**UNIVERSIDADE DE SÃO PAULO
FACULDADE DE ECONOMIA, ADMINISTRAÇÃO E CONTABILIDADE
DEPARTAMENTO DE ECONOMIA
PROGRAMA DE PÓS-GRADUAÇÃO EM ECONOMIA**

Affirmative Action Outcomes Evidence from a Law School in Brazil

**Os Efeitos de Ação Afirmativa
Evidências do Curso de Direito da UERJ**

Ana Carolina Trindade Ribeiro

Orientador: Profa. Dra. Fernanda Gonçalves de La Fuente Estevan

**SÃO PAULO
2017**

Prof. Dr. Marco Antonio Zago
Reitor da Universidade de São Paulo

Prof. Dr. Adalberto Américo Fischmann
Diretor da Faculdade de Economia, Administração e Contabilidade

Prof. Dr. Eduardo Amaral Haddad
Chefe do Departamento de Economia

Prof. Dr. André Luis Squarize Chagas
Coordenador do Programa de Pós-Graduação em Economia

ANA CAROLINA TRINDADE RIBEIRO

**Affirmative Action Outcomes
Evidence from a Law School in Brazil**

**Os Efeitos de Ação Afirmativa
Evidências do Curso de Direito da UERJ**

Dissertação apresentada ao Departamento de Economia da Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo como requisito parcial para a obtenção do título de Mestre em Ciências.

Orientador: Profa. Dra. Fernanda Gonçalves de La Fuente Estevan

Versão Original

**SÃO PAULO
2017**

FICHA CATALOGRÁFICA

Elaborada pela Seção de Processamento Técnico do SBD/FEA/USP

Ribeiro, Ana Carolina Trindade

Affirmative action outcomes: evidence from a law school in Brazil /
Ana Carolina Trindade Ribeiro. – São Paulo, 2017.

76 p.

Dissertação (Mestrado) – Universidade de São Paulo, 2017.

Orientador: Fernanda Gonçalves de La Fuente Estevan.

1. Ação afirmativa 2. Ensino superior I. Universidade de São Paulo.
Faculdade de Economia, Administração e Contabilidade. II. Título.

CDD – 320.6

Agradecimentos

Aos meus pais, José Luiz e Maria Teresa, e meu irmão, Luiz Guilherme, que acompanham cada passo, me apoiam e auxiliam em tudo que podem ao longo da minha trajetória.

À minha orientadora Fernanda Estevan, por ter apostado na ideia antes de saber se era possível, por todo seu apoio, dedicação e sua excelente orientação no decorrer deste trabalho. Foi um enorme privilégio e satisfação tê-la como orientadora.

Ao apoio financeiro da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) por meio da bolsa de mestrado, do início ao fim.

Ao Departamento de Seleção Acadêmica da Universidade do Estado do Rio de Janeiro (DSEA-UERJ), em especial ao Mauro Behring, pela confiança ao conceder os dados e todo o suporte conferido.

Aos professores Ricardo Madeira e Naércio Menezes-Filho, pelas críticas e comentários durante os processos de qualificação e avaliação de progresso, que contribuíram para o direcionamento e construção deste trabalho.

Agradecimentos especiais à equipe do Climate Policy Initiative - Brazil. Juliano Assunção, por me abrir as portas, Clarissa Gandour, Rudi Rocha e Pedro Hemsley, por me guiarem nos meus primeiros passos no mundo da pesquisa em microeconomia aplicada.

Aos amigos que fiz ao longo do mestrado, Júlia Burle, Rômulo Carvalho, Marcos Lee, Alex Hayato, Graziella Magalhães, Erick Baumgartner, Cristiano Carvalho, Matheus Assunção, Raphael Bruce, Rafael Tavares, Ricardo Sabbadini e Danilo Paula de Souza, pelas discussões e conversas, sérias ou descontraídas, de acordo com a necessidade de cada momento.

Aos amigos e advogados, Guilherme France, Amanda Morais, Diogo Coimbra, Gabriel Mynssen, Igor Tostes e Maria Doria, por todo o auxílio para compreender melhor as nuances e etapas da carreira que escolheram.

Finalmente, aos amigos que mesmo longe continuaram ao meu lado, Ana Carolina Mateus, Ana Luiza Machado, Aline Cunha, Bruna Victória Ferreira, Carolina Guaranys, Daphne Lourenço, Antonia Cunha, Ana Carolina Kang, Amanda Schutze, Clarissa Gandour, Christiane Szerman, João Pedro Cavaleiro, Pedro Pessoa e Maria Eduarda Migliora.

Aos familiares, pelo apoio e compreensão em todo esse processo.

*"The function of education is to teach one to think intensively and to think critically.
Intelligence plus character—that is the goal of true education."
(Martin Luther King, Jr.)*

Resumo

O principal objetivo de políticas de ação afirmativa (AA) é dar oportunidades, em geral inexistentes, aos membros da sociedade menos privilegiados, em especial àqueles pertencentes a minorias. Neste trabalho, é feita uma análise acerca do impacto da política de cotas no curso de Direito da primeira universidade pública a adotar a política de cotas no Estado do Rio de Janeiro, a UERJ, de forma a estimar os efeitos da política após o ensino superior. Especificamente, o quanto a política impulsiona seus beneficiários e em que medida permite que estes se aproximem de candidatos que obtiveram pontuação alta no vestibular mas não foram admitidos exclusivamente por causa da reserva de vagas. Adicionalmente, o impacto sobre estes últimos, que também são diretamente afetados. Para tanto, foram utilizados dados do processo de admissão do curso de Direito da Universidade do Estado do Rio de Janeiro (UERJ), considerado de alto prestígio, em conjunto com as listagens de aprovação no exame da Ordem dos Advogados do Brasil. Os resultados indicam que a política aumenta em 51p.p. a probabilidade de certificação dos candidatos que se beneficiam da política, apesar de os mesmos ainda apresentarem 4.56p.p. menos chance de certificação do que os candidatos *Displaced*. Além disso, há evidências de que a política não afeta negativamente as chances de aprovação na OAB dos candidatos *Displaced* que pontuaram pouco abaixo do corte de admissão na UERJ. Por outro lado, a política é capaz de aumentar a certificação dos alunos admitidos para vagas destinadas ao sistema de ensino público com pontuação próxima ao corte em até 52p.p.

Palavras-chaves: Ação Afirmativa, Ensino Superior.

Abstract

The main goal of affirmative action (AA) policies is to give opportunities otherwise nonexistent to minorities and underprivileged students. In this paper, I investigate whether the introduction of a college affirmative action policy enables AA beneficiaries to obtain a career in Law and to catch up with high scoring candidates who did not get admitted due to the policy (i.e., displaced candidates). To do so, I use a new dataset from UERJ admission office, a prominent public university in Rio de Janeiro, which was the first in Brazil to adopt a quota system for both black and public school students. I combine this dataset with the OAB exam passage records, equivalent to the American Bar exam. Preliminary results suggest that the quota policy improves OAB passage rates for beneficiaries. I find that lawyer certification for underprivileged students increases by 51 p.p., even though they underperform by 4.56 p.p when compared to displaced candidates. I also present evidence that displaced candidates do not experience any drop in their OAB exam passage rates due to the policy. Furthermore, I find that public school quota beneficiaries who score close to the admittance cutoff present an increase in the probability of passing the OAB exam by up to 52 p.p.

JEL Codes: D30, I23, I24, I25, I26, I28, O22

Keywords: Affirmative Action, Higher Education.

Contents

1	Introduction	19
2	Institutional Context	23
2.1	UERJ - Quota Policy and Admission	23
2.2	OAB Exam	24
3	Data	27
4	Empirical Strategy	31
4.1	The Boost Effect: <i>Vestibular</i> Same-score AA admitted and non-AA applicants	31
4.2	The Catching Up Effect: Displacer vs Displaced Performance	32
4.3	The Diploma Effect: Discontinuity Design Analysis	33
5	Results	35
5.1	Boost Effect	35
5.2	Catching Up Effect	36
5.3	The Diploma Effect	37
6	Robustness Exercises and Tests	39
6.1	Separating quota types	39
6.2	The Diploma Effect - McCrary Density Test and Placebo Cutoff Scores	39
7	Conclusion	41
	Bibliography	43
	APPENDIX A Data	45
	APPENDIX B Empirical Strategy	53
	B.1 The Boost Effect	53
	APPENDIX C Results	57
	C.1 The Boost Effect	57
	C.2 Catching Up Effect	58
	C.3 Diploma Effect	59
	APPENDIX D Diploma Effects: bandwidth, polynomial and bin variations	61
	APPENDIX E Robustness Exercises and Tests	71
	E.1 Separating quota types	71
	E.2 Diploma Effect - McCrary Density Test	73
	E.3 Diploma Effect - Placebo Cutoff Test	75

List of Figures

Figure 1 – Kernel Density of UERJ’s admission test scores for admitted candidates	48
Figure 2 – Kernel Density of UERJ’s admission test scores - Boost effect	50
Figure 3 – Kernel Density of UERJ’s admission test scores - Catching Up effect .	50
Figure 4 – Theoretic Graph	55
Figure 5 – Diploma Effect for Non-AA Candidates	59
Figure 6 – Diploma Effect for Self-declared Black Candidates	59
Figure 7 – Diploma Effect for Public School Candidates	59
Figure 8 – Bin Variation - OAB 1st Phase for Non-AA Candidates	64
Figure 9 – Bin Variation - OAB 2nd Phase for Non-AA Candidates	65
Figure 10 – Bin Variation - OAB 1st Phase for Self-declared Black Candidates . .	66
Figure 11 – Bin Variation - OAB 2nd Phase for Self-declared Black Candidates . .	67
Figure 12 – Bin Variation - OAB 1st Phase for Public School Quota Candidates . .	68
Figure 13 – Bin Variation - OAB 2nd Phase for Public School Quota Candidates .	69
Figure 14 – Density difference coefficients - Non-Quota Candidates	73
Figure 15 – Density difference coefficients - Racial Candidates	73
Figure 16 – Density difference coefficients - Public School Candidates	74
Figure 17 – Density difference coefficients - Quota Candidates Pooled	74
Figure 18 – Placebo Cutoff Scores Test - Non-Quota Candidates	75
Figure 19 – Placebo Cutoff Scores Test - Racial Candidates	75
Figure 20 – Placebo Cutoff Scores Test - Public School Candidates	76

List of Tables

Table 1 – Descriptive Statistics	45
Table 2 – UERJ’s Law School - Admittance Process and Graduation	46
Table 3 – UERJ Law School - Admitted Candidates Scores	46
Table 4 – Variables available per Year - UERJ	47
Table 5 – OAB passage Rate for UERJ’s Applicants and Mean Difference between AA and Non-AA	49
Table 6 – Mean Difference: AA and Non-AA with similar scores	51
Table 7 – Mean Difference: Displaced vs Displacer	52
Table 8 – The Boost Effect	57
Table 9 – Catching Up Effect	58
Table 10 – Discontinuity in OAB Passage Rate – Bandwidth = 2	61
Table 11 – Discontinuity in OAB Passage Rate – Bandwidth = 3	62
Table 12 – Discontinuity in OAB Passage Rate – Bandwidth = 4	62
Table 13 – Discontinuity in OAB Passage Rate – Bandwidth = 5	63
Table 14 – The Boost Effect - Separating quota types	71
Table 15 – The Catching Up Effect - Separating quota types	72

1 Introduction

The main goal of affirmative action (AA) policies is to give opportunities otherwise nonexistent to minorities and underprivileged individuals. This goal is particularly relevant in countries such as Brazil, which are characterized by high levels of income inequality and low-quality public schools, making it harder for the poor to climb the social ladder.

In Brazil, elementary public education is known to be, on average, of very low quality. Since private schools charge tuition fees, the majority of students from low-income families can only attend public schools.¹ Public universities, on the other hand, offer high quality education and are highly selective², as admission is based on a competitive entrance exam based on the high school curriculum. As a consequence, students from public high schools can hardly compete with those from private high schools and, therefore, have a much lower chance of being admitted to a public university, or even obtaining a college degree.

