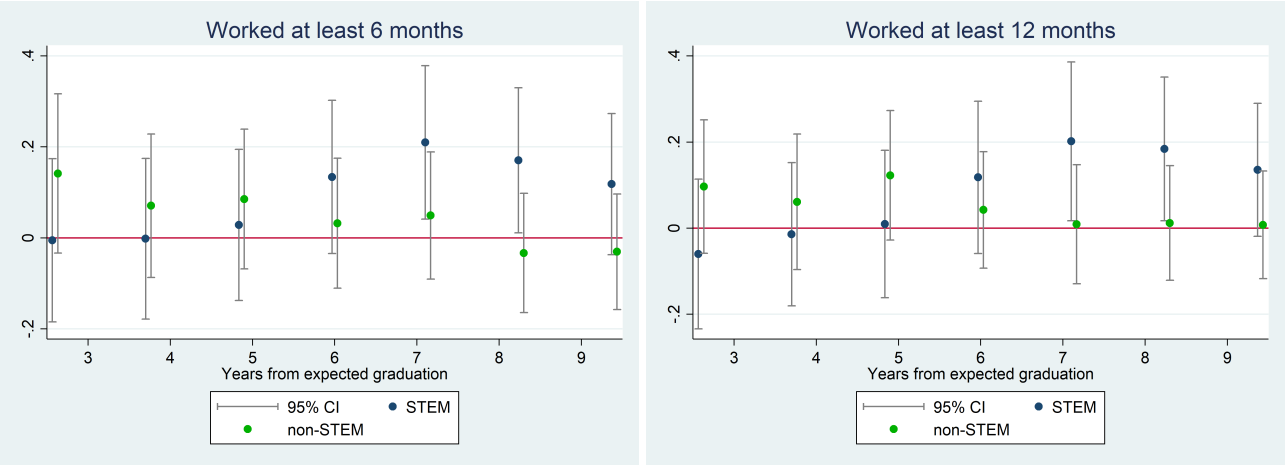
Notes: This figure plots the main RD estimates for the size of the shareholding status company over the years after expected graduation, by type of high school attended (public high school students on left and private high school students on the right). Each dot represents a different RD coefficient.

Figure A.11: Pre-AA - 1996-2004: By type of school - Earnings



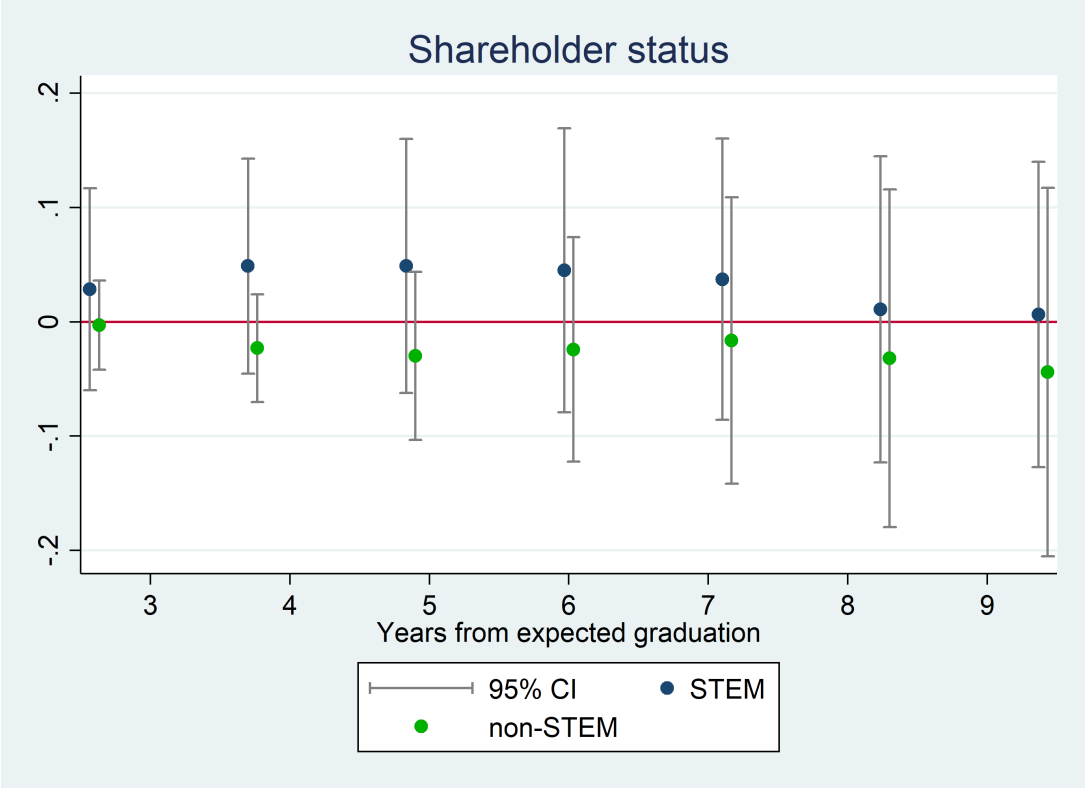
Notes: This figure plots the main RD estimates for each measure of earnings over the years after expected graduation, by type of high school attended. log(annual earnings) on the upper left, log(hourly wages in the main contract) on the upper right and log(December earnings) at the bottom. Each dot represents a different RD coefficient.

Figure A.12: Pre-AA - 1996-2004: By type of major - Formal Labor Market Participation



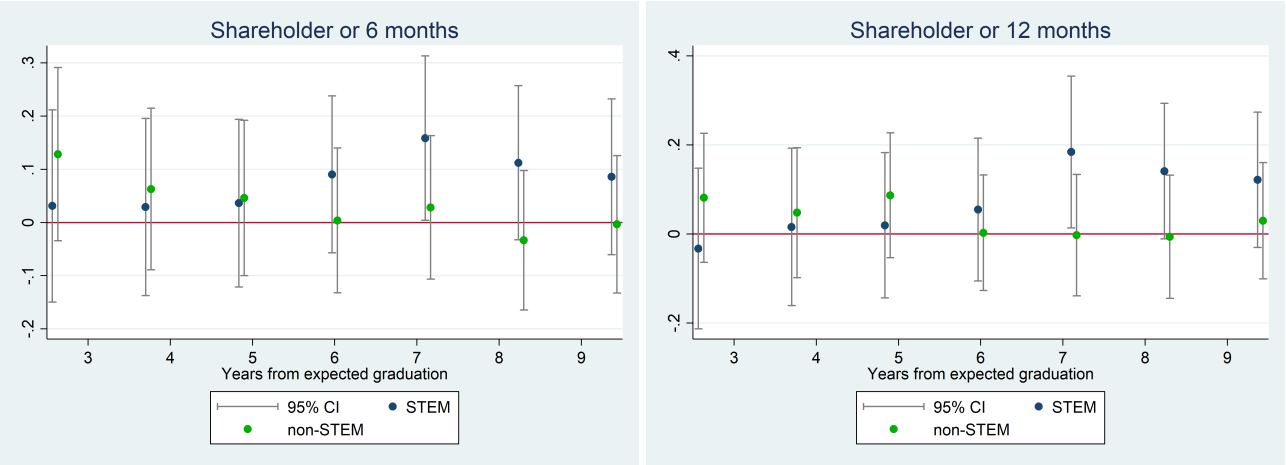
Notes: This figure plots the main RD estimates for at least 6 and 12 months of participation in the formal sector (left and right, respectively) over the years after expected graduation, by type of major choices. Each dot represents a different RD coefficient.

Figure A.13: Pre-AA - 1996-2004: By type of major - Shareholder Status



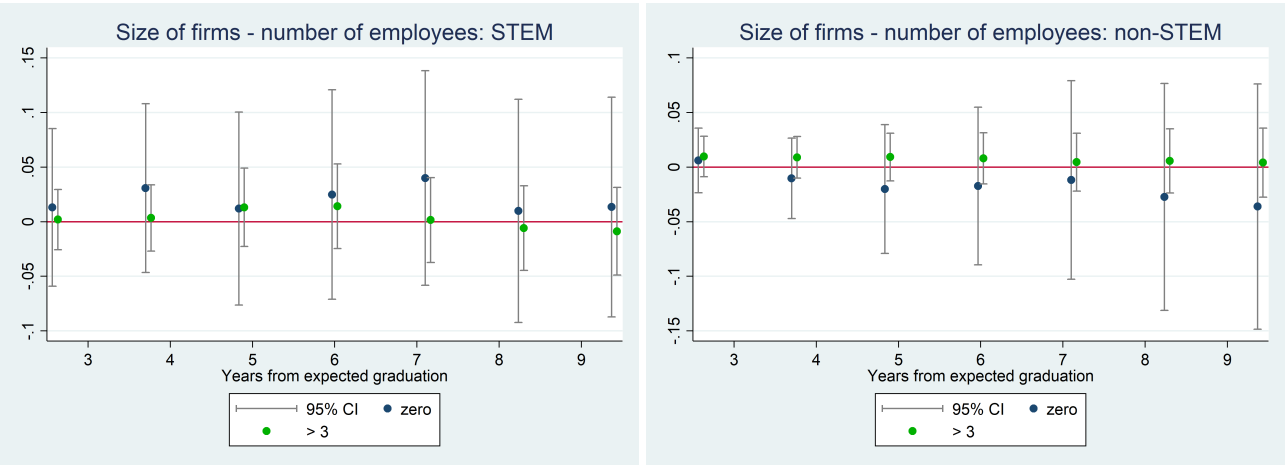
Notes: This figure plots the main RD estimates for shareholder status over the years after expected graduation, by type of major choice. Each dot represents a different RD coefficient.

Figure A.14: Pre-AA - 1996-2004: By type of major - Formal Labor Market Participation or Shareholder Status



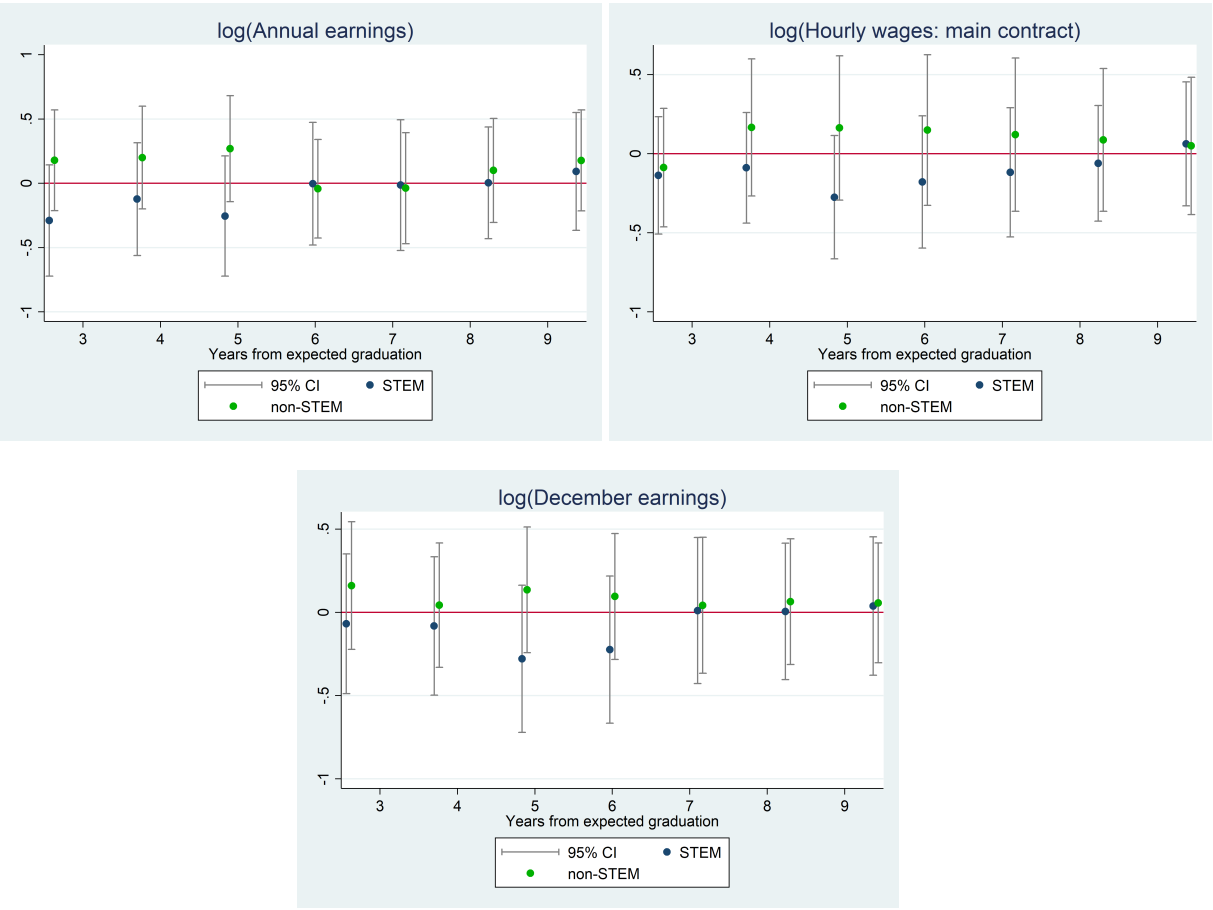
Notes: This figure plots the main RD estimates for the outcomes that combine at least 6 and 12 months of participation in the formal sector with the shareholding status (left and right, respectively) over the years after expected graduation, by type of major choice. Each dot represents a different RD coefficient.

Figure A.15: Pre-AA - 1996-2004: By type of major - Size of Shareholding Company



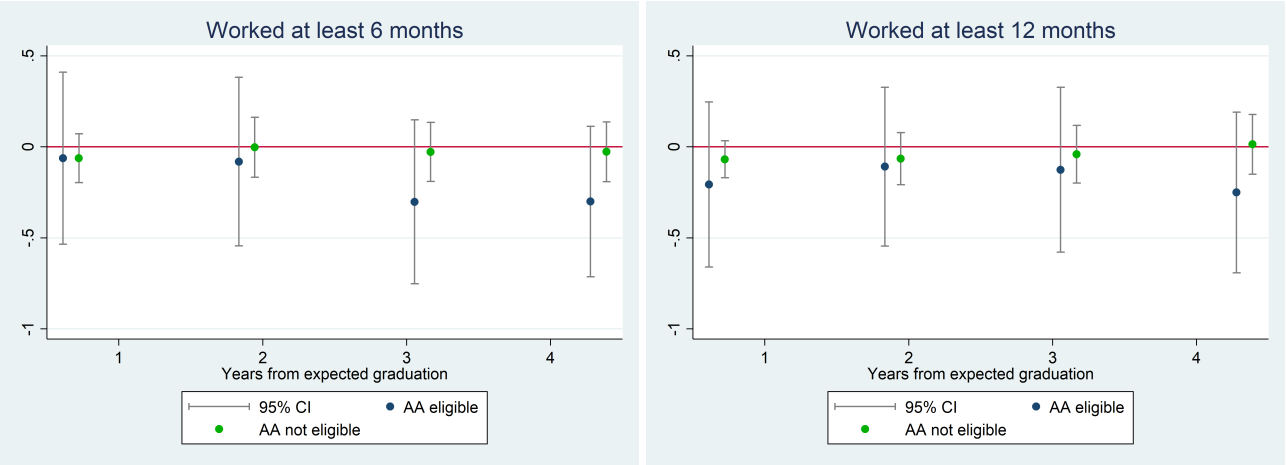
Notes: This figure plots the main RD estimates for the size of the shareholding company over the years after expected graduation, by type of major choice (STEM majors on left and non-STEM majors on the right). Each dot represents a different RD coefficient.

Figure A.16: Pre-AA - 1996-2004: By type of major - Earnings



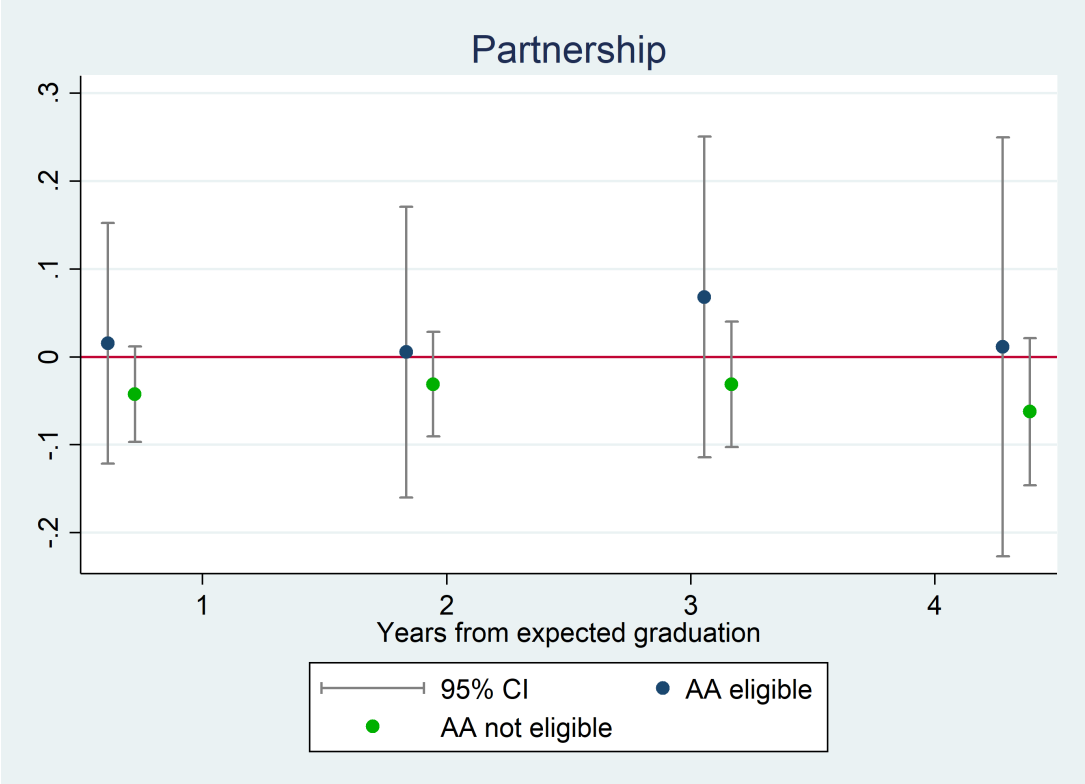
Notes: This figure plots the main RD estimates for each measure of earnings over the years after expected graduation, by type of major choice. log(annual earnings) on the upper left, log(hourly wages in the main contract) on the upper right and log(December earnings) at the bottom. Each dot represents a different RD coefficient.

Figure A.17: During AA - 2004-2009: By AA eligibility - Formal Labor Market Participation



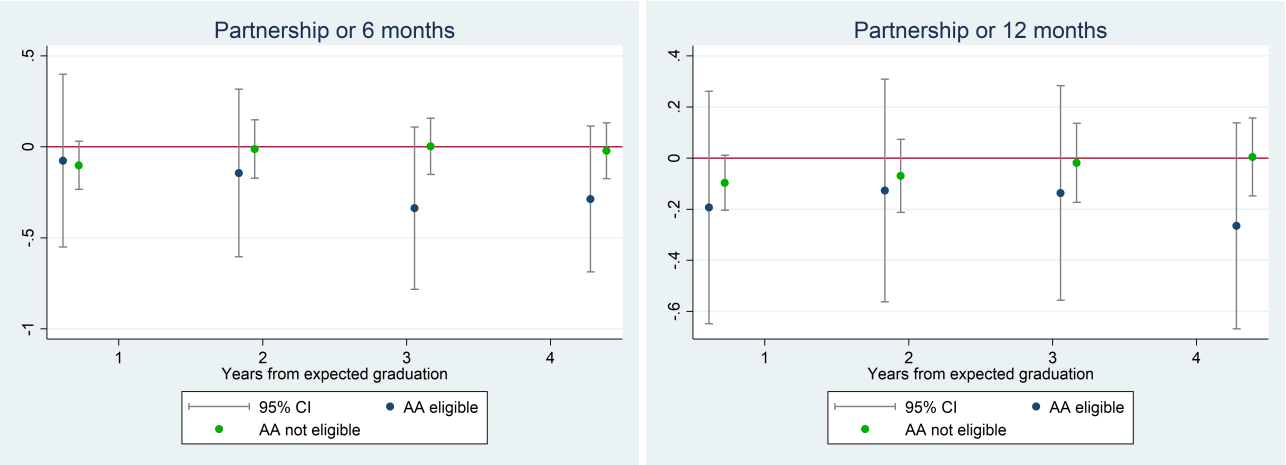
Notes: This figure plots the main RD estimates for at least 6 and 12 months of participation in the formal sector (left and right, respectively) over the years after expected graduation, by AA eligibility status. Each dot represents a different RD coefficient.

Figure A.18: During AA - 2004-2009: By AA eligibility - Shareholder Status



Notes: This figure plots the main RD estimates for shareholder status over the years after expected graduation, by AA eligibility status. Each dot represents a different RD coefficient.

Figure A.19: During AA - 2004-2009: By AA eligibility - Formal Labor Market Participation or Shareholder Status



Notes: This figure plots the main RD estimates for the outcomes that combine at least 6 and 12 months of participation in the formal sector with the shareholding status (left and right, respectively) over the years after expected graduation, by AA eligibility status. Each dot represents a different RD coefficient.

Table A.1: Balancing Tests pre-AA - 1996-2004: non-missing 3rd year earnings

	(1) Female	(2) Age	(3) Pub. Sec.	(4) Pub. HS	(5) Ev. HS	(6) Reg. HS	(7) Rep. HS	(8) Prep. course	(9) First vest.	(10) Other univ.	(11) Works	(12) Read news
Panel A: Individual characteristics												
RD coef.	0.023	0.311	-0.023	0.022	-0.008	0.018	0.026	-0.027	0.059	0.023	0.100	0.002
	(0.104)	(0.516)	(0.076)	(0.082)	(0.041)	(0.064)	(0.023)	(0.062)	(0.068)	(0.032)	(0.073)	(0.029)
Bandwidth	41.5	55.2	57.6	55.2	82.9	66.6	59.3	60.2	71.9	56.0	52.4	68.6
First stage est.	0.299	0.299	0.299	0.299	0.310	0.303	0.299	0.300	0.296	0.298	0.297	0.303
Observations	10,749	13,807	14,217	13,721	18,594	15,865	14,519	14,618	14,756	13,611	13,086	16,195
	0-3 m.w.	3-5 m.w.	5-10 m.w.	10-15 m.w.	15+ m.w.	Father: HS	Mother: HS	Father: Uni.	Mother: Uni.	Father: Top.occ.	Mother: Top.occ.	PC at home
Panel B: Family characteristics												
RD coef.	0.040*	-0.036	0.010	-0.039	0.009	0.013	0.062	-0.004	-0.090	0.018	0.006	-0.041
	(0.023)	(0.032)	(0.050)	(0.043)	(0.082)	(0.051)	(0.061)	(0.077)	(0.079)	(0.077)	(0.053)	(0.061)
Bandwidth	70.6	84.9	65.0	68.2	60.6	63.5	46.3	78.4	56.7	69.3	61.5	65.9
First stage est.	0.306	0.312	0.303	0.305	0.301	0.304	0.299	0.312	0.299	0.306	0.302	0.304
Observations	16,486	18,764	15,491	16,080	14,643	15,190	11,746	17,724	13,978	16,044	14,783	13,910

Notes: This table reports the balancing tests before the introduction of AA around the cutoff considering observations with non-missing earnings in the 3rd year after expected graduation. In Panel A we test individual characteristics and in Panel B we test family characteristics. All variables come from the exam registration survey. We also report the optimal bandwidth, the first stage estimate and observations for each test. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.2: Balancing Tests pre-AA - 1996-2004: non-missing 9rd year earnings