Recently, many policies have been implemented in Brazil as an attempt to level the playing field. A major concern of affirmative action policies is whether students admitted under a lower standard (i.e., policy beneficiaries) are able to succeed, despite entering college less well-prepared than their peers.³ In this paper, I investigate the outcomes of a quota policy implemented in 2002 at *Universidade do Estado do Rio de Janeiro* (UERJ), a large university in Rio de Janeiro with a prominent law school. The policy, one of the first in Brazil, determined quotas for students from low-income families in specific categories: 20% of offered seats in each major to racial minorities (self-declared black), 20% to public school students, and 5% to other minorities (physically disabled and sons of deceased-in-action public safety servers).⁴

Even in cases which AA beneficiaries are able to graduate at their desired major, the question of whether they are able to catch up with those admitted under regular requirements remains. These are potential issues in the case of UERJ. As most public universities in Brazil, UERJ has an esteemed reputation in Rio de Janeiro, in particular its law school, the major of interest in this analysis. Since the quota was relatively large, there is a considerable difference in admission scores between beneficiaries and non-beneficiaries

¹ In the 2010 Brazilian Demographic Census, for both state and municipality of Rio de Janeiro, it is reported that over 88% students from families with a per capita income below 1 minimum wage are enrolled in public schools.

² Refer to [Binelli, Meghir & Menezes-Filho \(2008\)](#) for evidence of the shift in quality patterns from public and private schools to public and private universities.

³ In affirmative action literature, this is referred to as the "Mismatch effect". [Arcidiacono & Lovenheim \(2016\)](#) summarizes the literature on mismatch for undergraduate and law school students, concluding that matching problems arise when affirmative action policies become more aggressive. The authors suggest targeted college services (tutoring and remedial classes) as a potential solution, not yet evaluated due to the lack of data.

⁴ Since then, other public, state and federal, universities from across the country have designed and adopted AA policies of their own. In 2012, the federal government passed a decree mandating all federal universities to implement quota policies starting at 12% and gradually raising the number of reserved seats to 50% in each major until 2016.

of UERJ’s affirmative action policy. Indeed, the great majority of law school AA applicants would not be admitted without the policy. According to the university admission process data, only 2% of UERJ’s AA admitted candidates scored above the regular cutoff.⁵

The literature on AA policies is extensive, summarized in [Sowell \(2004\)](#). Specifically for higher education, numerous articles focus their analysis on incentives and mechanisms triggered at the admission process, the socioeconomic diversity resulting from it and the performance observed throughout college education⁶. For Brazil, [Ferman & Assunção \(2015\)](#), find that, after UERJ’s policy was implemented, black students performance in high school dropped in Rio de Janeiro, indicating a possible disincentive effect in terms of pre-college effort. At the admission level, [Estevan, Gall & Morin \(2016\)](#) investigate a non-quota AA policy at UNICAMP, a prominent university in São Paulo, finding that the policy increases the probability of public school students being admitted, equivalently, [Francis & Tannuri-Pianto \(2012\)](#) find that the racial quota policy at UNB (‘Brasília University’) was able to increase color and socioeconomic diversity. In a more recent federal quota policy (active at federal universities), [Menezes-Filho, Vilela & Tachibana \(2016\)](#) find that the policy does not have significant effects on the average admission score of admitted students.

Difficulties in estimating the long-term, or post-graduation, effects of AA policies at higher education level are generally related either to the lack of a clean cutoff in college admission or to the unavailability of follow up data.

US universities tend to fall in the first case, as their admission process relies not only on SAT and GPA scores, but also recommendation letters and personal statement essays. The existence of subjective material on the admission process prevents a clear identification of students admitted due to affirmative action policies. [Rothstein & Yoon \(2008\)](#) analyze the case of affirmative actions on law schools in the US. The authors use common knowledge on admission cutoff scores at the LSAT exam and college GPA for each university as a proxy for the regular cutoff score. This approach allows them to identify the pool of probable AA admitted students. Their estimates confirm that these students present a lower chance of graduating and passing the Bar exam, compared to their non-AA peers. They also simulate a scenario in which the AA policy is absent, allowing to conclude that, without it, the pool of black lawyers would be much smaller.

Developing countries, such as India and Brazil, typically have college admission processes based on test scores, but generally fail in keeping longitudinal records that allows tracking students after college. Few studies manage to overcome this lack of data. [Bertrand,](#)

⁵ [Junior, Souza & Waltenberg \(2016\)](#) go further and analyze data for all majors of UERJ’s 2010 admission process. They show that the majority of black and public school applicants were only admitted due to the policy. Additionally, they conclude that, in general, displaced candidates have a more advantageous background than AA admitted candidates, suggesting that the policy increases social diversity at the university.

⁶ More recently, [Fraja \(2005\)](#), [Furstenberg \(2007\)](#), [Fryer, Loury & Yuret \(2008\)](#), [Rothstein & Yoon \(2008\)](#), [Bagde, Epple & Taylor \(2016\)](#), among others.

Hanna & Mullainathan (2010) evaluate the quota policy for lower-caste engineering college candidates in India. Using a background survey answered at the time of application and a follow up survey years later, they are able to conclude that the policy is able to distribute resources to relatively disadvantaged families. However, it comes as an absolute cost, since they estimate the income gains for AA beneficiaries to be less than the displaced candidates loss.⁷

In Brazil, the majority of the post-college outcome literature relies on ENADE's results, a national exam applied every few years to students of selected majors at their graduation year. Waltenberg & Carvalho (2015) find that self-declared black quota students present lower scores on ENADE than others. Pereira, Bittencourt & Braga (2015) use a differences-in-differences approach and find that the performance of AA black students compared to non-AA varied across majors. Valente & Berry (2016), on the other hand, report results indicating that AA students performed even better than their non-AA peers.

Although registering and showing up for ENADE is mandatory, this is a low-stakes exam. There is no performance threshold to pass the exam, and it takes place at the very end of the graduation term, when students are more worried about passing their last term exams in college, and turning in their graduation thesis. These factors combined lead to high incidence of students' poor performance at the exam, compromising ENADE's potential as a good measure of college education.

Alternatively, I focus on law school candidates, since they have to take a standard national exam after graduation in order to become lawyers, the OAB exam⁸. I investigate the extent to which UERJ's affirmative action policy helps underprivileged law students obtain professional certification in comparison to non-beneficiaries of the policy. This specificity allows me to measure and compare outcomes based on the exam success rate for beneficiaries and non-beneficiaries of UERJ's AA policy.

By using three different strategies, I investigate three distinct outcomes of the policy: the extent to which the quota policy can boost its beneficiaries chances of becoming lawyers; whether AA students are able to catch up to candidates that did not get admitted due to the policy (displaced candidates) in terms of OAB success rates; and if the policy has any effect on displaced candidates chances of passing OAB.

Consistent with the literature, a persistent gap between beneficiaries and displaced candidates of 4.56 percentage points in lawyer certification remains, which indicates that the policy alone is not able to eliminate performance differences between public and private high school graduates. Nonetheless, the strong positive result of 51p.p. boost in chances to become a lawyer reported for AA students indicates that this affirmative action policy has

⁷ Additionally, they find that the policy was successful at placing students with a more disadvantaged background in college compared to those who would have been admitted had the policy not existed.

⁸ The OAB exam is equivalent to the American Bar exam, in the sense that law graduates are required to pass it in order to be certified to practice law. OAB stands for *Ordem dos Advogados do Brasil* (translated into 'Brazilian Order of Lawyers'), and is the institution responsible for regulating the profession in Brazil.

a considerable impact on its beneficiaries.

As for displaced candidates, no evidence of difference in success rates is found near the cutoff score. This suggests that the policy did not affect these candidates beyond the choice of institution where they attend law school. Applying the same estimation exercise to quota beneficiaries, I find different results for students of each type of quota. While there is no discontinuity to be found at the cutoff margin for candidates to racial quotas, the pool of public school quota candidates present a significant difference at the cutoff score point, indicating that the policy increased beneficiaries chances of passing OAB by up to 52 percentage points.

This paper is organized as follows: section 2 describes the institutional context of UERJ's admission process, the university quota policy and the OAB exam, section 3 and 4 details the data and empirical strategies used, section 6 and 7 presents results and robustness checks and tests. Finally, section 7 concludes.

2 Institutional Context

2.1 UERJ - Quota Policy and Admission

In 2002, the State of Rio de Janeiro created the first Brazilian law that instated an affirmative action policy for higher education institutions. As UERJ is the only large state university in Rio de Janeiro, it was the only public university that offered a law degree to be subjected to the state affirmative action law¹, effective as of the 2003 admission process². It remained the only university in Rio de Janeiro State to follow a quota policy in its admission process until 2011, when federal universities in the state started to implement their own quota policies.

Rio de Janeiro State law 4151/2003 dictates that 20% of seats offered to each course are reserved to self-declared black candidates, another 20% to students who attended a public school from grades 6 through 12 (equivalent to American middle and high school), and 5% to other minorities, such as indigenous and disabled students. It also determines that the selection process should be the same for all candidates, respecting universities admission process autonomy.

Brazilian universities' admission processes typically rely on the results of one or two rounds of tests, called *Vestibular*, from which a final score is calculated and used to rank candidates. Only top-scoring candidates are offered admission, and no other criteria other than the test scores is considered. At the period analyzed, most universities held their own *Vestibular*, so candidates would have to apply and take separate exams for each institution of interest. This allowed top-scoring candidates to be offered a seat at more than one institution at the same *Vestibular* year.

In UERJ's case, the admission process consists of two separate rounds of exams. The first one is a multiple choice test, which can be taken twice a year, called "qualification exam". Only candidates who answer correctly more than 40% of its questions are allowed to apply to the second round of examination. When applying to the second round, candidates are required to chose the major they wish to apply to, which will determine the specific subjects tested at this round³. Additionally, at the second round, all candidates have to write an argumentative essay. The final score cam sum up to 100 points, in a combination of the second round scores (20 point maximum for the essay and each specific subject, with a double weight on the primary specific subject, summing up to 80 points) and bonus points from the qualification round (20 points maximum).⁴

¹ Two other state universities were also subjected to the AA law, however, they are both limited to rural and/or specific technical majors and do not offer law education.

² More details on how the policy began can be found at [Ferman & Assunção \(2015\)](#).

³ For example, candidates applying to law school have to take history and language tests, and candidates applying to engineering have to take mathematics and physics

⁴ A minimum of 70% of questions answered right grants a 20 point bonus, between 60 and 70% gives a 15 points bonus, and 10 points bonus between 50 and 60%. The least bonus value is 5 points, given

Candidates applying to one of the AA policy reserved seats need to undergo a few extra steps to prove their eligibility. All quota candidates have to submit an additional, quota-specific, application form and turn in several documents to attest their family per capita income falls below the policy cap value⁵. Candidates to the public school quota seats also have to turn in their school transcripts, while candidates to racial quotas only need to self-declare being black or indigenous on the socioeconomic questionnaire applied to all candidates. Interviews and a home visit by a member of UERJ's 'socioeconomic analysis commission'⁶ may also apply. If the candidate fails to satisfy any of the criteria, he or she gets automatically reassigned as a non-quota applicant.

Those who succeed at the quota application process, and score sufficiently high to get admitted, are entitled a monthly stipend⁷. It is meant as a financial support to the student until graduation, conditional on being enrolled, maintaining a minimum 75% class attendance rate and attesting their low-income situation periodically. If a quota student cannot comply to the low income rule because family income raised during college, he or she will no longer be granted the stipend. The enrollment, however, is maintained until graduation.

2.2 OAB Exam

In Brazil, the requirements to become a certified lawyer (i.e, be able to practice law) consists of completing a college degree in law and passing the OAB Exam. Only graduated candidates and students about to graduate (5th/last year of law school) are allowed to take the exam⁸.