	(1) Female	(2) Age	(3) Pub. Sec.	(4) Pub. HS	(5) Ev. HS	(6) Reg. HS	(7) Rep. HS	(8) Prep. course	(9) First vest.	(10) Other univ.	(11) Works	(12) Read news
Panel A: Individual characteristics												
RD coef.	-0.017	0.607	-0.010	0.020	0.010	-0.026	0.009	-0.039	-0.007	0.001	0.104	-0.004
	(0.094)	(0.395)	(0.070)	(0.074)	(0.036)	(0.061)	(0.019)	(0.052)	(0.057)	(0.027)	(0.063)	(0.029)
Bandwidth	47.8	72.1	66.1	61.2	74.5	59.8	92.5	70.7	83.7	60.2	59.3	60.4
First stage est.	0.295	0.302	0.299	0.298	0.304	0.297	0.310	0.301	0.305	0.294	0.295	0.296
Observations	14,592	20,444	19,051	17,879	20,809	17,496	24,194	19,975	20,032	17,330	17,393	17,630
	0-3 m.w.	3-5 m.w.	5-10 m.w.	10-15 m.w.	15+ m.w.	Father: HS	Mother: HS	Father: Uni.	Mother: Uni.	Father: Top.occ.	Mother: Top.occ.	PC at home
Panel B: Family characteristics												
RD coef.	0.042**	-0.032	-0.005	-0.025	0.018	-0.003	0.022	-0.008	-0.055	0.004	0.011	-0.045
	(0.020)	(0.029)	(0.043)	(0.037)	(0.063)	(0.044)	(0.046)	(0.070)	(0.069)	(0.067)	(0.049)	(0.061)
Bandwidth	73.6	96.9	76.2	70.2	112.0	78.2	70.4	85.0	73.6	78.1	70.6	61.7
First stage est.	0.304	0.312	0.305	0.302	0.316	0.308	0.302	0.310	0.303	0.308	0.302	0.300
Observations	20,457	24,695	20,999	19,775	26,746	21,381	19,913	22,703	20,588	21,126	19,829	15,798

Notes: This table reports the balancing tests before the introduction of AA around the cutoff considering observations with non-missing earnings in the 9th year after expected graduation. In Panel A we test individual characteristics and in Panel B we test family characteristics. All variables come from the exam registration survey. We also report the optimal bandwidth, the first stage estimate and observations for each test. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.3: Pre-AA - 1996-2004: Formal Labor Market Participation (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market - years after expected graduation							
At least 1 month	0.006	-0.049	-0.021	0.001	0.038	-0.030	-0.052
	(0.065)	(0.053)	(0.047)	(0.041)	(0.040)	(0.041)	(0.040)
Bandwidth	68.6	68.7	63.2	65.3	67.3	61.6	63.4
First stage est.	0.313	0.312	0.309	0.310	0.311	0.309	0.310
First stage F-stat.	322.4	323.4	303.0	310.7	318.1	296.9	304.1
Observations	24,202	24,320	22,746	23,372	23,925	22,285	22,777
At least 6 months	0.029	-0.016	-0.006	-0.002	0.065	-0.022	-0.026
	(0.068)	(0.063)	(0.052)	(0.046)	(0.048)	(0.044)	(0.040)
Bandwidth	67.5	56.3	60.0	66.0	53.1	63.7	68.6
First stage est.	0.312	0.307	0.308	0.310	0.307	0.309	0.312
First stage F-stat.	317.9	276.9	291.0	313.3	266.3	304.8	323.8
Observations	23,880	20,756	21,829	23,562	19,757	22,908	24,276
At least 12 months	-0.021	-0.033	-0.003	-0.021	0.019	0.016	0.004
	(0.065)	(0.066)	(0.055)	(0.050)	(0.053)	(0.048)	(0.043)
Bandwidth	75.9	58.6	70.0	65.9	59.4	60.5	61.3
First stage est.	0.316	0.308	0.312	0.310	0.308	0.308	0.309
First stage F-stat.	347.0	285.4	328.2	312.9	288.8	293.1	296.6
Observations	26,080	21,442	24,658	23,532	21,677	21,991	22,192

Notes: This table reports the RD estimates for participating for at least 1,6 and 12 months in the formal sector in the aggregate sample, excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths, the first-stage and F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.4: Pre-AA - 1996-2004: Shareholder Status (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Partnership - years after expected graduation							
Shareholder status	0.002	-0.003	-0.017	-0.029	-0.019	-0.045	-0.046
	(0.029)	(0.031)	(0.038)	(0.043)	(0.051)	(0.057)	(0.061)
Bandwidth	57.1	57.7	56.1	56.3	55.0	56.7	57.5
First stage est.	0.307	0.307	0.307	0.307	0.307	0.307	0.307
First stage F-stat.	279.8	282.0	276.1	276.9	272.3	278.5	281.4
Observations	20,988	21,183	20,690	20,756	20,350	20,880	21,134

Notes: This table reports the RD estimates for shareholder status in the aggregate sample, excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths, the first-stage and F-statistics are reported in each column. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.5: Pre-AA - 1996-2004: Formal Labor Market Participation or Shareholder Status (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market or Shareholder - years after expected graduation							
1 month or Shareholder	0.023	-0.048	-0.043	-0.033	0.005	-0.043	-0.062*
	(0.063)	(0.049)	(0.042)	(0.037)	(0.035)	(0.036)	(0.033)
Bandwidth	65.4	71.9	72.5	69.0	62.8	59.6	60.7
First stage est.	0.312	0.313	0.313	0.312	0.309	0.308	0.309
First stage F-stat.	311.1	335.1	337.1	324.5	301.6	289.5	294.2
Observations	23,297	25,184	25,329	24,385	22,642	21,733	22,029
6 months or Shareholder	0.033	-0.013	-0.033	-0.046	-0.000	-0.058	-0.033
	(0.065)	(0.057)	(0.046)	(0.041)	(0.037)	(0.038)	(0.035)
Bandwidth	67.2	60.6	65.6	72.1	73.8	63.0	65.1
First stage est.	0.312	0.308	0.310	0.313	0.314	0.309	0.310
First stage F-stat.	318.1	293.1	311.7	335.8	341.3	302.2	310.0
Observations	23,811	21,992	23,458	25,237	25,655	22,694	23,295
12 months or Shareholder	-0.004	-0.027	-0.028	-0.068	-0.016	-0.032	0.001
	(0.060)	(0.060)	(0.050)	(0.048)	(0.038)	(0.042)	(0.039)
Bandwidth	98.9	65.9	73.3	62.9	105.9	67.2	61.6
First stage est.	0.324	0.310	0.314	0.309	0.324	0.311	0.309
First stage F-stat.	419.4	312.9	339.8	301.9	437.7	317.9	297.6
Observations	31,110	23,532	25,538	22,667	32,437	23,903	22,294

Notes: This table reports the RD estimates for outcomes that combine participation (at least 1,6 and 12 months) in the formal sector and shareholder status in the aggregate sample, excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths, the first-stage and F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.6: Pre-AA - 1996-2004: Earnings (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Earnings - years after expected graduation							
log(annual earnings)	-0.074	-0.042	-0.063	-0.118	-0.183	-0.003	0.094
	(0.158)	(0.157)	(0.157)	(0.161)	(0.176)	(0.149)	(0.154)
Bandwidth	67.9	69.5	61.6	48.8	43.6	58.0	52.9
First stage est.	0.314	0.315	0.306	0.300	0.293	0.305	0.299
First stage F-stat.	246.3	280.5	266.3	212.3	176.6	237.5	211.7
Observations	15,450	17,459	16,771	14,199	13,048	16,779	15,367
log(hourly wage: m. contract)	-0.126	0.010	-0.069	-0.102	-0.122	-0.030	-0.008
	(0.134)	(0.139)	(0.144)	(0.154)	(0.153)	(0.139)	(0.141)
Bandwidth	56.2	59.7	56.3	48.0	49.4	58.1	55.6
First stage est.	0.310	0.309	0.303	0.300	0.294	0.305	0.300
First stage F-stat.	209.6	247.2	245.2	209.7	196.1	237.6	220.3
Observations	13,321	15,494	15,631	14,006	14,604	16,779	16,082
log(december earnings)	-0.071	-0.110	-0.134	-0.142	-0.061	-0.043	-0.019
	(0.158)	(0.154)	(0.150)	(0.147)	(0.153)	(0.141)	(0.145)
Bandwidth	55.7	51.6	50.6	49.0	47.3	52.9	51.8
First stage est.	0.300	0.302	0.298	0.298	0.298	0.304	0.301
First stage F-stat.	188.0	196.4	208.1	193.0	184.0	200.5	196.0
Observations	11,910	12,459	12,989	13,132	12,924	14,233	13,887

Notes: This table reports the RD estimates for our three earnings measures: annual earnings, hourly earnings of the main contract and December earnings in the formal sector for the aggregate sample, excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths, the first-stage and F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.7: Pre-AA - 1996-2004: By type of school - Formal Labor Market Participation (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market - years after expected graduation							
6 months - Pub. HS (exc. tech)	0.187	0.168	0.281**	0.247*	0.269**	0.135	0.089
	(0.151)	(0.146)	(0.140)	(0.132)	(0.136)	(0.114)	(0.109)
Bandwidth	62.1	60.3	57.8	54.7	54.6	63.2	64.5
First stage F-stat.	61.7	58.8	56.9	54.5	54.5	61.3	62.6
Observations	3,033	2,979	2,883	2,756	2,750	3,107	3,152
6 months - Priv. HS	0.027	-0.006	0.024	-0.003	0.058	-0.016	-0.034
	(0.086)	(0.076)	(0.068)	(0.056)	(0.053)	(0.055)	(0.044)
Bandwidth	63.9	59.2	54.4	69.5	68.1	58.9	80.0
First stage F-stat.	219.8	204.4	188.1	240.0	234.9	203.4	272.9
Observations	15,550	14,701	13,704	16,637	16,370	14,661	18,494
12 months - Pub. HS (exc. tech)	0.101	0.182	0.298*	0.257*	0.409***	0.255*	0.157
	(0.153)	(0.150)	(0.154)	(0.147)	(0.154)	(0.141)	(0.134)
Bandwidth	64.7	60.9	55.3	52.3	54.7	55.6	54.1
First stage F-stat.	64.2	59.2	55.1	52.6	54.5	55.3	54.2
Observations	3,134	3,005	2,787	2,634	2,756	2,801	2,725
12 months - Priv. HS	-0.009	-0.034	0.012	-0.002	-0.027	0.013	0.016
	(0.072)	(0.084)	(0.072)	(0.060)	(0.047)	(0.054)	(0.051)
Bandwidth	122.1	57.5	62.3	74.1	116.6	70.4	61.2
First stage F-stat.	397.0	198.2	215.4	254.2	382.9	242.7	212.8
Observations	23,811	14,362	15,280	17,478	23,326	16,793	15,071

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by type of high school attended (public and private high schools), excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.8: Pre-AA - 1996-2004: By type of school - Shareholder Status (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Shareholder status - years after expected graduation							
Shareholder - Pub. HS (exc. tech)	-0.053	-0.057	-0.076	-0.095	-0.098	-0.075	-0.107
	(0.060)	(0.067)	(0.074)	(0.078)	(0.083)	(0.084)	(0.086)
Bandwidth	76.9	68.8	64.4	64.3	63.8	64.0	66.9
First stage F-stat.	74.2	66.7	62.4	62.4	61.8	62.0	64.7
Observations	3,589	3,317	3,147	3,147	3,127	3,134	3,241
Shareholder - Priv. HS	-0.002	0.002	-0.007	-0.018	-0.006	-0.041	-0.023
	(0.035)	(0.038)	(0.048)	(0.054)	(0.065)	(0.073)	(0.079)
Bandwidth	69.2	66.6	57.7	60.0	54.1	54.3	53.2
First stage F-stat.	238.9	229.7	198.9	207.2	187.1	187.5	184.1
Observations	16,582	16,096	14,405	14,845	13,628	13,662	13,436

Notes: This table reports the RD estimates for the shareholder status by type of high school attended (public and private high schools), excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.9: Pre-AA - 1996-2004: By type of school - Formal Labor Market Participation or Shareholder status (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market or Shareholder - years after expected graduation							
6 months or sharehold. - Pub. HS (exc. tech)	0.177	0.112	0.109	0.091	0.134	0.018	0.005
	(0.147)	(0.137)	(0.122)	(0.121)	(0.122)	(0.107)	(0.103)
Bandwidth	61.1	60.5	68.5	59.0	57.1	64.4	62.8
First stage F-stat.	61.1	58.9	66.4	57.8	56.4	62.4	61.1
Observations	2,990	2,991	3,303	2,928	2,856	3,151	3,095
6 months or sharehold. - Priv. HS	0.026	0.001	-0.002	-0.031	0.017	-0.055	-0.026
	(0.082)	(0.070)	(0.061)	(0.054)	(0.049)	(0.051)	(0.047)
Bandwidth	63.1	62.2	58.6	61.5	63.8	53.1	57.1
First stage F-stat.	218.3	215.0	202.2	212.6	220.3	183.9	197.5
Observations	15,411	15,253	14,590	15,136	15,578	13,422	14,268
12 months or sharehold. - Pub. HS (exc. tech)	0.051	0.131	0.091	0.091	0.262*	0.072	0.047
	(0.151)	(0.145)	(0.136)	(0.141)	(0.141)	(0.128)	(0.123)
Bandwidth	63.7	61.3	67.8	54.2	57.9	62.7	59.9
First stage F-stat.	63.5	59.6	65.7	54.1	57.0	60.8	58.6
Observations	3,100	3,029	3,279	2,727	2,886	3,090	2,966
12 months or sharehold. - Priv. HS	-0.033	-0.025	-0.006	-0.036	-0.044	-0.024	0.030
	(0.079)	(0.076)	(0.066)	(0.061)	(0.055)	(0.057)	(0.052)
Bandwidth	78.7	68.3	62.2	60.7	69.1	56.8	53.1
First stage F-stat.	268.0	235.6	215.1	209.7	238.5	195.8	184.3
Observations	18,236	16,405	15,259	14,985	16,557	14,199	13,405

Notes: This table reports the RD estimates for outcomes that combine participation (at least 6 and 12 months) in the formal sector and shareholder status by type of high school attended (public and private high schools), excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels

Table A.10: Pre-AA - 1996-2004: By type of school - Size of Shareholding Companies (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Size of shareholding company (employees) - years after exp. graduation							
zero empl. - Pub. HS (exc. tech)	-0.088	-0.097	-0.119*	-0.119*	-0.148**	-0.165**	-0.166**
	(0.056)	(0.060)	(0.065)	(0.067)	(0.069)	(0.068)	(0.072)
Bandwidth	66.7	65.1	65.3	65.0	64.4	67.4	68.2
First stage F-stat.	62.9	61.3	61.5	61.2	60.7	63.3	65.0
Observations	3,220	3,157	3,164	3,149	3,127	3,240	3,266
zero empl. - Priv. HS	-0.001	0.010	-0.006	-0.001	0.027	-0.007	-0.005
	(0.031)	(0.035)	(0.041)	(0.046)	(0.054)	(0.058)	(0.063)
Bandwidth	57.8	53.8	54.6	54.4	49.4	52.2	51.6
First stage F-stat.	198.9	184.7	187.4	186.6	171.0	179.4	177.3
Observations	14,367	13,494	13,673	13,614	12,507	13,101	12,972
more than 3 empl. - Pub. HS (exc. tech)	0.016	0.023	0.018	0.011	0.008	0.028	0.034
	(0.019)	(0.021)	(0.024)	(0.026)	(0.026)	(0.030)	(0.029)
Bandwidth	58.5	56.7	59.8	59.7	56.7	54.7	60.0
First stage F-stat.	56.1	54.7	56.9	56.8	54.8	53.4	57.9
Observations	2,898	2,822	2,948	2,944	2,819	2,735	2,943
more than 3 empl. - Priv. HS	0.013	0.010	0.019	0.017	0.010	0.001	0.005
	(0.012)	(0.013)	(0.015)	(0.017)	(0.018)	(0.019)	(0.019)
Bandwidth	60.9	63.7	58.6	64.9	67.3	67.9	69.1
First stage F-stat.	210.0	218.1	200.6	222.0	230.5	231.9	235.7
Observations	14,945	15,467	14,484	15,668	16,104	16,195	16,392

Notes: This table reports the RD estimates for the outcomes size of shareholding companies by type of high school attended (public and private high schools), excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.11: Pre-AA - 1996-2004: By type of school - Earnings (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Earnings - years after expected graduation							
log(annual earnings) - Pub. HS (exc. tech)	-0.017	0.209	0.097	0.040	0.214	0.239	0.360
	(0.271)	(0.322)	(0.273)	(0.290)	(0.290)	(0.275)	(0.241)
Bandwidth	63.1	59.3	63.6	55.6	65.2	65.2	61.5
First stage F-stat.	43.6	44.6	55.0	40.0	50.2	56.8	58.6
Observations	2,173	2,248	2,479	2,291	2,630	2,653	2,509
log(annual earnings) - Priv. HS	-0.029	-0.092	0.025	-0.003	-0.139	0.086	0.174
	(0.213)	(0.210)	(0.193)	(0.176)	(0.207)	(0.162)	(0.180)
Bandwidth	45.8	43.3	47.8	55.0	44.3	65.2	53.4
First stage F-stat.	101.3	117.6	132.3	157.9	114.2	177.2	133.4
Observations	7,323	7,795	8,989	10,470	8,807	12,265	10,315
log(hourly wage: m. contract) - Pub. HS (exc. tech)	0.275	0.467*	0.297	0.263	0.271	0.269	0.406*
	(0.227)	(0.260)	(0.227)	(0.243)	(0.238)	(0.232)	(0.221)
Bandwidth	68.7	60.8	59.2	55.7	58.1	64.5	62.2
First stage F-stat.	46.6	45.4	51.9	40.1	45.1	56.3	59.2
Observations	2,309	2,290	2,348	2,292	2,400	2,629	2,540
log(hourly wage: m. contract) - Priv. HS	-0.176	-0.014	-0.111	-0.046	-0.113	-0.023	0.008
	(0.159)	(0.132)	(0.171)	(0.174)	(0.171)	(0.163)	(0.166)
Bandwidth	48.7	107.9	47.3	51.2	52.5	55.5	52.9
First stage F-stat.	107.3	298.2	131.0	146.6	136.8	146.4	132.0
Observations	7,715	15,458	8,900	9,832	10,273	10,790	10,230
log(december earnings) - Pub. HS (exc. tech)	0.099	0.338	0.108	0.126	0.113	0.176	0.154
	(0.239)	(0.271)	(0.229)	(0.244)	(0.237)	(0.241)	(0.225)
Bandwidth	64.2	60.2	58.3	55.6	61.1	62.8	66.5
First stage F-stat.	37.6	38.5	50.1	37.4	51.2	49.9	57.6
Observations	1,993	2,058	2,122	2,136	2,338	2,400	2,504
log(december earnings) - Priv. HS	-0.078	-0.127	-0.122	-0.110	-0.001	-0.000	-0.027
	(0.193)	(0.173)	(0.177)	(0.174)	(0.176)	(0.144)	(0.164)
Bandwidth	49.5	53.9	43.9	43.1	47.4	70.8	52.0
First stage F-stat.	93.7	125.4	110.1	111.9	113.9	177.5	125.9
Observations	7,046	8,536	7,545	7,723	8,574	11,972	9,236

Notes: This table reports the RD estimates for our three earnings measures: annual earnings, hourly earnings of the main contract and December earnings in the formal sector by type of high school attended (public and private high schools), excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.12: Pre-AA - 1996-2004: By type of major - Formal Labor Market Participation (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market - years after expected graduation							
6 months - STEM	-0.081	-0.086	-0.065	0.038	0.107	0.068	0.011
	(0.092)	(0.086)	(0.079)	(0.078)	(0.077)	(0.073)	(0.068)
Bandwidth	53.7	50.5	46.2	41.7	39.4	44.0	46.5
First stage F-stat.	106.8	102.7	95.3	87.8	84.3	91.6	96.3
Observations	12,433	11,878	10,942	9,954	9,396	10,466	11,000
6 months - non-STEM	0.131	0.038	0.043	-0.011	0.023	-0.069	-0.051
	(0.089)	(0.075)	(0.062)	(0.055)	(0.052)	(0.054)	(0.048)
Bandwidth	80.4	108.1	103.1	100.3	104.6	88.3	100.0
First stage F-stat.	301.2	346.6	338.9	335.0	341.4	315.8	334.6
Observations	10,119	12,054	11,730	11,561	11,839	10,728	11,539
12 months - STEM	-0.110	-0.089	-0.087	0.008	0.101	0.085	0.036
	(0.085)	(0.086)	(0.086)	(0.081)	(0.088)	(0.080)	(0.071)
Bandwidth	71.2	57.8	45.8	47.8	39.6	41.0	43.4
First stage F-stat.	135.2	113.9	94.6	98.1	84.5	86.7	91.0
Observations	15,587	13,332	10,854	11,327	9,438	9,782	10,329
12 months - non-STEM	0.085	0.042	0.103	0.001	-0.031	-0.005	-0.005
	(0.084)	(0.080)	(0.069)	(0.055)	(0.057)	(0.054)	(0.049)
Bandwidth	82.4	110.7	106.4	108.8	108.1	105.7	94.2
First stage F-stat.	304.8	350.9	344.1	347.8	346.7	343.0	326.2
Observations	10,303	12,218	11,951	12,104	12,057	11,910	11,169

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by type of major (STEM and non-STEM choices), excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.13: Pre-AA - 1996-2004: By type of major - Shareholder Status (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Shareholder status - years after expected graduation							
Shareholder - STEM	0.038	0.060	0.048	0.052	0.034	0.007	-0.000
	(0.050)	(0.053)	(0.061)	(0.069)	(0.068)	(0.074)	(0.073)
Bandwidth	51.1	48.2	45.3	42.1	47.1	46.1	50.8
First stage F-stat.	103.6	98.7	93.9	88.4	96.8	95.2	103.1
Observations	12,009	11,401	10,762	10,033	11,159	10,922	11,949
Shareholder - non-STEM	-0.017	-0.035	-0.056	-0.045	-0.044	-0.062	-0.068
	(0.021)	(0.025)	(0.043)	(0.057)	(0.074)	(0.086)	(0.095)
Bandwidth	139.6	136.5	103.3	132.1	109.6	97.7	87.4
First stage F-stat.	390.4	387.0	339.3	381.7	349.0	331.2	314.2
Observations	13,601	13,472	11,750	13,287	12,148	11,397	10,671

Notes: This table reports the RD estimates for the shareholder status by type of major (STEM and non-STEM choices), excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.14: Pre-AA - 1996-2004: By type of major - Formal Labor Market Participation or Shareholder Status (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market or Shareholding Status - years after expected graduation							
6 months or sharehold. - STEM	-0.037	-0.042	-0.053	0.008	0.060	0.006	-0.023
	(0.090)	(0.077)	(0.069)	(0.068)	(0.067)	(0.057)	(0.055)
Bandwidth	51.4	61.2	55.9	46.8	42.0	52.6	49.7
First stage F-stat.	104.3	119.6	110.8	96.5	88.2	105.8	101.6
Observations	12,002	13,937	12,982	11,101	10,010	12,300	11,695
6 months or sharehold. - non-STEM	0.103	0.015	-0.015	-0.061	-0.021	-0.089*	-0.039
	(0.079)	(0.066)	(0.053)	(0.047)	(0.046)	(0.046)	(0.046)
Bandwidth	98.7	108.3	109.3	110.7	107.3	107.1	93.3
First stage F-stat.	332.7	346.9	348.5	351.0	345.4	345.1	324.8
Observations	11,457	12,062	12,128	12,220	12,011	11,996	11,113
12 months or sharehold. - STEM	-0.105	-0.056	-0.083	-0.034	0.084	0.040	0.020
	(0.093)	(0.089)	(0.077)	(0.078)	(0.077)	(0.065)	(0.063)
Bandwidth	53.4	46.6	54.4	47.0	44.0	47.5	44.7
First stage F-stat.	107.1	96.0	108.4	96.7	91.5	97.7	93.0
Observations	12,376	11,045	12,664	11,139	10,464	11,260	10,617
12 months or sharehold. - non-STEM	0.056	0.016	0.045	-0.062	-0.062	-0.054	-0.009
	(0.074)	(0.069)	(0.058)	(0.048)	(0.052)	(0.055)	(0.050)
Bandwidth	99.6	113.1	109.7	113.5	112.0	110.8	105.7
First stage F-stat.	334.0	354.8	349.2	355.4	353.0	351.0	342.9
Observations	11,516	12,350	12,157	12,363	12,286	12,220	11,907