The exam consists of two rounds, in which the candidate has to pass the first one to be able to take the second. The first round is a multiple choice test, covering general subjects of Brazilian laws. Candidates have to answer at least 50% of questions right to pass this phase of the exam. The second round comprises a written test and the drafting of a petition⁹, both specific to a legal area chosen by the candidate beforehand. The exam takes place 2 to 4 times per year, and candidates can retake it as many times necessary to pass the second phase.

According to the [OAB \(2013\)](#) report, only 37.9% of applicants in Rio de Janeiro

to those scoring between 40 and 50%. The greatest bonus obtained in either of the two rounds of qualification is selected to calculate the final score.

⁵ This value is announced in a public note every year before the beginning of the application process.

⁶ This commission is in charge of managing and supervising matters related to students admitted through the quota policy throughout their education. It is not uncommon for this commission to receive and investigate fraud reports, which leads to the expulsion of the student if substantiated.

⁷ In 2010, the stipend was R\$300.00 (approximately US\$100.00), while the state minimum wage was approximately R\$580.00.

⁸ Students who pass the exam but fail to graduate at law school, for any reason, are not granted the certification.

⁹ Document used in lawsuits or judicial procedures in general.

managed to pass the exam 1st phase between 2010 and 2013. Among them, only 47% passed the 2nd phase and got certified. UERJ, on the other hand, had a total 75.7% certification rate for the same period. Other three public universities with prestigious law schools in Rio de Janeiro State presented similar certification rates, ranging between 73 and 77%.

3 Data

I combine two datasets to conduct this research: The pool of subjects who applied to a prominent Brazilian Law School (UERJ) and the pool of law students who obtained the title of lawyer (and the ability to practice law) by passing the OAB Exam¹. This setup allows me to perform a post-university analysis based on college admission data for both AA applicants and non-AA applicants.

The first dataset, regarding college admission process, was obtained from the State University of Rio de Janeiro’s admission office, DSEA-UERJ, and contains information from both admitted and non-admitted applicants for the university’s Law School from 1997 to 2001 and 2003 to 2010², with a total of 25,698 observations. This dataset lists applicants by name and contains their scores in each subject of UERJ admission test. It also informs the candidate ranking position, if he or she got admitted to UERJ and, if so, whether he or she graduated or not. Since the AA program began at *Vestibular 2003*, from this year to 2010 it is also reported if the candidate chose to apply as “non-AA”, “Self-declared Black”, “Public School Student”, or “Other Minorities”.

Additionally, a socioeconomic profile is available for each candidate who applied between 2006 and 2010, containing information such as family income, age, type of school attended (private or public), among others³. I decided to use this subset of years to perform this analysis since it enables the use of controls. As the quota policy was already active before, and remained so throughout this period, I do not explore the differences-in-differences method.

The second dataset was constructed from the lists of individuals who passed the OAB Exam in Rio de Janeiro between 2010 and 2015. I could not use the full set of applicants due to the exam contractual restrictions preventing disclosure of non approved applicants. Lists of approved candidates are available to public consultation at the Exam website.⁴ I selected this period in order to match the minimum time for law school students to be able to graduate and OAB examination, for candidates who applied to UERJ between 2006 and 2010. For each cycle of examination (2-4 per year), there are two lists: the first one contains candidates approved in the first phase of the exam, and the second one contains those who passed the second phase (which is only taken by those who passed the first phase), thus, the ones who became certified lawyers. It is important to point out that OAB did not disclose the full list of applicants registered for the exam, due to its contractual restrictions, preventing differentiation of individuals who took the exam but did not pass from those who never registered to take it, regardless of the reason.

Since the only identifier contained in the OAB listings was the name of the approved

¹ The OAB Exam is the Brazilian equivalent to the American BAR Exam. Passing this exam is a requirement to become a lawyer

² UERJ’s admission office did not provide the vestibular data for the year of 2002.

³ Table 4, in the appendix, presents all available variables in UERJ’s dataset by year.

⁴ <http://oab.fgv.br/>, last accessed on 05/14/2017.

candidates, it was also the key used to combine the two datasets, matching subjects who applied to UERJ's law school and later on passed the OAB Exam⁵.

Tables 1, 2 and 3 describes some main features of UERJ's admission process, by year, after its conclusion, and some data regarding admission test scores and graduation of those who were admitted. From Table 2 I can show that the number of non-AA applicants is around 10 times the number of AA applicants. This translates into a more fierce competition between non-AA candidates than in other categories, as evidenced by at least 30 points difference in cutoff scores for non-AA applicants in comparison to AA applicants, shown in the "Minimum" column of Table 3.

Other discrepancies between admission test scores of non-AA and AA admitted candidates are displayed in Table 3 and Figure 1. In addition to the cutoff difference, the data shows a 20 to 30 points difference in mean scores between AA and non-AA admitted candidates, and a 10 point difference for the maximum score.

Furthermore, contrary to what one would expect, graduation rates among AA students, specially Self-declared Black and Public School System candidates, are very similar to those of non-AA students, varying between 70 and 90%. However, AA students seem to take longer to graduate on average (around 6.5 years), indicating that these students may face greater difficulty progressing through the course. This can be interpreted as a reflection of the lower standard on which they get admitted.

Table 5 presents the rate of passage and indicate statistically significant difference between non-AA and AA candidates (by category) in each of the two OAB exam phases and the rate of passage on the second phase for those who passed the first phase. These statistics are shown separately for candidates who did not get admitted to UERJ and those who did (Panel A and B, respectively). By comparing the results displayed in Panel A and Panel B, it is possible to conclude that non-admitted candidates tend to have lower passage rates both on the first phase and the second phase of OAB exam, in comparison to candidates admitted to UERJ's law school. This could be explained by a higher percentage of non-admitted candidates changing careers in comparison to admitted ones. However, I do not have the necessary data to confirm this assumption.

From Panel A, I show that the difference of passage rates between non-AA and AA candidates not admitted to UERJ are always statistically significant on the first two groups of columns, showing at least 15 percentage points difference at the first phase and 13p.p. at the second phase of the exam. Although this remains true in Panel B (Candidates admitted to UERJ), the difference magnitude is smaller than those observed in Panel A, with a minimum 10p.p. significant difference for the first phase and 13p.p. for the second.

This pattern changes completely for the third group of columns, regarding the passage rates at the second phase of OAB exam conditional on having passed the first phase. For this specific group, rates of passage are high, mostly ranging between 80 an

⁵ No homonyms were found within UERJ's law school pool of applicants.

90%. This suggests that law students prepared enough to pass the first phase of the exam have high chances of passing the second one also. Nonetheless, in this case, the sample becomes very small due to the restriction, specially to non-admitted candidates in both AA types of placing, hindering the calculation of statistical mean differences.

The final dataset contains 12,906 observations in total, including admitted and non-admitted candidates that applied as non-quota, self-declared black and public school system student. Candidates in the "Disabled/Minorities" category were excluded from the analysis due to the lack of non-admitted candidates in most years, and small sample size of this category (only 46 observations throughout the 5 years sample, displayed in Table 2). Candidates who applied to UERJ's law school for two or more years were also dropped from the analyzed sample.⁶

⁶ A brief analysis was conducted on candidates who applied more than once, and over 180 candidates were found to change the type of application from one year to the other (non-AA to AA, one AA type to the other or even AA to non-AA) within the 2006-2010 period. Among them, 135 changed from non-AA to AA of any type, roughly 10% of the total pool of AA candidates in the sample analyzed throughout this paper. From them, 67% applied as a racial quota candidate at the last application. Although this sample reveals an increase in reports for the lowest family income level (less than 3 minimum wages) of about 10.7% between the first application, as non-AA, and the last, as AA, it is not sufficient to determine whether those candidates were committing fraud or were simply uninformed at their first application.

4 Empirical Strategy

To identify the quota policy effects on UERJ's AA and non-AA students after graduation, I employ three different strategies based on admission cutoff scores, subsets of the full sample, and the OAB exam outcomes. The results of these exercises are interpreted as the policy boost and catching up effects on AA students in law school, and the UERJ diploma effect, which can be interpreted as the potential "set back" imposed on non-AA candidates not admitted due to the quota policy.

In all empirical exercises I use three versions of the OAB exam results as outcome variables: passage in the first round, passage in the second round, and passage in the second round restricted to individuals who passed the first round. The difference between the last two is the use of the sample restriction as a proxy for "law school completion".

By using the 1st and 2nd phase passage rates against the full sample of candidates, I take into account attrition from both UERJ's law school admitted and not admitted, assuming most of the latter pursued a law career in another institution. Since I do not have access to the information regarding other institution enrollments of UERJ's not admitted candidates, I lack a finer indicator of law school completion. Thus, the proxy is used to conduct a more specific analysis over law students only.

The empirical exercises are described below.

4.1 The Boost Effect:

Vestibular Same-score AA admitted and non-AA applicants

I define the policy boost effect as the advantage given to candidates who benefited from the quota policy as opposed to those who were not eligible to it and scored similarly on the admission test. To estimate this boost, I use UERJ's admission test scores from AA admitted candidates to build a comparable control group.

The admission test score is used as a proxy to "test taking ability" so that, by comparing students who had the same score, I assume to be comparing students with similar test taking abilities. Following this premise, I select a subsample of the available dataset containing only AA and non-AA candidates who scored above the AA cutoff and below the non-AA cutoff. Thus, all AA candidates in this subsample were admitted to UERJ, and none of the non-AA candidates were admitted to UERJ.

I use background characteristics taken out of the socioeconomic survey as controls. This allows me to estimate the outcome difference between AA admitted candidates and non-AA not admitted ones as a result from the fact that the former only got admitted to UERJ's law school because the quota policy lowered their cutoff.

The following regression is designed to estimate the difference in OAB exam passage

rates between AA admitted and same-scores non-AA (not admitted) UERJ candidates, i.e, the boost given to AA admitted candidates:¹

$$\begin{aligned} OAB_i = & \beta_0 + \beta_1(AA_i \times Admitted_i) + \beta_2 Score_i \\ & + \beta_3(AA_i \times Admitted_i \times Score_i) + \phi X_i + \varepsilon_i \end{aligned} \quad (4.1)$$

The $(AA_i \times Admitted_i)$ variable is an indicator for individuals i that applied to UERJ's law school through the quota system and got admitted. The $Score_i$ variable refers to the score obtained by individual i at UERJ's admission test, with range 33 to 73 points in this sample, and X_i is a vector of candidates characteristics (age, gender, parents education, family income, etc.). The outcome variable, OAB_i , takes value 1 if the individual i passed the OAB exam, and 0 otherwise. For a given admission test score, the difference in OAB passage rate for AA-admitted and same-score non-AA candidates (i.e, the boost) is given by parameter β_1 plus the product of β_3 and the score value.

4.2 The Catching Up Effect: Displacer vs Displaced Performance

The catching up effect is characterized as how close to displaced candidates are AA admitted candidates in terms of OAB passage chances. By the policy design, candidates who are eligible to apply through the quota policy come from a disadvantageous background, being raised in a low income family and, in most cases, attending public school. As opposed to this, candidates who would have been admitted in the absence of the AA policy (displaced candidates) presents higher patterns of income and parents education, in addition to attending private schools their whole lives.² Our interest here is to measure the policy resulting difference in performance at the end of the college cycle, by evaluating the difference in OAB passage rates for displaced and displacer candidates.

The displacer vs displaced approach used here is similar to the one in Bertrand et al (2010). The displaced set of applicants is constituted by non-AA applicants who ranked below the non-AA cutoff and that would have been admitted to UERJ's law school in the absence of the quota policy³. The displacer set contains only AA admitted applicants who would not be admitted if the policy was not in place.

As aforementioned, candidates that were displaced due to the policy were most

¹ Appendix B presents a detailed explanation for using this model instead of a traditional Differences-in-Differences model.

² Table 7 displays evidence of such differences between displaced and displacer candidates

³ We used the number of AA admitted candidates to determine how far down in the general ranking non-AA candidates would be admitted.

likely offered a seat in at least one other prestigious law school in Rio de Janeiro⁴, suggesting that the policy would have little, if any, effect on their chances of passing the OAB exam.