Notes: This table reports the RD estimates for outcomes that combine participation (at least 6 and 12 months) in the formal sector and shareholder status by type of major (STEM and non-STEM choices), excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.15: Pre-AA - 1996-2004: By type of major - Earnings (higher education restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Earnings - years after expected graduation							
log(annual earnings) - STEM	-0.250	-0.077	-0.232	-0.010	-0.031	0.053	0.080
	(0.210)	(0.220)	(0.231)	(0.238)	(0.251)	(0.206)	(0.230)
Bandwidth	49.9	44.9	41.6	39.6	40.1	44.9	41.2
First stage F-stat.	86.2	80.8	75.3	69.2	65.9	78.1	65.0
Observations	8,020	7,888	7,660	7,390	7,588	8,482	7,714
log(annual earnings) - non-STEM	0.216	0.161	0.203	-0.104	-0.059	0.034	0.189
	(0.193)	(0.198)	(0.207)	(0.192)	(0.216)	(0.206)	(0.196)
Bandwidth	74.2	97.4	88.8	76.0	111.5	85.6	105.7
First stage F-stat.	199.7	253.7	257.3	246.0	252.9	236.3	269.7
Observations	5,466	7,471	7,666	7,288	9,413	8,153	9,192
log(hourly wage: m. contract) - STEM	-0.103	-0.065	-0.255	-0.165	-0.118	-0.025	0.062
	(0.178)	(0.174)	(0.191)	(0.205)	(0.200)	(0.173)	(0.190)
Bandwidth	50.9	52.1	43.6	38.2	39.4	49.4	45.5
First stage F-stat.	87.5	92.3	79.3	67.6	65.1	86.1	71.3
Observations	8,144	9,025	8,021	7,172	7,462	9,290	8,465
log(hourly wage: m. contract) - non-STEM	-0.044	0.164	0.145	0.125	-0.005	0.017	0.064
	(0.183)	(0.215)	(0.228)	(0.239)	(0.243)	(0.225)	(0.216)
Bandwidth	78.8	91.2	74.6	93.2	77.8	71.9	92.3
First stage F-stat.	203.7	248.1	242.1	264.9	216.3	219.8	256.8
Observations	5,677	7,223	6,864	8,307	7,585	7,222	8,533
log(december earnings) - STEM	-0.016	-0.066	-0.246	-0.216	0.043	0.007	0.043
	(0.209)	(0.211)	(0.221)	(0.218)	(0.218)	(0.194)	(0.208)
Bandwidth	42.6	38.8	38.6	36.1	38.2	44.1	42.8
First stage F-stat.	70.1	64.8	62.6	60.5	60.0	68.8	62.3
Observations	6,295	6,232	6,502	6,302	6,705	7,690	7,377
log(december earnings) - non-STEM	0.121	0.003	0.107	0.069	0.009	0.023	0.049
	(0.190)	(0.189)	(0.190)	(0.191)	(0.203)	(0.187)	(0.179)
Bandwidth	88.9	88.8	83.0	101.1	85.7	106.2	137.8
First stage F-stat.	175.1	219.7	244.5	244.1	232.0	246.2	285.2
Observations	5,358	6,285	6,626	7,898	7,395	8,449	9,556

Notes: This table reports the RD estimates for our three earnings measures: annual earnings, hourly earnings of the main contract and December earnings in the formal sector by type of major (STEM and non-STEM choices), excluding individuals without a higher education degree as reported in RAIS. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.16: Pre-AA - 1996-2004: By type of school - Formal Labor Market Participation (instrument restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market - years after expected graduation							
6 months - Pub. HS (exc. tech)	0.155	0.139	0.232**	0.201**	0.167*	0.152*	0.111
	(0.108)	(0.105)	(0.098)	(0.089)	(0.090)	(0.088)	(0.088)
Bandwidth	64.5	64.6	63.8	70.2	70.6	65.1	65.3
First stage F-stat.	166.3	166.9	165.1	179.7	180.7	168.1	167.8
Observations	3,530	3,570	3,540	3,813	3,828	3,596	3,602
6 months - Priv. HS	0.048	0.051	0.064	0.057	0.124**	0.042	0.032
	(0.074)	(0.072)	(0.061)	(0.057)	(0.059)	(0.053)	(0.052)
Bandwidth	61.0	48.9	61.7	63.4	52.1	60.3	58.7
First stage F-stat.	309.4	253.7	313.4	321.3	267.4	306.0	297.7
Observations	17,278	14,380	17,464	17,812	15,175	17,146	16,814
12 months - Pub. HS (exc. tech)	0.092	0.160	0.216**	0.258**	0.251**	0.191**	0.138
	(0.104)	(0.104)	(0.100)	(0.105)	(0.100)	(0.096)	(0.103)
Bandwidth	67.8	65.1	65.2	55.6	68.0	67.6	56.2
First stage F-stat.	173.8	168.0	168.2	148.1	174.8	173.9	148.6
Observations	3,674	3,595	3,600	3,161	3,721	3,704	3,186
12 months - Priv. HS	0.002	0.012	0.064	0.054	0.042	0.069	0.059
	(0.072)	(0.072)	(0.061)	(0.056)	(0.055)	(0.051)	(0.050)
Bandwidth	55.9	54.0	65.2	70.0	67.8	64.9	60.9
First stage F-stat.	284.0	275.5	330.0	354.0	343.0	328.9	308.7
Observations	16,119	15,656	18,237	19,283	18,795	18,178	17,270

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by type of high school attended (public and private high schools), excluding individuals that did not enroll in the first exam attempt but enrolled in later years. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.17: Pre-AA - 1996-2004: By type of school - Shareholder Status (instrument restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Shareholder status - years after expected graduation							
Shareholder - Pub. HS (exc. tech)	-0.013	-0.017	-0.032	-0.041	-0.050	-0.034	-0.047
	(0.042)	(0.046)	(0.049)	(0.051)	(0.055)	(0.056)	(0.060)
Bandwidth	74.8	69.7	69.4	69.2	67.6	69.6	67.7
First stage F-stat.	189.3	178.7	178.1	177.7	174.0	178.5	174.1
Observations	3,991	3,792	3,782	3,776	3,706	3,785	3,709
Shareholder - Priv. HS	0.001	0.006	0.007	-0.004	0.006	-0.024	-0.004
	(0.028)	(0.031)	(0.037)	(0.044)	(0.052)	(0.057)	(0.062)
Bandwidth	57.0	54.6	55.1	50.0	48.6	51.2	50.7
First stage F-stat.	289.5	278.5	280.8	258.4	252.5	263.3	261.4
Observations	16,396	15,835	15,960	14,654	14,306	14,948	14,837

Notes: his table reports the RD estimates for the shareholder status by type of high school attended (public and private high schools), excluding individuals that did not enroll in the first exam attempt but enrolled in later years. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.18: Pre-AA - 1996-2004: By type of school - Formal Labor Market Participation or Shareholder status (instrument restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market or Shareholder - years after expected graduation							
6 months or sharehold. - Pub. HS (exc. tech)	0.163	0.115	0.152	0.132	0.101	0.081	0.062
	(0.104)	(0.102)	(0.097)	(0.092)	(0.092)	(0.086)	(0.089)
Bandwidth	67.4	64.3	65.7	64.6	66.4	66.7	62.1
First stage F-stat.	174.3	166.3	169.4	166.9	171.1	171.7	161.3
Observations	3,664	3,561	3,623	3,573	3,659	3,667	3,471
6 months or sharehold. - Priv. HS	0.049	0.056	0.058	0.045	0.081	0.013	0.042
	(0.073)	(0.068)	(0.062)	(0.058)	(0.056)	(0.056)	(0.052)
Bandwidth	60.1	54.4	54.2	57.6	58.0	55.7	62.3
First stage F-stat.	305.5	277.6	276.4	292.5	294.3	283.6	316.0
Observations	17,069	15,778	15,701	16,556	16,650	16,116	17,569
12 months or sharehold. - Pub. HS (exc. tech)	0.076	0.134	0.133	0.156	0.189*	0.110	0.075
	(0.106)	(0.102)	(0.105)	(0.103)	(0.101)	(0.098)	(0.099)
Bandwidth	66.8	66.1	61.6	58.1	65.5	65.4	58.4
First stage F-stat.	172.7	170.3	159.8	152.7	168.9	168.7	153.5
Observations	3,634	3,643	3,439	3,272	3,613	3,609	3,289
12 months or sharehold. - Priv. HS	-0.002	0.022	0.068	0.043	0.043	0.036	0.076
	(0.069)	(0.069)	(0.062)	(0.064)	(0.060)	(0.059)	(0.054)
Bandwidth	65.5	60.3	57.9	48.7	55.2	51.3	57.0
First stage F-stat.	332.3	306.0	293.9	252.8	281.1	264.0	289.5
Observations	18,292	17,151	16,625	14,317	15,981	15,009	16,404

Notes: This table reports the RD estimates for outcomes that combine participation (at least 6 and 12 months) in the formal sector and shareholder status by type of high school attended (public and private high schools), excluding individuals that did not enroll in the first exam attempt but enrolled in later years. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.19: Pre-AA - 1996-2004: By type of school - Size of Shareholding Companies (instrument restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Size of shareholding company (employees) - years after exp. graduation							
zero empl. - Pub. HS (exc. tech)	-0.053	-0.061	-0.074*	-0.072*	-0.099**	-0.105**	-0.111**
	(0.034)	(0.038)	(0.040)	(0.041)	(0.042)	(0.043)	(0.048)
Bandwidth	72.3	68.2	70.2	68.3	71.3	71.5	70.0
First stage F-stat.	181.6	172.7	177.1	172.8	179.3	178.8	175.6
Observations	3,864	3,714	3,794	3,713	3,825	3,826	3,777
zero empl. - Priv. HS	0.006	0.016	0.005	0.013	0.035	0.001	0.003
	(0.024)	(0.028)	(0.033)	(0.038)	(0.043)	(0.045)	(0.048)
Bandwidth	50.3	46.8	47.8	45.9	44.6	48.8	49.7
First stage F-stat.	258.0	242.6	246.7	238.2	233.2	249.6	252.7
Observations	14,676	13,740	14,025	13,471	13,124	14,236	14,455
more than 3 empl. - Pub. HS (exc. tech)	0.016	0.021	0.016	0.013	0.014	0.028	0.028
	(0.016)	(0.017)	(0.018)	(0.019)	(0.020)	(0.022)	(0.022)
Bandwidth	66.5	62.6	65.9	63.6	62.4	60.0	58.9
First stage F-stat.	169.0	159.9	167.3	162.4	159.5	153.6	151.6
Observations	3,642	3,476	3,611	3,513	3,464	3,337	3,290
more than 3 empl. - Priv. HS	0.004	0.001	0.008	0.006	0.001	-0.001	0.002
	(0.011)	(0.011)	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)
Bandwidth	58.2	57.9	55.4	66.2	66.6	76.3	78.7
First stage F-stat.	293.6	291.5	279.4	331.6	333.7	377.6	386.8
Observations	16,633	16,554	15,946	18,330	18,422	20,467	20,881

Notes: This table reports the RD estimates for the outcomes size of shareholding companies by type of high school attended (public and private high schools), excluding individuals that did not enroll in the first exam attempt but enrolled in later years. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.20: Pre-AA - 1996-2004: By type of school - Earnings (instrument restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Earnings - years after expected graduation							
log(annual earnings) - Pub. HS (exc. tech)	-0.103	0.039	0.121	-0.042	0.099	0.216	0.291
	(0.193)	(0.209)	(0.207)	(0.206)	(0.206)	(0.214)	(0.185)
Bandwidth	72.6	76.1	61.6	61.5	64.4	62.3	61.0
First stage F-stat.	112.2	140.1	126.2	122.3	130.0	146.3	144.0
Observations	2,394	2,696	2,400	2,446	2,571	2,523	2,452
log(annual earnings) - Priv. HS	-0.109	-0.091	0.016	-0.014	-0.056	0.060	0.134
	(0.192)	(0.177)	(0.158)	(0.138)	(0.179)	(0.148)	(0.145)
Bandwidth	43.2	43.3	47.9	62.2	40.2	52.8	57.1
First stage F-stat.	131.9	171.3	194.6	264.5	155.3	204.6	212.2
Observations	6,818	7,574	8,719	11,138	7,721	9,922	10,509
log(hourly wage: m. contract) - Pub. HS (exc. tech)	0.159	0.181	0.175	0.144	0.201	0.212	0.381**
	(0.172)	(0.165)	(0.173)	(0.174)	(0.172)	(0.173)	(0.171)
Bandwidth	67.7	76.7	59.6	59.7	57.7	61.9	58.8
First stage F-stat.	105.9	140.8	122.4	118.8	118.2	145.7	140.4
Observations	2,279	2,711	2,339	2,391	2,360	2,513	2,377
log(hourly wage: m. contract) - Priv. HS	-0.220	-0.094	-0.110	-0.058	-0.106	-0.032	0.011
	(0.139)	(0.141)	(0.144)	(0.148)	(0.152)	(0.135)	(0.130)
Bandwidth	50.5	52.2	47.4	50.7	46.0	60.3	60.5
First stage F-stat.	151.4	201.5	192.5	215.8	175.2	237.2	226.3
Observations	7,823	8,925	8,626	9,402	8,752	11,097	10,995
log(december earnings) - Pub. HS (exc. tech)	0.021	0.148	0.061	0.051	0.041	0.079	0.194
	(0.171)	(0.180)	(0.173)	(0.186)	(0.164)	(0.165)	(0.172)
Bandwidth	74.3	67.7	58.8	54.8	65.2	75.6	60.6
First stage F-stat.	108.1	113.7	116.0	95.7	139.9	156.5	135.7
Observations	2,209	2,226	2,122	2,074	2,421	2,703	2,276
log(december earnings) - Priv. HS	-0.094	-0.163	-0.138	-0.113	-0.029	-0.005	-0.018
	(0.146)	(0.144)	(0.150)	(0.147)	(0.141)	(0.136)	(0.137)
Bandwidth	69.6	51.3	41.3	40.3	53.8	48.0	52.1
First stage F-stat.	193.9	173.4	155.6	166.5	199.9	167.8	183.7
Observations	9,024	7,920	6,865	6,963	9,255	8,306	8,886

Notes: This table reports the RD estimates for our three earnings measures: annual earnings, hourly earnings of the main contract and December earnings in the formal sector by type of high school attended (public and private high schools), excluding individuals that did not enroll in the first exam attempt but enrolled in later years. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.21: Pre-AA - 1996-2004: By type of major - Formal Labor Market Participation (instrument restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market - years after expected graduation							
6 months - STEM	-0.031	-0.011	0.045	0.147*	0.209***	0.193**	0.140*
	(0.085)	(0.087)	(0.080)	(0.079)	(0.078)	(0.076)	(0.074)
Bandwidth	45.5	35.8	34.7	33.3	32.6	34.0	37.5
First stage F-stat.	117.9	104.7	103.9	103.0	102.8	103.5	105.8
Observations	11,848	9,542	9,261	8,894	8,730	9,071	9,934
6 months - non-STEM	0.139*	0.079	0.078	0.046	0.056	-0.013	-0.007
	(0.073)	(0.070)	(0.062)	(0.060)	(0.058)	(0.055)	(0.051)
Bandwidth	78.3	82.8	96.0	92.4	85.6	85.0	92.3
First stage F-stat.	539.7	548.2	576.9	569.6	553.8	552.8	569.4
Observations	11,840	12,290	13,458	13,163	12,541	12,492	13,160
12 months - STEM	-0.108	-0.032	0.033	0.143*	0.205**	0.215***	0.155**
	(0.087)	(0.084)	(0.081)	(0.084)	(0.086)	(0.078)	(0.074)
Bandwidth	41.2	40.3	35.2	33.5	32.7	33.6	37.1
First stage F-stat.	109.9	109.8	104.3	103.2	102.8	103.2	105.4
Observations	10,785	10,637	9,394	8,942	8,750	8,968	9,846
12 months - non-STEM	0.097	0.055	0.120*	0.052	0.017	0.025	0.021
	(0.066)	(0.068)	(0.062)	(0.056)	(0.057)	(0.053)	(0.050)
Bandwidth	79.7	82.4	96.2	97.8	91.3	91.0	89.3
First stage F-stat.	541.9	547.3	577.2	580.1	567.3	566.5	562.5
Observations	11,976	12,253	13,465	13,604	13,079	13,045	12,881

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by type of major (STEM and non-STEM choices), excluding individuals that did not enroll in the first exam attempt but enrolled in later years. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.22: Pre-AA - 1996-2004: By type of major - Shareholder Status (instrument restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Shareholder status - years after expected graduation							
Shareholder - STEM	0.048	0.068	0.075	0.068	0.061	0.037	0.035
	(0.044)	(0.047)	(0.054)	(0.060)	(0.057)	(0.063)	(0.062)
Bandwidth	41.7	40.0	37.7	36.2	42.3	40.5	44.5
First stage F-stat.	112.0	109.4	106.5	105.0	113.0	110.0	117.2
Observations	11,006	10,571	10,001	9,632	11,162	10,685	11,711
Shareholder - non-STEM	-0.002	-0.018	-0.029	-0.022	-0.015	-0.032	-0.042
	(0.017)	(0.019)	(0.032)	(0.042)	(0.056)	(0.065)	(0.070)
Bandwidth	91.0	110.2	100.7	96.2	86.3	76.0	72.5
First stage F-stat.	566.6	601.4	585.6	577.3	555.3	536.2	530.1
Observations	13,058	14,557	13,832	13,476	12,617	11,611	11,206

Notes: This table reports the RD estimates for the shareholder status by type of major (STEM and non-STEM choices), excluding individuals that did not enroll in the first exam attempt but enrolled in later years. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.23: Pre-AA - 1996-2004: By type of major - Formal Labor Market Participation or Shareholder Status (instrument restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market or Shareholding Status - years after expected graduation							
6 months or sharehold. - STEM	0.015	0.016	0.056	0.121*	0.172**	0.126*	0.115
	(0.083)	(0.083)	(0.077)	(0.072)	(0.075)	(0.069)	(0.070)
Bandwidth	46.9	37.5	36.2	40.4	33.8	40.1	38.1
First stage F-stat.	121.6	106.2	105.0	110.0	103.3	109.5	106.8
Observations	12,208	9,933	9,625	10,671	9,022	10,575	10,086
6 months or sharehold. - non-STEM	0.132*	0.076	0.055	0.028	0.041	-0.007	0.015
	(0.069)	(0.065)	(0.059)	(0.057)	(0.054)	(0.054)	(0.053)
Bandwidth	80.9	85.3	93.7	94.0	109.9	91.9	92.6
First stage F-stat.	544.3	553.3	572.5	573.2	600.9	568.7	570.2
Observations	12,099	12,520	13,281	13,302	14,529	13,135	13,183
12 months or sharehold. - STEM	-0.062	0.033	0.047	0.090	0.203**	0.164**	0.147**
	(0.086)	(0.073)	(0.079)	(0.075)	(0.084)	(0.071)	(0.072)
Bandwidth	43.4	58.3	37.8	45.4	34.2	40.1	37.2
First stage F-stat.	114.5	147.3	106.5	119.1	103.6	109.5	105.8
Observations	11,371	14,881	10,006	11,934	9,112	10,575	9,862
12 months or sharehold. - non-STEM	0.085	0.052	0.095*	0.022	0.014	0.014	0.039
	(0.062)	(0.063)	(0.057)	(0.053)	(0.054)	(0.056)	(0.054)
Bandwidth	81.0	84.2	94.6	96.6	109.9	92.9	93.4
First stage F-stat.	544.5	551.1	574.5	578.0	600.9	570.9	571.9
Observations	12,112	12,418	13,336	13,502	14,530	13,214	13,259

Notes: This table reports the RD estimates for outcomes that combine participation (at least 6 and 12 months) in the formal sector and shareholder status by type of major (STEM and non-STEM choices), excluding individuals that did not enroll in the first exam attempt but enrolled in later years. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.24: Pre-AA - 1996-2004: By type of major - Earnings (instrument restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Earnings - years after expected graduation							
log(annual earnings) - STEM	-0.264	-0.103	-0.171	0.007	0.027	0.029	0.078
	(0.206)	(0.195)	(0.203)	(0.205)	(0.222)	(0.191)	(0.198)
Bandwidth	42.5	41.3	36.3	36.3	34.4	40.5	40.2
First stage F-stat.	90.5	100.6	94.5	99.6	90.1	103.0	93.2
Observations	6,745	7,042	6,515	6,620	6,333	7,383	7,232
log(annual earnings) - non-STEM	0.105	0.153	0.182	-0.094	-0.112	-0.009	0.114
	(0.158)	(0.163)	(0.169)	(0.159)	(0.178)	(0.169)	(0.161)
Bandwidth	76.5	106.0	92.9	87.5	94.2	79.6	100.3
First stage F-stat.	422.9	482.2	457.6	504.2	442.2	427.5	480.7
Observations	5,496	7,655	7,693	7,755	8,305	7,507	8,635
log(hourly wage: m. contract) - STEM	-0.134	-0.100	-0.257	-0.161	-0.095	-0.064	0.020
	(0.172)	(0.153)	(0.173)	(0.179)	(0.176)	(0.163)	(0.167)
Bandwidth	44.5	50.3	37.7	34.6	34.2	43.4	42.6
First stage F-stat.	93.6	116.6	96.4	97.9	89.9	107.9	96.3
Observations	7,068	8,474	6,737	6,306	6,303	7,905	7,646
log(hourly wage: m. contract) - non-STEM	-0.129	0.061	0.113	0.048	-0.028	-0.001	0.026
	(0.152)	(0.184)	(0.189)	(0.197)	(0.200)	(0.187)	(0.179)
Bandwidth	75.4	67.1	81.2	83.1	76.7	74.5	82.0
First stage F-stat.	422.5	440.3	439.5	498.0	416.1	420.0	456.7
Observations	5,448	5,776	7,080	7,511	7,288	7,182	7,636
log(december earnings) - STEM	-0.035	-0.060	-0.237	-0.184	-0.004	-0.022	0.012
	(0.192)	(0.179)	(0.194)	(0.186)	(0.184)	(0.175)	(0.176)
Bandwidth	39.7	36.3	33.6	32.7	34.9	40.2	41.7
First stage F-stat.	83.8	88.0	84.2	91.5	90.1	94.6	90.4
Observations	5,739	5,694	5,496	5,521	5,908	6,725	6,921
log(december earnings) - non-STEM	0.074	-0.043	0.073	-0.001	-0.020	0.008	0.012
	(0.156)	(0.155)	(0.152)	(0.155)	(0.169)	(0.154)	(0.149)
Bandwidth	86.8	90.9	86.1	96.1	86.0	103.2	93.2
First stage F-stat.	357.3	413.4	449.0	466.9	435.9	443.6	450.5
Observations	5,216	6,249	6,579	7,446	7,168	8,024	7,601

Notes: This table reports the RD estimates for our three earnings measures: annual earnings, hourly earnings of the main contract and December earnings in the formal sector by type of major (STEM and non-STEM choices), excluding individuals that did not enroll in the first exam attempt but enrolled in later years. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.25: Pre-AA - 1996-2004: By type of school - Formal Labor Market Participation (major offering restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market - years after expected graduation							
6 months - Pub. HS (exc. tech)	0.216	0.139	0.263*	0.236*	0.208	0.176	0.165
	(0.153)	(0.146)	(0.142)	(0.138)	(0.140)	(0.123)	(0.124)
Bandwidth	67.0	69.0	66.4	62.1	62.9	70.0	68.5
First stage F-stat.	66.7	67.5	65.6	62.7	63.3	68.1	66.6
Observations	3,304	3,436	3,332	3,159	3,192	3,468	3,411
6 months - Priv. HS	0.031	0.028	0.051	0.011	0.088	0.014	-0.002
	(0.083)	(0.091)	(0.082)	(0.068)	(0.072)	(0.069)	(0.064)
Bandwidth	109.2	56.0	59.7	83.6	65.4	66.0	68.3
First stage F-stat.	312.0	164.4	175.9	243.4	192.8	194.6	202.3
Observations	24,697	15,227	16,022	20,820	17,230	17,345	17,811
12 months - Pub. HS (exc. tech)	0.156	0.192	0.249*	0.249*	0.398**	0.239	0.145
	(0.148)	(0.145)	(0.148)	(0.147)	(0.158)	(0.152)	(0.141)
Bandwidth	72.1	70.6	62.9	60.0	62.1	60.3	63.8
First stage F-stat.	70.2	68.5	63.3	61.5	62.8	61.6	63.5
Observations	3,493	3,488	3,195	3,046	3,163	3,062	3,223
12 months - Priv. HS	-0.033	-0.003	0.042	0.024	0.007	0.040	0.050
	(0.090)	(0.093)	(0.077)	(0.065)	(0.072)	(0.068)	(0.066)
Bandwidth	68.3	58.0	74.3	99.4	72.2	69.6	59.5
First stage F-stat.	201.6	170.4	218.1	287.2	212.8	205.6	176.1
Observations	17,809	15,674	19,057	23,371	18,653	18,102	15,965