The "Displacer vs Displaced" design allows the estimation of the policy "catching up" effect for AA students, by comparing their results at the OAB exam with those from the displaced candidates. In order to estimate this effect, I used the following model with and without the controls vector X_i :

$$OAB_i = \alpha_0 + \alpha_1(AA_i \times Admitted_i) + \gamma X_i + \epsilon_i \quad (4.2)$$

The preferred specification does not include X_i . By doing so, I am estimating the mean difference in OAB passage rates between displacer and displaced candidates, which is interpreted as the remaining gap in performance, and I will be calling it the catching up effect. A zero value for α_1 means that AA admitted candidates are performing similarly, i.e., they are catching up to candidates that were displaced by the policy. A positive value for this parameter means AA admitted candidates are performing better than the displaced ones. Equivalently, a negative value means that the policy does not fill completely the existing gap between displacer and displaced candidates.

4.3 The Diploma Effect: Discontinuity Design Analysis

The diploma effect is the extent to which OAB passage rates are affected by attending UERJ's law school. For non-AA candidates, this result is interpreted as the difference between UERJ law school and alternative institutions. For AA candidates, as applicants have lower chances of entering another high quality law school, this is the difference of gaining access to a quality law school as opposed to entering a lower quality law school or even not attending law school.

The estimations used in this exercise follows the regression discontinuity design (RDD) suggested in [Imbens & Lemieux \(2008\)](#). I use the admission test score ($Score_i$) as running variable, and investigate the existence of a discontinuity in OAB passage rates on the cutoff score point for each type of candidate (non-AA, self-declared black AA and public school AA). The cutoff score was adjusted to zero in each year for both AA and non-AA pool of candidates, to enable pooling subjects from different years from the available data.

⁴ For the year of 2010, I was able to gather information from the first (from about 7) round of admission offers from UFRJ and UFF, two prestigious law schools in Rio de Janeiro, and found that 72 of 140 displaced candidates from UERJ were offered a seat in at least one of the two institutions in that year.

$$OAB_i = \delta + \psi 1\{Score_i > 0\} + \varphi Score_i + \phi Score_i 1\{Score_i > 0\} + \xi_i \quad (4.3)$$

Parameters ψ and ϕ determine any difference in level and slope, respectively, for OAB exam approval rate, regarding candidates that scored above the cutoff in contrast to those scoring below.

This method allows to identify UERJ's law school diploma effect, separately for AA and non-AA candidates, by using the cutoff score as a determinant for being admitted or not. Since each type of seat has a different cutoff, I present separate results for self-declared black and public school quota candidates.

The quota policy caused the cutoff score for non-AA to raise, while lowering it for AA candidates. Since the effect on the cutoff score is different between AA and non-AA candidates, the diploma effect interpretation also differs. For non-AA candidates, I will analyze the impact on the left side (who scored slightly below the cutoff) of the non-AA cutoff instead of the right side, thus, the effect of the policy on displaced candidates. In contrast, for AA candidates, the policy impacted the right side of the (AA) cutoff, so the left score side of the cutoff is our baseline for what would have happened to the AA admitted candidates if the policy was not in place.

For non-AA candidates the absence of a discontinuity at the cutoff score point indicates that the quota policy did not affect those who "almost were admitted" to UERJ, and, ultimately, would have been if quotas did not exist. However, the existence of a negative statistically significant discontinuity on the left side of the cutoff score, in this case, means that displaced candidates had their chances of passing OAB hampered by the policy.

For AA candidates, in both analyzed categories, a positive significant discontinuity on the right side of the cutoff score is interpreted as an improvement in passage rates due to the policy, since admitted candidates who scored slightly above AA cutoffs would not be admitted under the non-AA cutoff.

5 Results

All regression model estimates are presented for the three outcome variables "OAB 1st phase", "OAB 2nd phase" and "OAB 2nd phase with sample restricted to individuals who passed the 1st phase".

5.1 Boost Effect

The boost effect estimates are reported in Table 8. Columns (1) to (3) contain the mean difference in OAB passage rates for AA admitted candidates in comparison to same-score non-AA candidates, in the first and second phases for the full sample used in this exercise, and second phase with first phase sample restriction. These results indicate that, on average, UERJ's AA students have an 11.5 p.p. and a 7.67 p.p. higher chance at passing the first and second OAB phases, respectively, than the pool of non-AA applicants that scored similar to them on UERJ's admission test. However, when I restrict the sample to candidates who passed the first phase of the exam, the result reveals that AA candidates admitted to UERJ have a 4 p.p. lower chance of becoming a lawyer than non-AA in the AA score range that passed OAB first phase. This result suggests that the policy is not able to boost AA candidates enough for them to perform as well as non-AA candidates that are able to finish law school and pass OAB first phase

Columns (4) to (6) contain the estimates for the OLS model using an interaction between scores and the AA admitted candidate dummy. The inclusion of the score variable allows for some variation of the passage rate along the score distribution. Moreover, the inclusion of the interaction allows to estimate this variation separately for AA and non-AA candidates. The "AA" coefficient increases in magnitude for all outcome variables: 52.8 p.p. on the first phase, 41.68 p.p. on the second, and -6.86 when sample is restricted, however, the latter is not statistically significant.

Columns (4) and (5) present negative estimates for the interaction coefficient, -0.7 and -0.5 p.p. per additional score point, respectively. In both cases, this value is smaller in magnitude than the score coefficient, 1.1 p.p. per additional score point in both cases. This indicates that the difference in passage rates is higher between candidates who fall in the lower end of score distribution, decreasing as the score value increase.

On the last three columns I include background characteristics as controls, such as age, gender, parents education, school characteristics, working status before college and family income. The pattern of coefficients significance and the interaction values presented in columns (4) to (6) are maintained on (7) to (9) almost exactly. The "AA Admitted" coefficient increases in magnitude to 64.8 p.p. on the first phase, 51.2 p.p. on the second, and -6.59 for second phase with sample restriction, when controls are added to the model.

5.2 Catching Up Effect

In Table 9 I present the results estimated for the "displaced vs displacer" exercise, which I use to investigate how AA admitted candidates (displacer) chances of passing OAB compare to those of displaced ones. Specifically, based on the fact that AA students, on average, only had access to low quality education, I assume that without being admitted to UERJ their passing chances would be lower. Thus, I want to evaluate if the quota policy allows them to perform similarly at the OAB exam.

The preferred specification in this exercise is the one displayed in columns (1) to (3), as it shows the mean difference between displacer and displaced candidates *de facto*. Their results are a measure of the persistent gap between displacer and displaced candidates. The three columns report negative results for displacer candidates, in which the chances of passing OAB first phase is very close to zero (0.28p.p.) and not statistically significant. Columns (2) and (3) display a 4.56 p.p. lower passing rate for AA admitted candidates at the second phase and even lower, 7.69p.p., when the sample is restricted to the first phase. These results indicate that the policy is not enough to fill gap presented at the admission test scores, as it shows that displacer candidates are underperforming displaced ones at the exam.

Given that the first and second columns analyze the same pool of subjects, and AA results worsen at the second phase, it appears that AA admitted candidates are closer to catching up with displaced ones at OAB first phase test than on the second phase. One possible explanation for this is the differences between first and second phase tests. Since the first phase is a multiple choice test and the second one is a writing test, the increase in magnitude of the negative effects on the second phase could be explained by a difference in writing skills between the groups, which is generally best developed before college education.

On the next three columns (4 to 6), when I add the score variable to regressors, the displacer coefficient shifts to a positive value for the non restricted outcomes, even though not significant. This indicates that AA candidates who score the same as a displaced one in the admission test, have a greater chance of passing OAB examination in about 4.5 p.p. at the first phase and 1.5 p.p. at the second. Nonetheless, these are minority in the displacer group, most of the AA admitted candidates are concentrated to the left of displaced score distribution, as shown in Figure 3.

The estimates presented by columns (7) to (9) include characteristic controls. These columns display a greater, positive, statistically significant coefficient for displacer candidates in both first and second phase without restriction, suggesting that background characteristics play a significant role in determining the chances of success even after college.

5.3 The Diploma Effect

Graphics and regressions for the RDD model are reported in sections C.3 and D of the appendix. In this exercise I analyze separately racial and public school quota candidates, since each type of quota has its own distinct cutoff.

Both graphical visualization and regression results in the case of non-AA candidates indicates to the nonexistence of a discontinuity in the OAB passage rates between candidates close to the non-AA admission cutoff score, for every outcome variable used. This confirms the theory that candidates displaced by the quota policy did not have their OAB passage chances diminished by not being able to attend UERJ's law school.

For AA self-declared black candidates, regressions display no significant difference in OAB passage at the cutoff point, as in the graphical evidence. Even so, the pattern displayed at these graphics suggest the need of further investigation to better understand it.

Public School quota candidates, on the other hand, display both graphical and regression wise evidences of an existing, significant, discontinuity at their cutoff point. Candidates admitted through this quota type seem to be benefiting from an increase in OAB first phase passage rate as high as 68 percentage points, for those who scored less than 2 points higher than the cutoff score. The effect appears to be smaller for OAB second phase, but still reaching a 52 percentage point difference, considering the same 2 points interval for UERJ's admission test score.

6 Robustness Exercises and Tests

6.1 Separating quota types

In this exercise, I perform the boost (Table 14) and catching up (Table 15) estimations separating quota beneficiaries by the type of quota they applied to (racial or public school) to obtain their specific coefficient.

At the Boost Effect, the mean difference (columns 1 to 3) from racial and public school quota beneficiaries to non-quota candidates in the same score range is very similar for OAB 1st phase (11.38p.p. and 11.60p.p., respectively). On the 2nd phase, however, the passage difference is higher for public school, as it is 8.65p.p., opposed to 6.6p.p. for racial quota beneficiaries. By including the admission test score and the interaction between score and quota type in the estimation model (columns 4 to 6), both quota coefficients for the 1st and 2nd phase increase drastically in magnitude – 72p.p. for public school and 31p.p. for racial quotas –, and all but the racial coefficient for OAB 2nd phase remain statistically significant. Moreover, by adding socioeconomic controls (columns 7 to 9), coefficients increase further, leading to a boost effect of 88p.p. in OAB 1st phase approval rate and 74p.p. in OAB 2nd phase for public school quota beneficiaries, and 41p.p. in OAB 1st phase for racial quota. No significant difference is found on the 2nd phase with sample restriction once scores were added (columns 6 and 9).

Similarly to the pooled exercise, I find no evidence of difference in OAB approval rate at the 1st phase between displaced and displacer candidates of any type (column 1). For the 2nd phase (column 2), the negative coefficient is significant for racial quota displacers. Nevertheless, when restricting the sample for those approved at the 1st phase, the negative effect is statistically significant and strong for both quota types, with 8.9p.p. less chance of certification for self-declared black displacers and 6.5 for public school displacers (column 3). Columns 4 to 9 maintain the same pattern displayed at the pooled exercise, with higher coefficients and more statistically significant results for public school displacers.

6.2 The Diploma Effect -

McCrary Density Test and Placebo Cutoff Scores

The graphs presented in appendix E.2 display the density discontinuity coefficients at every integer for an interval of -10 and +10 around the cutoff admission score, pooling candidates to UERJ's law school from 2006 to 2010. The test applied follows the method described in McCrary (2008).

For Non-Quota candidates (Figure 14), the distribution appears to have many points of discontinuity for a 95% confidence interval, including the cutoff point. In many

cases, a discontinuity on the cutoff score would point towards manipulation. However, the cutoff score for college admission is not a predetermined specific value. Instead, it takes the score value of the lowest ranked candidate admitted, which is a function of the number of seats available and the number of candidates who are offered admission and accept it. Thus, it is unlikely that a significant number of candidates would be able to manipulate their score to be admitted.

Figures 15 and 16 present the density discontinuity coefficients for the two types of quota separately. In the case of racial quotas (Figure 15), although there is evidence of density discontinuity throughout the analyzed interval, there is none to be found at the cutoff score specifically. On the other hand, the same test applied to the pool of public school quota candidates (Figure 16) indicates a large difference in density below and above the cutoff score. The coefficient is positive and significant for the cutoff and 1 point less.