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by type of high school attended (public and private high schools), considering only majors that existed throughout the whole period. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.26: Pre-AA - 1996-2004: By type of school - Shareholder Status (major offering restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Shareholder status - years after expected graduation							
Shareholder - Pub. HS (exc. tech)	0.013	0.006	-0.003	-0.035	-0.025	-0.008	-0.034
	(0.063)	(0.067)	(0.070)	(0.071)	(0.077)	(0.081)	(0.084)
Bandwidth	70.4	68.3	68.2	71.3	68.8	67.7	70.5
First stage F-stat.	68.4	66.9	66.9	68.9	67.3	66.5	68.4
Observations	3,481	3,405	3,405	3,511	3,427	3,384	3,483
Shareholder - Priv. HS	0.002	0.013	0.010	0.007	0.015	-0.012	0.004
	(0.028)	(0.032)	(0.043)	(0.051)	(0.062)	(0.070)	(0.074)
Bandwidth	103.5	92.3	74.1	72.1	62.9	61.3	63.2
First stage F-stat.	297.2	269.1	217.6	212.5	185.7	180.9	186.4
Observations	23,961	22,292	19,024	18,634	16,692	16,357	16,747

Notes: This table reports the RD estimates for the shareholder status by type of high school attended (public and private high schools), considering only majors that existed throughout the whole period. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.27: Pre-AA - 1996-2004: By type of school - Formal Labor Market Participation or Shareholder status (major offering restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market or Shareholder - years after expected graduation							
6 months or sharehold. - Pub. HS (exc. tech)	0.245	0.140	0.186	0.122	0.102	0.090	0.075
	(0.149)	(0.142)	(0.140)	(0.135)	(0.130)	(0.121)	(0.120)
Bandwidth	67.7	69.1	69.5	64.3	71.1	72.0	72.5
First stage F-stat.	67.7	67.6	67.8	64.3	68.8	69.3	69.8
Observations	3,350	3,438	3,450	3,246	3,505	3,532	3,547
6 months or sharehold. - Priv. HS	0.042	0.046	0.048	0.012	0.051	0.011	0.030
	(0.090)	(0.088)	(0.079)	(0.073)	(0.066)	(0.070)	(0.064)
Bandwidth	74.3	59.1	63.5	65.4	80.1	65.4	71.7
First stage F-stat.	218.1	174.1	187.3	192.9	232.8	192.7	211.6
Observations	19,028	15,922	16,828	17,236	20,172	17,216	18,526
12 months or sharehold. - Pub. HS (exc. tech)	0.170	0.186	0.148	0.127	0.272*	0.106	0.049
	(0.144)	(0.142)	(0.143)	(0.142)	(0.145)	(0.141)	(0.130)
Bandwidth	75.4	71.2	70.9	65.5	70.6	68.3	71.9
First stage F-stat.	72.9	68.9	68.7	65.0	68.5	66.9	69.4
Observations	3,629	3,508	3,495	3,295	3,487	3,407	3,527
12 months or sharehold. - Priv. HS	-0.022	0.013	0.052	0.014	0.021	0.032	0.086
	(0.089)	(0.088)	(0.076)	(0.077)	(0.073)	(0.075)	(0.065)
Bandwidth	72.4	65.5	74.1	60.2	70.8	60.7	69.6
First stage F-stat.	213.3	193.0	217.4	177.6	208.8	179.1	205.9
Observations	18,657	17,243	19,008	16,135	18,327	16,245	18,092

Notes: This table reports the RD estimates for outcomes that combine participation (at least 6 and 12 months) in the formal sector and shareholder status by type of high school attended (public and private high schools), considering only majors that existed throughout the whole period. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.28: Pre-AA - 1996-2004: By type of school - Size of Shareholding Companies (major offering restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Size of shareholding company (employees) - years after exp. graduation							
zero empl. - Pub. HS (exc. tech)	-0.045	-0.062	-0.061	-0.071	-0.091	-0.116*	-0.115*
	(0.049)	(0.052)	(0.055)	(0.056)	(0.059)	(0.060)	(0.066)
Bandwidth	72.4	72.2	71.2	72.3	71.9	71.9	72.9
First stage F-stat.	68.0	67.7	67.1	67.7	67.5	67.1	68.6
Observations	3,529	3,521	3,491	3,520	3,510	3,507	3,543
zero empl. - Priv. HS	-0.005	0.003	-0.006	0.001	0.026	-0.004	-0.008
	(0.029)	(0.032)	(0.038)	(0.044)	(0.052)	(0.056)	(0.059)
Bandwidth	66.5	63.7	65.3	62.9	55.9	59.7	61.0
First stage F-stat.	195.8	186.9	191.3	184.5	163.0	174.5	178.1
Observations	17,364	16,783	17,106	16,571	15,102	15,908	16,151
more than 3 empl. - Pub. HS (exc. tech)	0.020	0.029	0.018	0.011	0.012	0.027	0.030
	(0.023)	(0.024)	(0.026)	(0.027)	(0.028)	(0.030)	(0.030)
Bandwidth	79.6	76.0	73.5	73.1	68.9	71.8	71.1
First stage F-stat.	72.0	70.0	68.5	68.3	65.6	67.1	67.5
Observations	3,775	3,676	3,573	3,558	3,415	3,505	3,480
more than 3 empl. - Priv. HS	0.010	0.007	0.014	0.016	0.011	0.005	0.009
	(0.013)	(0.014)	(0.015)	(0.017)	(0.018)	(0.018)	(0.019)
Bandwidth	61.6	62.7	61.4	63.7	62.7	68.3	69.8
First stage F-stat.	181.8	184.2	180.3	186.8	184.1	200.2	204.1
Observations	16,366	16,551	16,297	16,767	16,530	17,713	17,993

Notes: This table reports the RD estimates for the outcomes size of shareholding companies by type of high school attended (public and private high schools), considering only majors that existed throughout the whole period. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.29: Pre-AA - 1996-2004: By type of school - Earnings (major offering restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Earnings - years after expected graduation							
log(annual earnings) - Pub. HS (exc. tech)	-0.007	0.148	0.227	0.035	0.295	0.307	0.444
	(0.286)	(0.313)	(0.294)	(0.312)	(0.303)	(0.300)	(0.277)
Bandwidth	70.9	76.0	62.5	60.9	67.8	64.1	59.9
First stage F-stat.	42.0	50.9	48.7	39.3	48.3	53.0	50.7
Observations	2,131	2,455	2,219	2,209	2,462	2,366	2,198
log(annual earnings) - Priv. HS	-0.213	-0.024	0.058	0.078	-0.056	0.110	0.219
	(0.250)	(0.236)	(0.199)	(0.188)	(0.232)	(0.180)	(0.178)
Bandwidth	43.9	42.2	56.6	57.2	44.8	64.6	69.7
First stage F-stat.	71.5	85.8	118.4	124.3	85.7	135.4	141.2
Observations	6,314	6,764	9,355	9,752	7,989	10,988	11,537
log(hourly wage: m. contract) - Pub. HS (exc. tech)	0.231	0.386	0.228	0.152	0.268	0.210	0.469*
	(0.247)	(0.255)	(0.240)	(0.252)	(0.239)	(0.247)	(0.250)
Bandwidth	73.5	64.3	70.2	65.5	75.0	67.5	59.9
First stage F-stat.	42.9	47.3	51.6	41.7	51.6	54.8	50.7
Observations	2,184	2,160	2,422	2,344	2,659	2,464	2,198
log(hourly wage: m. contract) - Priv. HS	-0.284	-0.104	-0.117	-0.024	-0.041	0.013	0.090
	(0.177)	(0.190)	(0.190)	(0.190)	(0.189)	(0.180)	(0.181)
Bandwidth	53.7	50.3	51.8	57.5	56.9	56.6	56.6
First stage F-stat.	88.0	102.9	107.1	124.9	112.8	115.5	109.1
Observations	7,529	7,969	8,650	9,792	9,907	9,895	9,785
log(december earnings) - Pub. HS (exc. tech)	0.029	0.354	0.141	0.029	0.263	0.192	0.299
	(0.242)	(0.267)	(0.247)	(0.263)	(0.245)	(0.258)	(0.254)
Bandwidth	75.1	71.1	60.2	63.1	69.8	76.9	62.1
First stage F-stat.	41.1	41.3	42.5	37.4	50.1	49.5	47.9
Observations	2,026	2,102	1,952	2,124	2,363	2,522	2,137
log(december earnings) - Priv. HS	-0.173	-0.159	-0.122	-0.046	0.039	-0.008	0.018
	(0.195)	(0.204)	(0.187)	(0.176)	(0.194)	(0.174)	(0.162)
Bandwidth	62.1	47.1	51.6	53.3	49.2	54.6	71.0
First stage F-stat.	90.6	77.7	96.3	104.0	89.6	97.4	135.5
Observations	7,558	6,749	7,815	8,388	7,986	8,760	10,753

Notes: This table reports the RD estimates for our three earnings measures: annual earnings, hourly earnings of the main contract and December earnings in the formal sector by type of high school attended (public and private high schools), considering only majors that existed throughout the whole period. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.30: Pre-AA - 1996-2004: By type of major - Formal Labor Market Participation (major offering restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market - years after expected graduation							
6 months - STEM	-0.035	-0.020	0.023	0.132	0.218**	0.174*	0.107
	(0.105)	(0.106)	(0.098)	(0.099)	(0.100)	(0.096)	(0.091)
Bandwidth	52.4	43.4	42.0	39.0	36.8	39.4	42.1
First stage F-stat.	85.2	72.2	70.4	67.4	65.8	67.6	70.7
Observations	13,308	11,303	10,918	10,141	9,624	10,219	10,932
6 months - non-STEM	0.114	0.045	0.066	-0.011	0.010	-0.046	-0.042
	(0.102)	(0.098)	(0.093)	(0.088)	(0.085)	(0.080)	(0.078)
Bandwidth	80.2	84.2	86.1	85.2	85.8	88.7	85.6
First stage F-stat.	231.4	235.5	237.4	236.5	237.1	240.3	236.9
Observations	10,489	10,849	11,008	10,928	10,974	11,206	10,961
12 months - STEM	-0.102	-0.039	0.021	0.114	0.202*	0.171*	0.136
	(0.104)	(0.100)	(0.100)	(0.103)	(0.110)	(0.099)	(0.093)
Bandwidth	54.2	52.1	42.1	39.6	36.7	38.8	40.0
First stage F-stat.	87.6	85.4	70.5	67.8	65.7	67.2	68.4
Observations	13,687	13,328	10,960	10,296	9,592	10,096	10,376
12 months - non-STEM	0.078	0.040	0.097	0.016	-0.032	-0.009	0.014
	(0.092)	(0.096)	(0.092)	(0.083)	(0.085)	(0.081)	(0.076)
Bandwidth	80.1	86.2	84.1	87.7	86.1	90.0	80.6
First stage F-stat.	231.3	237.4	235.4	239.2	237.3	241.8	231.8
Observations	10,482	11,011	10,842	11,146	10,993	11,316	10,524

Notes: This table reports the RD estimates for participating at least 6 and 12 months in the formal sector by type of major (STEM and non-STEM choices), considering only majors that existed throughout the whole period. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.31: Pre-AA - 1996-2004: By type of major - Shareholder Status (major offering restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Shareholder status - years after expected graduation							
Shareholder - STEM	0.025	0.050	0.041	0.045	0.043	0.018	0.007
	(0.049)	(0.052)	(0.061)	(0.070)	(0.068)	(0.074)	(0.073)
Bandwidth	54.5	51.5	47.7	44.9	50.8	48.5	53.1
First stage F-stat.	88.9	84.6	78.5	74.3	83.6	79.8	86.9
Observations	13,887	13,218	12,358	11,640	13,059	12,532	13,559
Shareholder - non-STEM	0.005	-0.019	-0.024	-0.011	-0.003	-0.017	-0.019
	(0.026)	(0.029)	(0.045)	(0.060)	(0.079)	(0.091)	(0.098)
Bandwidth	76.8	89.0	90.3	91.0	87.2	82.8	81.1
First stage F-stat.	228.5	240.7	242.3	243.2	238.5	234.1	232.3
Observations	10,183	11,239	11,359	11,426	11,101	10,733	10,571

Notes: This table reports the RD estimates for the shareholder status by type of major (STEM and non-STEM choices), considering only majors that existed throughout the whole period. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.32: Pre-AA - 1996-2004: By type of major - Formal Labor Market Participation or Shareholder Status (major offering restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Formal Labor Market or Shareholding Status - years after expected graduation							
6 months or sharehold. - STEM	0.008	0.016	0.031	0.088	0.167*	0.119	0.087
	(0.102)	(0.101)	(0.093)	(0.084)	(0.093)	(0.088)	(0.087)
Bandwidth	54.5	46.3	44.7	50.7	38.6	42.0	42.2
First stage F-stat.	88.3	76.4	74.1	83.4	67.0	70.4	70.7
Observations	13,783	12,007	11,621	13,040	10,046	10,934	10,957
6 months or sharehold. - non-STEM	0.120	0.050	0.050	-0.015	0.003	-0.036	-0.001
	(0.095)	(0.094)	(0.090)	(0.085)	(0.083)	(0.082)	(0.081)
Bandwidth	86.1	82.2	84.8	84.3	84.3	85.6	86.0
First stage F-stat.	237.3	233.5	236.1	235.6	235.6	236.8	237.3
Observations	10,994	10,676	10,890	10,857	10,855	10,954	10,993
12 months or sharehold. - STEM	-0.060	-0.002	0.020	0.036	0.206**	0.144	0.138
	(0.103)	(0.099)	(0.095)	(0.087)	(0.104)	(0.090)	(0.091)
Bandwidth	56.4	50.8	46.7	57.4	38.2	42.6	39.7
First stage F-stat.	91.2	83.6	77.0	93.6	66.7	71.1	68.0
Observations	14,192	13,063	12,094	14,522	9,967	11,073	10,301
12 months or sharehold. - non-STEM	0.080	0.038	0.084	0.002	-0.024	-0.017	0.052
	(0.087)	(0.089)	(0.087)	(0.081)	(0.086)	(0.087)	(0.081)
Bandwidth	78.8	84.4	85.7	85.4	84.9	85.5	84.5
First stage F-stat.	230.2	235.7	236.9	236.7	236.2	236.8	235.9
Observations	10,357	10,865	10,963	10,941	10,901	10,948	10,875

Notes: This table reports the RD estimates for outcomes that combine participation (at least 6 and 12 months) in the formal sector and shareholder status by type of major (STEM and non-STEM choices), considering only majors that existed throughout the whole period. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.33: Pre-AA - 1996-2004: By type of major - Earnings (major offering restriction)

	(1) 3 y.	(2) 4 y.	(3) 5 y.	(4) 6 y.	(5) 7 y.	(6) 8 y.	(7) 9 y.
Earnings - years after expected graduation							
log(annual earnings) - STEM	-0.318	-0.068	-0.234	0.012	0.061	0.058	0.170
	(0.247)	(0.257)	(0.268)	(0.255)	(0.300)	(0.248)	(0.272)
Bandwidth	57.1	43.0	43.4	51.4	38.1	43.8	39.2
First stage F-stat.	74.7	62.6	61.6	70.9	50.6	59.0	48.5
Observations	8,543	7,159	7,578	8,983	6,849	7,844	6,924
log(annual earnings) - non-STEM	0.089	0.226	0.244	-0.041	-0.139	-0.008	0.204
	(0.249)	(0.253)	(0.255)	(0.234)	(0.266)	(0.245)	(0.242)
Bandwidth	64.8	87.5	71.1	93.6	84.6	76.9	94.3
First stage F-stat.	136.8	168.5	163.8	182.1	156.3	166.7	179.1
Observations	3,996	5,757	5,423	6,952	6,720	6,327	7,244
log(hourly wage: m. contract) - STEM	-0.174	-0.111	-0.273	-0.161	-0.044	-0.021	0.124
	(0.206)	(0.209)	(0.224)	(0.243)	(0.236)	(0.209)	(0.231)
Bandwidth	59.7	44.8	45.5	39.1	38.4	47.5	42.2
First stage F-stat.	78.0	65.1	64.8	55.0	50.9	64.3	51.0
Observations	8,822	7,450	7,895	6,897	6,899	8,485	7,464
log(hourly wage: m. contract) - non-STEM	-0.225	0.125	0.131	0.089	0.082	0.079	0.129
	(0.234)	(0.277)	(0.290)	(0.299)	(0.300)	(0.275)	(0.270)
Bandwidth	60.9	75.3	67.6	90.9	86.6	91.4	100.6
First stage F-stat.	131.9	164.6	160.2	180.6	157.3	174.1	182.2
Observations	3,775	5,204	5,231	6,836	6,814	7,139	7,512
log(december earnings) - STEM	-0.084	-0.070	-0.288	-0.216	0.120	0.032	0.109
	(0.243)	(0.241)	(0.256)	(0.258)	(0.258)	(0.243)	(0.248)
Bandwidth	46.0	39.5	40.5	37.0	35.8	40.8	40.4
First stage F-stat.	56.9	53.1	51.8	48.4	45.2	48.3	45.1
Observations	6,381	5,973	6,430	6,080	5,951	6,699	6,585
log(december earnings) - non-STEM	0.031	-0.019	0.088	0.062	-0.025	0.008	0.037
	(0.240)	(0.246)	(0.239)	(0.232)	(0.249)	(0.229)	(0.222)
Bandwidth	76.3	73.3	69.6	82.7	71.2	89.0	95.6
First stage F-stat.	120.0	128.9	151.2	160.5	155.9	161.2	165.4
Observations	3,908	4,491	4,790	5,834	5,393	6,368	6,697

Notes: This table reports the RD estimates for our three earnings measures: annual earnings, hourly earnings of the main contract and December earnings in the formal sector by type of major (STEM and non-STEM choices), considering only majors that existed throughout the whole period. The optimal bandwidths and the first-stage F-statistics are reported for each estimation. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.34: Balancing Tests pre-AA - 1996-2004 (higher education restriction)

	(1) Female	(2) Age	(3) Pub. Sec.	(4) Pub. HS	(5) Ev. HS	(6) Reg. HS	(7) Rep. HS	(8) Prep. course	(9) First vest.	(10) Other univ.	(11) Works	(12) Read news
Panel A: Individual characteristics												
RD coef.	-0.007	0.521	-0.008	-0.004	0.004	-0.004	0.013	-0.003	0.027	0.011	0.101*	0.005
	(0.087)	(0.348)	(0.058)	(0.063)	(0.029)	(0.055)	(0.021)	(0.044)	(0.056)	(0.025)	(0.055)	(0.024)
Bandwidth	46.4	61.5	72.9	65.0	77.0	53.3	56.2	72.7	66.4	52.3	51.2	69.9
First stage est.	0.307	0.308	0.313	0.309	0.315	0.306	0.306	0.313	0.305	0.304	0.306	0.311
Observations	17,560	22,239	25,280	23,117	26,293	19,632	20,603	25,117	20,828	18,950	18,968	24,390
	0-3 m.w.	3-5 m.w.	5-10 m.w.	10-15 m.w.	15+ m.w.	Father: HS	Mother: HS	Father: Uni.	Mother: Uni.	Father: Top.occ.	Mother: Top.occ.	PC at home
Panel B: Family characteristics												
RD coef.	0.020	-0.028	-0.001	-0.009	0.019	-0.018	0.012	-0.010	-0.032	0.019	0.014	-0.003
	(0.017)	(0.024)	(0.040)	(0.034)	(0.064)	(0.039)	(0.038)	(0.069)	(0.061)	(0.064)	(0.046)	(0.053)
Bandwidth	89.4	92.5	68.8	67.0	73.0	76.7	76.6	60.0	77.8	65.6	65.2	57.8
First stage est.	0.319	0.321	0.311	0.310	0.313	0.317	0.314	0.310	0.315	0.312	0.310	0.309
Observations	28,871	29,525	23,963	23,447	25,061	26,039	26,147	21,522	26,415	22,888	22,973	18,454

Notes: This table reports the balancing tests before the introduction of AA around the cutoff, excluding individuals without a higher education degree as reported in RAIS. In Panel A we test individual characteristics and in Panel B we test family characteristics. All variables come from the exam registration survey. We also report the optimal bandwidth, the first stage estimate and observations for each test. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.35: Balancing Tests pre-AA - 1996-2004 (instrument restriction)

	(1) Female	(2) Age	(3) Pub. Sec.	(4) Pub. HS	(5) Ev. HS	(6) Reg. HS	(7) Rep. HS	(8) Prep. course	(9) First vest.	(10) Other univ.	(11) Works	(12) Read news
Panel A: Individual characteristics												
RD coef.	0.038	0.320	0.025	0.004	0.011	-0.018	0.005	-0.075*	0.072	0.006	0.086*	0.021
	(0.073)	(0.332)	(0.050)	(0.051)	(0.026)	(0.044)	(0.017)	(0.040)	(0.051)	(0.022)	(0.046)	(0.020)
Bandwidth	41.5	48.6	61.6	62.1	61.2	51.6	50.5	57.8	52.1	46.1	55.2	63.1
First stage est.	0.360	0.361	0.366	0.367	0.366	0.362	0.361	0.364	0.355	0.356	0.363	0.366
Observations	18,031	20,813	25,250	25,358	25,079	21,726	21,407	23,921	19,510	19,297	23,007	25,584
	0-3 m.w.	3-5 m.w.	5-10 m.w.	10-15 m.w.	15+ m.w.	Father: HS	Mother: HS	Father: Uni.	Mother: Uni.	Father: Top.occ.	Mother: Top.occ.	PC at home
Panel B: Family characteristics												
RD coef.	0.024*	-0.017	-0.001	-0.011	-0.006	-0.003	-0.011	-0.017	-0.039	-0.039	-0.025	-0.017
	(0.013)	(0.021)	(0.035)	(0.030)	(0.057)	(0.034)	(0.039)	(0.057)	(0.055)	(0.055)	(0.039)	(0.043)
Bandwidth	78.9	72.5	55.1	52.9	51.3	61.2	47.3	57.3	50.0	57.2	59.7	57.5
First stage est.	0.376	0.373	0.363	0.362	0.361	0.367	0.360	0.365	0.361	0.365	0.366	0.369
Observations	30,135	28,355	22,827	22,049	21,498	24,889	20,150	23,643	21,166	23,343	24,377	20,964

Notes: This table reports the balancing tests before the introduction of AA around the cutoff, excluding individuals that did not enroll in the first exam attempt but enrolled in later years. In Panel A we test individual characteristics and in Panel B we test family characteristics. All variables come from the exam registration survey. We also report the optimal bandwidth, the first stage estimate and observations for each test. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.

Table A.36: Balancing Tests pre-AA - 1996-2004 (major offering restriction)

	(1) Female	(2) Age	(3) Pub. Sec.	(4) Pub. HS	(5) Ev. HS	(6) Reg. HS	(7) Rep. HS	(8) Prep. course	(9) First vest.	(10) Other univ.	(11) Works	(12) Read news
Panel A: Individual characteristics												
RD coef.	0.036	0.228	0.012	-0.019	0.021	0.002	0.010	-0.059	0.035	-0.009	0.105	0.021
	(0.099)	(0.378)	(0.068)	(0.070)	(0.036)	(0.058)	(0.021)	(0.044)	(0.061)	(0.026)	(0.065)	(0.026)
Bandwidth	43.3	97.7	61.9	65.1	63.9	65.3	61.7	76.4	58.8	52.5	50.9	62.1
First stage est.	0.284	0.302	0.286	0.288	0.287	0.288	0.286	0.294	0.283	0.280	0.282	0.286
Observations	17,622	33,398	23,831	24,820	24,435	24,820	23,776	28,025	20,318	20,329	20,171	23,785
	0-3 m.w.	3-5 m.w.	5-10 m.w.	10-15 m.w.	15+ m.w.	Father: HS	Mother: HS	Father: Uni.	Mother: Uni.	Father: Top.occ.	Mother: Top.occ.	PC at home
Panel B: Family characteristics												
RD coef.	0.027	-0.019	-0.003	-0.026	0.015	-0.022	-0.014	0.020	-0.026	-0.032	-0.029	0.006
	(0.017)	(0.027)	(0.043)	(0.030)	(0.069)	(0.043)	(0.044)	(0.075)	(0.073)	(0.068)	(0.047)	(0.058)
Bandwidth	88.7	87.0	68.6	85.1	76.2	67.1	67.9	65.6	57.9	71.0	79.8	58.9
First stage est.	0.299	0.298	0.289	0.297	0.293	0.290	0.290	0.290	0.285	0.293	0.295	0.288
Observations	30,924	30,568	25,638	30,079	27,782	25,242	25,601	24,799	22,520	26,056	28,680	20,156

Notes: This table reports the balancing tests before the introduction of AA around the cutoff, considering only the majors that existed troughout the whole period. In Panel A we test individual characteristics and in Panel B we test family characteristics. All variables come from the exam registration survey. We also report the optimal bandwidth, the first stage estimate and observations for each test. Standard errors clustered at the year-major choice level are reported in parentheses. ***, ** and * indicate the coefficients significantly different from zero at the 99, 95, and 90 percent confidence levels.