Generally, such result would be interpreted as an increase in the density of candidates close to the cutoff (indicating manipulation). Nonetheless, by pooling both types of quota candidates around the public school cutoff (Figure 17), I find no evidence of density difference at the cutoff point. As the public school cutoff score was higher than the racial one for most years in sample, it is likely that some candidates self-select themselves to the racial quota, increasing their chances to be admitted.

In appendix E.3 I present estimates of placebo cutoff coefficients around the true cutoff ($-/+10$ interval) for non-quotas, racial and public school candidates. The pool of non-quota candidates (Figure 18) display discontinuity evidence only for scores above the true cutoff point. A possible explanation for this is the fact that there are less observations on the right of the true cutoff than on its left, which makes estimates to the right more sensible to the existence of dropout students. For racial quota candidates (Figure 19), I find negative discontinuity for scores both below and above the true cutoff. Since the sample for racial quota candidates is much smaller, it is also more sensible to individual variations.

In the case of public school quota candidates (Figure 20), no discontinuity in OAB passage rates were found at scores near the cutoff point, indicating that the discontinuity found at the cutoff is driven by the fact that students were admitted to UERJ and profited from its education.

7 Conclusion

The analysis presented here suggest that UERJ's affirmative action gives opportunities to those who otherwise would not have it, without diminishing the chances of success for non-beneficiaries who are also directly affected by the policy. However, it is important to point out that this result applies to a very specific context, and cannot be generalized to every affirmative action policy in higher education and every college major.

Law school is one of the most selective majors in UERJ, and it is considered to be one of the best at Rio de Janeiro State. Additionally, it was the only college in Rio with an active quota policy at the period analyzed, with a handful of other prestigious law schools available in state. Thus, the outcomes portrayed here for affirmative action are those of underprivileged students who benefited from high quality education and peer effects externalities from studying with some of the best students in the state. As for non-beneficiaries directly affected by the policy, they were only displaced from UERJ's law school, still being able to pursue a lawyer career at a prestigious institution without leaving the state.

This study contributes to the literature on affirmative action by exploring the fact that an AA policy was used in a university that relies uniquely on a test score as the admission determinant, and the existence of a high stakes post-graduation exam. Although the estimates presented here rely on narrow scope data and context, it brings evidence to the ongoing discussion on affirmative action outcomes for more than one perspective.

Critics of AA policies in higher education claim that the displacing of candidates would mean a less cost-efficient allocation of university seats, arguing that AA students would have lower graduation rates, due to the mismatch effect. However, I find that, even though AA students stay enrolled for longer periods, graduation rates for both AA and non-AA students at UERJ's law school are very similar.

In [Fryer & Loury \(2005\)](#), the authors use economic reasoning and research available at the time to demystify 7 mythologies concerning affirmative action. They acknowledge the lack of empirical evidence for many of these matters as a difficulty. This dissertation addresses two of the discussed "myths". In the paper, the authors state that society overestimates the cost for non beneficiaries. Substantiating their claim, the results presented here indicate that, for those who are non beneficiaries and directly affected by the policy (displaced candidates), the estimated cost appears to be inexistent in terms of lawyer certification.

Additionally, the strong positive effect for lawyer certification on the cutoff margin for one type of quota (public school) but not the other (racial quota) creates grounds for arguing that AA can indeed help, just not always.

As shown here, a well designed (even though not perfect) AA policy in a high

quality college can boost underprivileged students to a great extent, allowing them to come close to catching up to students who had a better start, without undermining the latter. Many lessons can be taken from UERJ's affirmative action experience with its law school. However, many more questions arise regarding the impact on other majors, and how the labor market perceive the policy and their beneficiaries, left as a suggestion for future research.

Bibliography

- ARCIDIACONO, P.; LOVENHEIM, M. Affirmative Action and the Quality-Fit Trade-off. *Journal of Economic Literature*, v. 54, n. 1, p. 3–51, 2016. Disponível em: <<http://dx.doi.org/10.1257/jel.54.1.3>>.
- BAGDE, S.; EPPLE, D.; TAYLOR, L. Does affirmative action work? caste, gender, college quality, and academic success in india. *American Economic Review*, v. 106, n. 6, p. 1495–1521, 2016. Disponível em: <<http://EconPapers.repec.org/RePEc:aea:aecrev:v:106:y:2016:i:6:p:1495-1521>>.
- BERTRAND, M.; HANNA, R.; MULLAINATHAN, S. Affirmative action in education: Evidence from engineering college admissions in india. *Journal of Public Economics*, v. 94, n. 1-2, p. 16–29, 2010. Disponível em: <<http://EconPapers.repec.org/RePEc:eee:pubeco:v:94:y:2010:i:1-2:p:16-29>>.
- BINELLI, C.; MEGHIR, C.; MENEZES-FILHO, N. Education and wages in brazil. *Working Paper*, 2008. Disponível em: <<http://www.ifs.org.uk/edepo/binellietal.pdf>>.
- ESTEVAN, F.; GALL, T.; MORIN, L. Redistribution without distortion: Evidence from an affirmative action program at a large brazilian university. *Working Paper*, 2016.
- FERMAN, B.; ASSUNÇÃO, J. Does affirmative action enhance or undercut investment incentives? Evidence from quotas in brazilian public universities. *Working Paper*, 2015.
- FRAJA, G. D. Reverse discrimination and efficiency in education. *International Economic Review*, v. 46, n. 3, p. 1009–1031, 2005. Disponível em: <<http://EconPapers.repec.org/RePEc:ier:iecrev:v:46:y:2005:i:3:p:1009-1031>>.
- FRANCIS, A. M.; TANNURI-PIANTO, M. The redistributive equity of affirmative action: Exploring the role of race, socioeconomic status, and gender in college admissions. *Economics of Education Review*, v. 31, n. 1, p. 45 – 55, 2012. ISSN 0272-7757. Disponível em: <<http://www.sciencedirect.com/science/article/pii/S0272775711001385>>.
- FRYER, R.; LOURY, G. Affirmative action and its mythology. *Journal of Economic Perspectives*, v. 19, n. 3, p. 319–355, 2005. Disponível em: <<http://EconPapers.repec.org/RePEc:nbr:nberwo:11464>>.
- FRYER, R.; LOURY, G.; YURET, T. An economic analysis of color-blind affirmative action. *Journal of Law Economics and Organization*, v. 24, n. 2, p. 319–55, 2008.
- FURSTENBERG, E. K. The informational value of affirmative action in college admissions. *The BE Journal of Economic Analysis and Policy*, v. 7, n. 1, p. 1–13, 2007. Disponível em: <<http://EconPapers.repec.org/RePEc:bpj:bejeap:v:7:y:2007:i:1:n:36>>.
- IMBENS, G. W.; LEMIEUX, T. Regression discontinuity designs: A guide to practice. *Journal of econometrics*, Elsevier, v. 142, n. 2, p. 615–635, 2008.
- JUNIOR, A. A. F. M.; SOUZA, A. De Mello e; WALTENBERG, F. D. Affirmative action and access to higher education in brazil: The significance of race and other social factors. *Journal of Latin American Studies*, v. 48, p. 301–334, 5 2016. ISSN 1469-767X. Disponível em: <http://journals.cambridge.org/article_S0022216X16000018>.

MCCRARY, J. Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics*, v. 142, n. 2, p. 698–714, 2008.

MENEZES-FILHO, N.; VILELA, L.; TACHIBANA, T. Y. As cotas nas universidades públicas diminuem a qualidade dos alunos selecionados? simulações com dados do enem. *Policy Paper - Insper*, 2016.

OAB. Exame de Ordem em Números I. *FGV Projetos*, 2013.

PEREIRA, J. I. R.; BITTENCOURT, M.; BRAGA, B. *Affirmative Action in Higher Education: Impacts of the National Exam in Brazil*. [S.l.], 2015. Disponível em: <http://EconPapers.repec.org/RePEc:wiw:wiwrsa:ersa15p1578>.

ROTHSTEIN, J.; YOON, A. Affirmative action in law school admissions: What do racial preferences do? *University of Chicago Law Review*, v. 75, n. 2, p. 649–714, 2008.

SOWELL, T. *Affirmative Action Around the World: An Empirical Study*. Yale University Press, 2004. (Yale Nota Bene). ISBN 9780300107753. Disponível em: <https://books.google.com.br/books?id=zDVWOeqDMrEC>.

VALENTE, R. R.; BERRY, B. J. Performance of students admitted through affirmative action in brazil. (*Forthcoming*) *Latin American Research Review*, 2016. Disponível em: <http://EconPapers.repec.org/RePEc:aea:aecrev:v:106:y:2016:i:6:p:1495-1521>.

WALTENBERG, F. D.; CARVALHO, M. de. Desigualdade de oportunidades no acesso ao ensino superior no brasil: uma comparação entre 2003 e 2013. *Economia Aplicada*, v. 19, n. 2, p. 369–396, 2015.

APPENDIX A – Data

Table 1 – Descriptive Statistics

Admitted Placing Category	No			Yes		
	Non-Quota	Black	Public School	Non-Quota	Black	Public School
Admittance Test Score	47.76 (13.62)	30.20 (5.62)	30.58 (6.48)	75.49 (4.22)	48.02 (8.14)	50.27 (9.04)
Gender: Male	0.45 (0.5)	0.42 (0.49)	0.43 (0.5)	0.46 (0.5)	0.41 (0.49)	0.47 (0.5)
Father's Education: College	0.57 (0.5)	0.09 (0.28)	0.07 (0.26)	0.78 (0.41)	0.20 (0.4)	0.14 (0.35)
Mother's Education: College	0.57 (0.49)	0.07 (0.26)	0.06 (0.24)	0.78 (0.41)	0.16 (0.37)	0.14 (0.35)
Public School Education	0.24 (0.43)	0.59 (0.49)	0.97 (0.17)	0.20 (0.4)	0.44 (0.5)	0.99 (0.12)
Dayturn High School	0.96 (0.21)	0.76 (0.43)	0.80 (0.4)	0.99 (0.09)	0.87 (0.33)	0.85 (0.36)
Worked before 18 years old	0.13 (0.34)	0.38 (0.49)	0.40 (0.49)	0.06 (0.24)	0.29 (0.45)	0.28 (0.45)
Family Income: Less than 3 MW	0.13 (0.33)	0.63 (0.48)	0.66 (0.48)	0.02 (0.15)	0.51 (0.5)	0.54 (0.5)
Family Income: 3 to 5 MW	0.20 (0.4)	0.29 (0.46)	0.27 (0.44)	0.08 (0.27)	0.31 (0.46)	0.33 (0.47)
Family Income: 5 to 10 MW	0.27 (0.44)	0.06 (0.24)	0.07 (0.25)	0.22 (0.41)	0.15 (0.35)	0.12 (0.33)
Family Income: 10 to 20 MW	0.23 (0.42)	0.01 (0.11)	0.00 (0.06)	0.30 (0.46)	0.02 (0.15)	0.01 (0.09)
Family Income: 20 to 30 MW	0.11 (0.31)	0.00 (0)	0.00 (0)	0.19 (0.4)	0.00 (0)	0.00 (0)
Graduated Law School				0.84 (0.36)	0.77 (0.42)	0.81 (0.39)
OAB Phase 1 Approval	0.46 (0.5)	0.21 (0.4)	0.24 (0.43)	0.77 (0.42)	0.64 (0.48)	0.65 (0.48)
OAB Phase 2 Approval	0.41 (0.49)	0.17 (0.38)	0.21 (0.41)	0.70 (0.46)	0.54 (0.5)	0.57 (0.5)
Age	19.58 (5.68)	24.04 (7.78)	21.99 (6.56)	18.38 (3.08)	21.45 (5.18)	21.26 (4.91)
Observations	10656	282	353	923	331	361

Columns present the mean level of variables by placing category, separately for admitted and not admitted candidates. Standard errors are presented in parentheses.

Table 2 – UERJ’s Law School - Admittance Process and Graduation

Admission Year	Seat Type	Non-Admitted	Admitted	UERJ’s Admitted			
				Graduated	Enrolled in 2015.2	Avg Years Enrolled	SD Years Enrolled
2006	Disabled / Minorities	0	8	5 (62%)	1	7.00	2.00
	Self-declared Black	37	69	49 (71%)	6	6.98	1.73
	Public School System	90	72	53 (73%)	1	6.55	1.35
	Non Quota	2361	182	134 (73%)	1	5.84	0.92
2007	Disabled / Minorities	0	2	2 (100%)	0	7.50	0.71
	Self-declared Black	34	65	56 (86%)	6	6.46	1.33
	Public School System	34	78	60 (76%)	6	6.65	1.42
	Non Quota	1820	182	132 (72%)	6	5.90	1.00
2008	Disabled / Minorities	0	11	4 (36%)	2	7.25	0.96
	Self-declared Black	36	64	57 (89%)	15	6.56	1.05
	Public School System	44	73	61 (83%)	11	6.34	1.11
	Non Quota	1734	181	141 (77%)	8	5.84	0.89
2009	Disabled / Minorities	1	16	15 (93%)	6	6.33	0.72
	Self-declared Black	70	65	55 (84%)	20	6.31	0.74
	Public School System	76	66	56 (84%)	23	6.32	0.77
	Non Quota	2185	188	155 (82%)	10	5.71	0.63
2010	Disabled / Minorities	0	8	7 (87%)	6	5.86	0.38
	Self-declared Black	105	68	62 (91%)	33	5.85	0.36
	Public School System	109	72	64 (88%)	33	5.80	0.41
	Non Quota	2556	190	153 (80%)	42	5.67	0.47

Table 3 – UERJ Law School - Admitted Candidates Scores

Admission Year	Seat Type	Score			
		Minimum	Maximum	Mean	Std Dev
2006	Disabled / Minorities	20.00	59.00	32.09	12.72
	Self-declared Black	33.00	65.75	44.61	7.65
	Public School System	37.50	73.00	47.06	8.11
	Non Quota	67.75	82.25	72.29	3.18
2007	Disabled / Minorities	27.50	32.00	29.75	3.18
	Self-declared Black	34.00	73.75	46.55	9.73
	Public School System	34.25	68.00	46.71	9.19
	Non Quota	69.00	88.50	73.94	3.78
2008	Disabled / Minorities	21.00	48.25	36.34	8.90
	Self-declared Black	40.50	69.75	49.12	6.93
	Public School System	40.50	74.75	51.81	8.69
	Non Quota	70.75	87.75	75.82	3.45
2009	Disabled / Minorities	22.50	48.50	34.36	6.93
	Self-declared Black	43.00	75.00	52.69	7.16
	Public School System	45.50	79.75	55.58	8.89
	Non Quota	75.00	92.50	79.44	3.38
2010	Disabled / Minorities	21.50	50.00	33.31	11.62
	Self-declared Black	38.25	64.00	47.37	6.72
	Public School System	42.75	76.25	50.92	7.41
	Non Quota	70.25	88.50	75.83	3.61

Table 4 – Variables available per Year - UERJ

	1997	1998	1999	2000	2001	2003	2004	2005	2006	2007	2008	2009	2010
Name	x	x	x	x	x	x	x	x	x	x	x	x	x
Vestibular Score per subject	x	x	x	x	x	x	x	x	x	x	x	x	x
Total Score	x	x	x	x	x	x	x	x	x	x	x	x	x
General Ranking	x	x	x	x	x	x	x	x	x	x	x	x	x
Graduation year (if admitted)	x	x	x	x	x	x	x	x	x	x	x	x	x
If still enrolled in 2015.2	x	x	x	x	x	x	x	x	x	x	x	x	x
Admission Status	x	x	x	x	x	x	x	x	x	x	x	x	x
School Type (Public or Private)							x	x	x	x	x	x	x
Seat Type							x	x	x	x	x	x	x
Ranking per Seat Type							x	x	x	x	x	x	x
Bonus earned in the Qualification Fase							x	x	x	x	x	x	x
Date of Birth										x	x	x	x
Socioeconomic Profile:													
Daytime or nighttime school										x	x	x	x
Attended prep school										x	x	x	x
Took vestibular previously										x	x	x	x
Previously enrolled in college										x	x	x	x
Number of motorvehicles owned										x	x	x	x
Candidate contributes to family income										x	x	x	x
Family with more than 4 members										x	x	x	x
Knows how to use a computer										x	x	x	x
Owns a computer										x	x	x	x
Internet access										x	x	x	x
Has email account										x	x	x	x
Reads newspaper										x	x	x	x
Watches TV news										x	x	x	x
Exercises										x	x	x	x
Studied a foreign language										x	x	x	x
Opinion on quotas										x	x	x	x
Living Status										x	x	x	x
If worked before vestibular										x	x	x	x
Source of income										x	x	x	x
Family income ranges										x	x	x	x
Father and Mother education										x	x	x	x
Self-declared skin color										x	x	x	x
Amount of books read										x	x	x	x

Figure 1 – Kernel Density of UERJ's admission test scores for admitted candidates

Table 5 – OAB passage Rate for UERJ's Applicants and Mean Difference between AA and Non-AA

Panel A: Non-Admitted Applicants

Admission Year	OAB - Phase 1					OAB - Phase 2					OAB - Phase 2 conditional on Phase 1				
	Mean Non-Quota	Mean and Black		Difference Public School		Mean Non-Quota	Mean and Black		Difference Public School		Mean Non-Quota	Mean and Black		Difference Public School	
2006	48.50% (2361)	29.73% (37)	**	23.33% (90)	***	44.94% (2361)	27.03% (37)	**	21.11% (90)	***	92.66% (1145)	90.91% (11)		90.48% (21)	
2007	47.53% (1820)	26.47% (34)	**	29.41% (34)	**	43.19% (1820)	23.53% (34)	**	26.47% (34)	*	90.87% (865)	88.89% (9)		90.00% (10)	
2008	47.81% (1734)	25.00% (36)	***	31.82% (44)	**	42.96% (1734)	16.67% (36)	***	29.55% (44)	*	89.87% (829)	66.67% (9)	**	92.86% (14)	
2009	44.76% (2185)	12.86% (70)	***	13.16% (76)	***	35.65% (2185)	11.43% (70)	***	10.53% (76)	***	79.65% (978)	88.89% (9)		80.00% (10)	
2010	43.43% (2556)	19.05% (105)	***	26.61% (109)	***	39.32% (2556)	16.19% (105)	***	23.85% (109)	***	90.54% (1110)	85.00% (20)		89.66% (29)	

Panel B: Admitted Applicants

Admission Year	OAB - Phase 1					OAB - Phase 2					OAB - Phase 2 conditional on Phase 1				
	Mean Non-Quota	Mean and Black		Difference Public School		Mean Non-Quota	Mean and Black		Difference Public School		Mean Non-Quota	Mean and Black		Difference Public School	
2006	72.53% (182)	53.62% (69)	***	58.33% (72)	**	69.78% (182)	43.48% (69)	***	52.78% (72)	**	96.21% (132)	81.08% (37)	***	90.48% (42)	
2007	75.27% (182)	64.62% (65)	*	65.38% (78)		71.98% (182)	56.92% (65)	**	53.85% (78)	***	95.62% (137)	88.1% (42)	*	82.35% (51)	
2008	76.80% (181)	65.63% (64)	*	72.60% (73)		72.93% (181)	59.38% (64)	**	65.75% (73)		94.96% (139)	90.48% (42)		90.57% (53)	
2009	81.91% (188)	70.77% (65)	*	62.12% (66)	***	59.04% (188)	53.85% (65)		51.52% (66)		72.08% (154)	76.09% (46)		82.93% (41)	
2010	80.53% (190)	67.65% (68)	**	65.28% (72)	***	76.84% (190)	57.35% (68)	***	59.72% (72)	***	95.42% (153)	84.78% (46)	**	91.49% (47)	

Mean difference between Non-Quota and Self-declared Black candidates and between Non-Quota and Public School System candidates:

*** p<0.01, ** p<0.05, * p<0.1.

Number of observations in parentheses.

Figure 2 – Kernel Density of UERJ's admission test scores - Boost effect

Figure 3 – Kernel Density of UERJ's admission test scores - Catching Up effect

Table 6 – Mean Difference: AA and Non-AA with similar scores

	Non-Quota Applicants	Quota Applicants	Mean Difference	
Passed Vestibular UERJ	0% (4546)	100% (686)		
Went to Public School	20.66% (4546)	71.72% (686)	-51.06	***
Went to dayturn high school	97.27% (4205)	85.63% (647)	11.64	***
Went to prep school	43.89% (4195)	47.43% (641)	-3.54	*
Tried Vestibular before	74.23% (4198)	81.09% (640)	-6.87	***
Went to a university before	8.54% (2412)	16.28% (393)	-7.74	***
Contributes to Family Income	11.62% (4174)	27.86% (639)	-16.24	***
Knows how to use a computer	98.3% (2405)	96.41% (390)	1.88	**
Has computer at home	91.65% (4158)	62.17% (637)	29.49	***
Has internet access	95.12% (2397)	89.51% (391)	5.60	***
Uses internet as a mean of study	72.84% (2404)	55.61% (392)	17.22	***
Went to a foreign language course	82.06% (4147)	55.96% (638)	26.10	***
Lives in na Owned Home	74.21% (4184)	49.07% (642)	25.15	***
Worked before the age of 14	1.89% (4176)	4.7% (638)	-2.81	***
Worked between the ages of 14 and 18	9.2% (4176)	23.82% (638)	-14.63	***
Never worked	80.56% (4176)	51.57% (638)	28.99	***
Family Income: Less than 3 minimum wages	9.13% (4138)	53.22% (637)	-44.08	***
Family Income: 3 to 5 minimum wages	18.32% (4138)	32.03% (637)	-13.71	***
Family Income: 5 to 10 minimum wages	27.45% (4138)	12.87% (637)	14.58	***
Family Income: 10 to 20 minimum wages	25.23% (4138)	1.57% (637)	23.66	***
Family Income: 20 to 30 minimum wages	12.45% (4138)	0% (637)	12.45	***
Family Income: More than 30 minimum wages	7.32% (4138)	0% (637)	7.32	***
Father's Education High School	26.49% (4156)	37.38% (642)	-10.89	***
Father's Education College	60.88% (4156)	16.98% (642)	43.90	***
Mother's Education High School	26.55% (4165)	41.72% (640)	-15.16	***
Mother's Education College	61.82% (4165)	15.31% (640)	46.51	***
Amount of Books at home: None	0.91% (4162)	2.04% (638)	-1.12	***
Amount of Books at home: More than 100	32.03% (4162)	10.5% (638)	21.53	***
Gender: Male	45.67% (4546)	44.17% (686)	1.50	
Age	19.176 (4546)	21.402 (686)	-2.23	***

Standard Errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7 – Mean Difference: Displaced vs Displacer

	Non-Quota (Displaced)	Quota (Displacer)	Mean Difference	
Passed Vestibular UERJ	0% (715)	100% (724)		
Went to Public School	16.64% (715)	71.13% (724)	-54.49	***
Dayturn high school	98.65% (665)	84.63% (683)	14.02	***
Went to prep school	43.81% (662)	47.42% (677)	-3.61	
Tried Vestibular before	74.21% (663)	81.07% (676)	-6.86	***
Enrolled to a university before	10.53% (399)	16.63% (409)	-6.10	**
Contributes to Family Income	7.73% (660)	28.59% (675)	-20.87	***
Knows how to use a computer	99.5% (399)	96.55% (406)	2.95	***
Has computer at home	96.5% (657)	61.96% (673)	34.54	***
Has internet access	99% (399)	88.94% (407)	10.05	***
Uses internet as a mean of study	78.95% (399)	55.64% (408)	23.31	***
Went to a foreign language course	90.95% (652)	55.64% (674)	35.31	***
Lives in na Owned Home	79.21% (659)	49.12% (678)	30.10	***
Worked before the age of 14	1.21% (659)	5.19% (674)	-3.98	***
Worked between the ages of 14 and 18	7.44% (659)	24.04% (674)	-16.60	***
Never worked	84.83% (659)	50.45% (674)	34.38	***
Family Income: Less than 3 minimum wages	3.36% (654)	53.49% (673)	-50.13	***
Family Income: 3 to 5 minimum wages	9.79% (654)	31.8% (673)	-22.01	***
Family Income: 5 to 10 minimum wages	24.16% (654)	12.93% (673)	11.23	***
Family Income: 10 to 20 minimum wages	32.11% (654)	1.49% (673)	30.62	***
Family Income: 20 to 30 minimum wages	17.43% (654)	0% (673)	17.43	***
Family Income: More than 30 minimum wages	13.15% (654)	0% (673)	13.15	***
Father's Education High School	19.48% (657)	37.46% (678)	-17.98	***
Father's Education College	74.43% (657)	16.96% (678)	57.47	***
Mother's Education High School	20.82% (658)	41.72% (676)	-20.90	***
Mother's Education College	74.62% (658)	15.24% (676)	59.38	***
Amount of Books at home: None	0.46% (655)	1.93% (674)	-1.47	**
Amount of Books at home: More than 100	45.04% (655)	10.39% (674)	34.65	***
Gender: Male	48.67% (715)	44.48% (724)	4.20	
Age	18.662 (715)	21.590 (724)	-2.93	***

Standard Errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

APPENDIX B – Empirical Strategy

B.1 The Boost Effect

The specification used to estimate the boost effect derives from a traditional differences-in-differences model, described as follows:

$$\begin{aligned} OAB_i = & \alpha_0 + \alpha_1 AA_i + \alpha_2 Admitted_i + \alpha_3 AA_i \times Admitted_i + \alpha_4 Score_i \\ & + \alpha_5 (AA_i \times Score_i) + \alpha_6 (Admitted_i \times Score_i) \\ & + \alpha_7 (AA_i \times Admitted_i \times Score_i) + \phi X_i + \varepsilon_i \end{aligned} \quad (B.1)$$

This model allows me to identify the predicted OAB passage rate for each type of candidate:

- (i) Not admitted non-AA candidates ($AA_i = 0$ and $Admitted_i = 0$):

$$[\alpha_0] + [\alpha_4] \times Score_i \quad (B.2)$$

- (ii) Not admitted AA candidates ($AA_i = 1$ and $Admitted_i = 0$):

$$[\alpha_0 + \alpha_1] + [\alpha_4 + \alpha_5] \times Score_i \quad (B.3)$$

- (iii) Admitted non-AA candidates ($AA_i = 0$ and $Admitted_i = 1$):

$$[\alpha_0 + \alpha_2] + [\alpha_4 + \alpha_6] \times Score_i \quad (B.4)$$

- (iv) Admitted AA candidates ($AA_i = 1$ and $Admitted_i = 1$):

$$[\alpha_0 + \alpha_1 + \alpha_2 + \alpha_3] + [\alpha_4 + \alpha_5 + \alpha_6 + \alpha_7] \times Score_i \quad (B.5)$$

In order to understand each parameter in this model, some hypothesis regarding UERJ candidates chances of passing the OAB exam are required:

Hypothesis 1. *OAB passage rates must be non-negative for all candidates.*

Hypothesis 2. *UERJ's admittance test scores are positively correlated to OAB passage rates.*

Hypothesis 3. *Since UERJ's quota policy can be the only chance of attending law school for many AA candidates, the OAB passage rate for admitted AA candidates should be higher than for not admitted AA.*

Hypothesis 4. *AA not admitted candidates have the lowest chance of passing OAB exam among UERJ's pool of applicants.*

Hypothesis 5. *Non-AA admitted candidates have the highest chance of passing OAB exam among UERJ's pool of applicants.*

Hypothesis 6. *UERJ's not admitted non-AA candidates have higher chances to pass OAB than not admitted AA candidates.*

Hypothesis 7. *Not admitted non-AA candidates who scored close to the non-AA cutoff score have passage rates (almost) as high as those who were admitted.*

Hypothesis 8. *Not admitted non-AA candidates who scored below AA cutoff scores have passage rates (almost) as low as not admitted AA candidates.*

From hypothesis (1) and (2), follows that

$$\alpha_0 \geq 0 \tag{B.6}$$

$$\alpha_4 > 0, \quad \alpha_4 + \alpha_5 > 0, \quad \alpha_4 + \alpha_6 > 0, \quad \alpha_4 + \alpha_5 + \alpha_6 + \alpha_7 > 0 \tag{B.7}$$

From (i) and (ii):

$$\alpha_0 > \alpha_0 + \alpha_1 \quad \Rightarrow \quad \alpha_1 < 0 \tag{B.8}$$

$$\alpha_4 > \alpha_4 + \alpha_5 \quad \Rightarrow \quad \alpha_5 < 0 \tag{B.9}$$

From (i) and (iii):

$$\alpha_0 + \alpha_2 > \alpha_0 \quad \Rightarrow \quad \alpha_2 > 0 \tag{B.10}$$

$$\alpha_4 > \alpha_4 + \alpha_6 \quad \Rightarrow \quad \alpha_6 < 0 \tag{B.11}$$

From (ii), (iii) and (iv):

$$\alpha_0 + \alpha_1 < \alpha_0 + \alpha_1 + \alpha_2 + \alpha_3 \quad \Rightarrow \quad \alpha_3 > -\alpha_2 \tag{B.12}$$

$$\alpha_0 + \alpha_2 > \alpha_0 + \alpha_1 + \alpha_2 + \alpha_3 \quad \Rightarrow \quad \alpha_3 < -\alpha_1 \tag{B.13}$$

Since $\alpha_1 < 0$, we can rewrite equations (B.12) and (B.13) as

$$-\alpha_2 < \alpha_3 < |\alpha_1| \tag{B.14}$$

Figure 4 – Theoretic Graph

Lastly, from (i) and (iv)

$$\alpha_4 > \alpha_4 + \alpha_5 + \alpha_6 + \alpha_7 > 0 \quad (\text{B.15})$$

Which can be rearranged into

$$-\alpha_4 + |\alpha_5 + \alpha_6| < \alpha_7 < |\alpha_5 + \alpha_6| \quad (\text{B.16})$$

Considering that admission test scores range between 20 and 100 and the minimum AA and non-AA cutoff scores from 2006 and 2010¹, Figure 4 is a theoretic representation of this model applied to our data. This graph helps understand that, due to the existence of different cutoffs for non-AA and AA candidates, the policy result does not comply with a traditional differences-in-differences model.

The great distance between cutoffs precludes the analysis of "treated" and "not treated" individuals along groups. Non-AA candidates admitted to UERJ do not fall in the same admittance score range as AA admitted candidates. Instead, they have much higher

¹ Candidates who score below 20 are eliminated from the admittance process, and 100 is the highest possible score. The minimum cutoff score for AA candidates between 2006 and 2010 was 33, and, for non-AA, 72. The highest score obtained by a candidate in this period was 92.

scores than the latter, preventing the possibility of decomposing the OAB passage rate difference into "UERJ law school treatment" and their own ability. Thus, these candidates and AA admitted ones are not comparable.

As for not admitted non-AA candidates, they are not affected by AA cutoff scores, which falls at some point in the lower half of this group score distribution. Above this cutoff, AA candidates are exposed to "UERJ law school treatment", while non-AA are not. Hence, these groups are also not comparable in a differences-in-differences sense.

For this reason, I chose an alternative approach to analyze the quota policy effect on AA beneficiaries (admitted AA candidates). Instead of using the whole range of scores, I decided to narrow it down by selecting all candidates comprised in the range of scores in which admitted AA candidates fall in. By doing so, our sample no longer includes non-AA admitted and not admitted AA, meaning that I can no longer estimate the values of α_1 , α_2 , α_5 and α_6 , due to multicollinearity concerning α_3 and α_7 .

The implications of this sample restriction is twofold. First, both remaining groups of applicants, AA admitted and non-AA not admitted, are distributed throughout the score restriction. Second, I can estimate the difference between these groups as the result of being admitted to UERJ's law school due to the quota policy and not being admitted by using background characteristics controls.

APPENDIX C – Results

C.1 The Boost Effect

Table 8 – The Boost Effect

	OAB Approval Rate								
	1st phase (1)	2nd phase (2)	2nd phase (3)	1st phase (4)	2nd phase (5)	2nd phase (6)	1st phase (7)	2nd phase (8)	2nd phase (9)
AA Candidate (Admitted to UERJ) Score	0.1150*** (0.0201)	0.0767*** (0.0201)	-0.0400*** (0.0154)	0.5284*** (0.1230) 0.0110*** (0.0006)	0.4168*** (0.1232) 0.0111*** (0.0006)	-0.0705 (0.0953) 0.0025*** (0.0006)	0.6482*** (0.1260) 0.0092*** (0.0007)	0.5122*** (0.1264) 0.0094*** (0.0007)	-0.0659 (0.1008) 0.0023*** (0.0006)
Interaction AA x Score				-0.0073*** (0.0025)	-0.0058** (0.0025)	0.0010 (0.0019)	-0.0072*** (0.0025)	-0.0054** (0.0025)	0.0010 (0.0020)
Observations	8,443	8,443	4,550	8,443	8,443	4,550	7,650	7,650	4,114
R-squared	0.0039	0.0017	0.0015	0.0398	0.0385	0.0067	0.0943	0.0904	0.0217
1st phase Sample restriction	N	N	Y	N	N	Y	N	N	Y
FE Vestibular Year	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constrols	N	N	N	N	N	N	Y	Y	Y

Controls: Age, Squared Age, Gender (Male), Father's Education: College Degree, Mother's Education: College Degree, High School Type (Public), High School Classes Turn (dayturn), worked before the age of 18, Family Income ranges in Minimum Wages: less than 3, 3 to 5, 5 to 10, 10 to 20 and 20 to 30.

Standard Errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

C.2 Catching Up Effect

Table 9 – Catching Up Effect

	OAB Approval Rate								
	1st phase (1)	2nd phase (2)	2nd phase (3)	1st phase (4)	2nd phase (5)	2nd phase (6)	1st phase (7)	2nd phase (8)	2nd phase (9)
Displacer	0.0028	-0.0456*	-0.0769***	0.0451	0.0152	-0.0416	0.1514**	0.1343**	-0.0152
Score	(0.0257)	(0.0265)	(0.0201)	(0.0538)	(0.0554)	(0.0411)	(0.0642)	(0.0662)	(0.0505)
				0.0022	0.0031	0.0018	0.0002	0.0014	0.0015
				(0.0024)	(0.0025)	(0.0019)	(0.0025)	(0.0026)	(0.0020)
Observations	1,399	1,399	899	1,399	1,399	899	1,279	1,279	820
R-squared	0.0000	0.0021	0.0162	0.0006	0.0032	0.0173	0.0828	0.0830	0.0434
1st phase Sample restriction	N	N	Y	N	N	Y	N	N	N
FE Vestibular Year	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constrols	N	N	N	N	N	N	Y	Y	Y

Controls: Age, Squared Age, Gender (Male), Father's Education: College Degree, Mother's Education: College Degree, High School Type (Public), High School Classes Turn (dayturn), worked before the age of 18, Family Income ranges in Minimum Wages: less than 3, 3 to 5, 5 to 10, 10 to 20 and 20 to 30.

Standard Errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

C.3 Diploma Effect

Figure 5 – Diploma Effect for Non-AA Candidates

Figure 6 – Diploma Effect for Self-declared Black Candidates

Figure 7 – Diploma Effect for Public School Candidates

APPENDIX D – Diploma Effects: bandwidth, polynomial and bin variations

Table 10 – Discontinuity in OAB Passage Rate – Bandwidth = 2

Panel A: Non-Quota Candidates												
	1st phase				2nd phase				2nd phase (restricted)			
Polynomial Order	1	2	3	4	1	2	3	4	1	2	3	4
Coefficient	0.04	-0.08	0.17	0.44	0.01	-0.06	0.26	0.49	-0.03	0.03	0.16	0.11
P-Value												
Obs (left of cutoff)	282	282	282	282	282	282	282	282	186	186	186	186
Obs (right of cutoff)	216	216	216	216	216	216	216	216	158	158	158	158

Panel B: Self-declared Black												
	1st phase				2nd phase				2nd phase (restricted)			
Polynomial Order	1	2	3	4	1	2	3	4	1	2	3	4
Coefficient	-0.16	-0.05	0	0.58	-0.15	-0.31	-0.23	1.14	-0.17	-0.73	-0.1	1.6
P-Value												
Obs (left of cutoff)	31	31	31	31	31	31	31	31	9	9	9	9
Obs (right of cutoff)	34	34	34	34	34	34	34	34	16	16	16	16

Panel C: Public School Students												
	1st phase				2nd phase				2nd phase (restricted)			
Polynomial Order	1	2	3	4	1	2	3	4	1	2	3	4
Coefficient	0.68	1.02	0.6	-0.02	0.52	0.96	0.42	0.11	-0.51	1.22	-4.56	14.89
P-Value	***	***			**	**						
Obs (left of cutoff)	29	29	29	29	29	29	29	29	9	9	9	9
Obs (right of cutoff)	56	56	56	56	56	56	56	56	37	37	37	37

*** p<0.01, ** p<0.05, * p<0.1

Table 11 – Discontinuity in OAB Passage Rate – Bandwidth = 3

Panel A: Non-Quota Candidates												
	1st phase				2nd phase				2nd phase (restricted)			
	1	2	3	4	1	2	3	4	1	2	3	4
Polynomial Order												
Coefficient	0.06	0.02	-0.08	-0.05	0.03	0.01	-0.08	0.09	-0.04	-0.02	0	0.19
P-Value												
Obs (left of cutoff)	454	454	454	454	454	454	454	454	300	300	300	300
Obs (right of cutoff)	335	335	335	335	335	335	335	335	251	251	251	251

Panel B: Self-declared Black												
	1st phase				2nd phase				2nd phase (restricted)			
	1	2	3	4	1	2	3	4	1	2	3	4
Polynomial Order												
Coefficient	-0.07	-0.22	-0.06	0.24	-0.02	-0.25	-0.36	-0.16	0.06	-0.4	-0.88	-0.47
P-Value												
Obs (left of cutoff)	50	50	50	50	50	50	50	50	12	12	12	12
Obs (right of cutoff)	60	60	60	60	60	60	60	60	30	30	30	30

Panel C: Public School Students												
	1st phase				2nd phase				2nd phase (restricted)			
	1	2	3	4	1	2	3	4	1	2	3	4
Polynomial Order												
Coefficient	0.44	0.84	1.12	0.84	0.32	0.68	1.05	0.85	-0.29	-0.8	1.69	4.02
P-Value	**	***	***		*	**	**					
Obs (left of cutoff)	46	46	46	46	46	46	46	46	12	12	12	12
Obs (right of cutoff)	85	85	85	85	85	85	85	85	58	58	58	58

*** p<0.01, ** p<0.05, * p<0.1

Table 12 – Discontinuity in OAB Passage Rate – Bandwidth = 4

Panel A: Non-Quota Candidates												
	1st phase				2nd phase				2nd phase (restricted)			
	1	2	3	4	1	2	3	4	1	2	3	4
Polynomial Order												
Coefficient	0.06	0.05	0	-0.11	0.02	0.02	0	-0.11	-0.04	-0.04	0	-0.01
P-Value												
Obs (left of cutoff)	654	654	654	654	654	654	654	654	423	423	423	423
Obs (right of cutoff)	467	467	467	467	467	467	467	467	344	344	344	344

Panel B: Self-declared Black												
	1st phase				2nd phase				2nd phase (restricted)			
	1	2	3	4	1	2	3	4	1	2	3	4
Polynomial Order												
Coefficient	-0.04	-0.16	-0.23	0.04	-0.01	-0.13	-0.36	-0.33	0.07	-0.28	-0.75	-0.9
P-Value												
Obs (left of cutoff)	59	59	59	59	59	59	59	59	13	13	13	13
Obs (right of cutoff)	89	89	89	89	89	89	89	89	52	52	52	52

Panel C: Public School Students												
	1st phase				2nd phase				2nd phase (restricted)			
	1	2	3	4	1	2	3	4	1	2	3	4
Polynomial Order												
Coefficient	0.4	0.58	1	1.21	0.3	0.44	0.84	1.17	-0.19	-0.45	-1.15	3.17
P-Value	**	**	***	**	*	*	**	**				
Obs (left of cutoff)	60	60	60	60	60	60	60	60	16	16	16	16
Obs (right of cutoff)	103	103	103	103	103	103	103	103	71	71	71	71

*** p<0.01, ** p<0.05, * p<0.1

Table 13 – Discontinuity in OAB Passage Rate – Bandwidth = 5

Panel A: Non-Quota Candidates												
	1st phase				2nd phase				2nd phase (restricted)			
Polynomial Order	1	2	3	4	1	2	3	4	1	2	3	4
Coefficient	0.06	0.06	0.04	-0.04	0.03	0.02	0.02	-0.03	-0.04	-0.05	-0.02	0.01
P-Value												
Obs (left of cutoff)	853	853	853	853	853	853	853	853	548	548	548	548
Obs (right of cutoff)	572	572	572	572	572	572	572	572	429	429	429	429

Panel B: Self-declared Black												
	1st phase				2nd phase				2nd phase (restricted)			
Polynomial Order	1	2	3	4	1	2	3	4	1	2	3	4
Coefficient	0.06	-0.17	-0.18	-0.16	0.05	-0.09	-0.21	-0.41	0.03	0.08	-0.4	-0.89
P-Value												
Obs (left of cutoff)	86	86	86	86	86	86	86	86	23	23	23	23
Obs (right of cutoff)	104	104	104	104	104	104	104	104	61	61	61	61

Panel C: Public School Students												
	1st phase				2nd phase				2nd phase (restricted)			
Polynomial Order	1	2	3	4	1	2	3	4	1	2	3	4
Coefficient	0.38	0.48	0.77	1.12	0.29	0.36	0.63	0.98	-0.14	-0.4	-0.59	-0.94
P-Value	***	**	**	***	*		**	**				
Obs (left of cutoff)	78	78	78	78	78	78	78	78	21	21	21	21
Obs (right of cutoff)	123	123	123	123	123	123	123	123	88	88	88	88

*** p<0.01, ** p<0.05, * p<0.1

Figure 8 – Bin Variation - OAB 1st Phase for Non-AA Candidates

Figure 9 – Bin Variation - OAB 2nd Phase for Non-AA Candidates

Figure 10 – Bin Variation - OAB 1st Phase for Self-declared Black Candidates

Figure 11 – Bin Variation - OAB 2nd Phase for Self-declared Black Candidates

Figure 12 – Bin Variation - OAB 1st Phase for Public School Quota Candidates

Figure 13 – Bin Variation - OAB 2nd Phase for Public School Quota Candidates

APPENDIX E – Robustness Exercises and Tests

E.1 Separating quota types

Table 14 – The Boost Effect - Separating quota types

	OAB Approval Rate								
	1st phase (1)	2nd phase (2)	2nd phase (3)	1st phase (4)	2nd phase (5)	2nd phase (6)	1st phase (7)	2nd phase (8)	2nd phase (9)
AA Candidate - Racial Quotas (Admitted to UERJ)	0.1138*** (0.0283)	0.0660** (0.0284)	-0.0535** (0.0217)	0.3142* (0.1741)	0.2062 (0.1744)	-0.1158 (0.1373)	0.4165** (0.1800)	0.2835 (0.1806)	-0.1110 (0.1473)
AA Candidate - Public School (Admitted to UERJ)	0.1160*** (0.0273)	0.0865*** (0.0273)	-0.0275 (0.0209)	0.7227*** (0.1690)	0.6160*** (0.1693)	-0.0272 (0.1269)	0.8809*** (0.1713)	0.7460*** (0.1718)	-0.0265 (0.1318)
Score				0.0110*** (0.0006)	0.0111*** (0.0006)	0.0025*** (0.0006)	0.0092*** (0.0007)	0.0093*** (0.0007)	0.0023*** (0.0006)
Interaction				-0.0028 (0.0036)	-0.0016 (0.0036)	0.0016 (0.0028)	-0.0029 (0.0037)	-0.0012 (0.0037)	0.0018 (0.0030)
Racial AA x Score				-0.0113*** (0.0034)	-0.0097*** (0.0034)	0.0003 (0.0025)	-0.0114*** (0.0034)	-0.0095*** (0.0034)	0.0004 (0.0026)
Observations	8,443	8,443	4,550	8,443	8,443	4,550	7,650	7,650	4,114
R-squared	0.0039	0.0018	0.0017	0.0401	0.0388	0.0069	0.0948	0.0909	0.0218
1st phase Sample restriction	N	N	Y	N	N	Y	N	N	Y
FE Vestibular Year	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constrols	N	N	N	N	N	N	Y	Y	Y

Controls: Age, Squared Age, Gender (Male), Father's Education: College Degree, Mother's Education: College Degree, High School Type (Public), High School Classes Turn (dayturn), worked before the age of 18, Family Income ranges in Minimum Wages: less than 3, 3 to 5, 5 to 10, 10 to 20 and 20 to 30.

Standard Errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Table 15 – The Catching Up Effect - Separating quota types

	OAB Approval Rate								
	1st phase (1)	2nd phase (2)	2nd phase (3)	1st phase (4)	2nd phase (5)	2nd phase (6)	1st phase (7)	2nd phase (8)	2nd phase (9)
Racial Quota	-0.0004	-0.0572*	-0.0893***	0.0433	0.0037	-0.0548	0.1168*	0.1030	-0.0141
Displacer	(0.0319)	(0.0329)	(0.0249)	(0.0591)	(0.0608)	(0.0445)	(0.0669)	(0.0690)	(0.0522)
Public School Quota	0.0059	-0.0346	-0.0653***	0.0460	0.0213	-0.0324	0.1949***	0.1737**	-0.0171
Displacer	(0.0313)	(0.0323)	(0.0244)	(0.0553)	(0.0570)	(0.0428)	(0.0684)	(0.0706)	(0.0552)
Score				0.0022	0.0030	0.0017	-0.0003	0.0008	0.0015
				(0.0024)	(0.0025)	(0.0019)	(0.0025)	(0.0026)	(0.0020)
Observations	1,399	1,399	899	1,399	1,399	899	1,279	1,279	820
R-squared	0.0000	0.0024	0.0170	0.0006	0.0034	0.0179	0.0852	0.0849	0.0434
1st phase Sample restriction	N	N	Y	N	N	Y	N	N	Y
FE Vestibular Year	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constrols	N	N	N	N	N	N	Y	Y	Y

Controls: Age, Squared Age, Gender (Male), Father's Education: College Degree, Mother's Education: College Degree, High School Type (Public), High School Classes Turn (dayturn), worked before the age of 18, Family Income ranges in Minimum Wages: less than 3, 3 to 5, 5 to 10, 10 to 20 and 20 to 30.

Standard Errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

E.2 Diploma Effect - McCrary Density Test

Figure 14 – Density difference coefficients - Non-Quota Candidates

Figure 15 – Density difference coefficients - Racial Candidates

Figure 16 – Density difference coefficients - Public School Candidates

Figure 17 – Density difference coefficients - Quota Candidates Pooled

E.3 Diploma Effect - Placebo Cutoff Test

Figure 18 – Placebo Cutoff Scores Test - Non-Quota Candidates

Figure 19 – Placebo Cutoff Scores Test - Racial Candidates

Figure 20 – Placebo Cutoff Scores Test - Public School Candidates