



# Affirmative Action Outcomes - Evidence from a Law School in Brazil

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**Keywords:** affirmative action; higher education; policy evaluation

**JEL Codes:** I28; I38; J78

# Affirmative Action Outcomes: Evidence from a Law School in Brazil

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## 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 college affirmative action policy enables AA candidates 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 a large university in Rio de Janeiro, the first in Brazil to adopt the quota system for both black and public school students. This dataset is combined 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 33 p.p., even though they underperform by 7.68 p.p when compared to displaced candidates. I also present evidence that displaced candidates do not experience any drop on their OAB exam passage rates due to the policy. Furthermore, I find that public school quota beneficiaries who score close to the admittance cutoff score 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

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# 1 Introduction

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 college affirmative action policy enables AA candidates to obtain a career in Law and to catch up with candidates who did not get admitted due to the policy (i.e., displaced candidates). To do so, I use a new dataset from a large university in Rio de Janeiro, the first in Brazil to adopt a quota system for both black and public school students. This dataset is combined with the list of successful candidates at OAB exam, equivalent to the American Bar exam. Preliminary results suggest that the quota policy improves OAB success rates for beneficiaries. I find that lawyer certification for underprivileged students increases by 33 p.p., even though they underperform by 7.68 p.p when compared to displaced candidates. I also present evidence that displaced candidates do not experience any drop on their OAB exam success rates due to the policy. Furthermore, I find that public school quota beneficiaries who score close to the admittance cutoff score present an increase in the probability of passing the OAB exam by up to 52 p.p.. These results suggest that affirmative action policies can improve equality of opportunities without imposing a large efficiency loss.

Public education in Brazil is known to be, on average, of very low quality. This is true especially when compared to many of the available private schools. Since private schools charge tuition fees, students from low-income families can only attend public schools. Public universities, on the contrary, offer high quality education and are highly selective<sup>1</sup>, as admission is based on a competitive entrance exam covering high school material. As a consequence, students from public high schools can hardly compete with students from private high schools and, therefore, have a much lower chance of being admitted to a public university.

Recently, many policies have been implemented in Brazil as an attempt to level the playing field. In 2002 one of the first Brazilian affirmative action (AA) policies for higher education was created and implemented in UERJ, a large public university in Rio de Janeiro. The policy determined quotas for students from low-income families in specific categories, such as self-declared black (20% of offered seats in each course), public school students (20%) and other minorities (5%). Since then, other universities in the country have designed and adopted AA policies of their own. As a controversial policy, AA implementation is always accompanied by much debate. Questions of whether the policy does more harm than good can be raised from both targeted and non-targeted students points of view. To answer these questions, reason and debate are not enough, as suggested in Fryer & Loury (2005), and empirical evidence is needed.

A major concern of affirmative action policies is whether students admitted under a lower standard (i.e., policy beneficiaries) are able to catch up with those admitted under

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<sup>1</sup>Binelli et al (2008) present evidence for the shift in quality patterns for public and private schools in relation to public and private universities.

regular requirements. This is potentially an issue 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 for this dissertation. Since the quota was relatively large, there is a big difference in admission scores between beneficiaries and non-beneficiaries of UERJ's affirmative action policy. The great majority of AA applicants would not be admitted without the policy. According to our data, only 2% of AA admitted candidates scored above the regular cutoff.

This dissertation investigates the extent to which UERJ's affirmative action policy helps underprivileged law students obtain professional certification in comparison to candidates who are similar to them but were not eligible to the policy, and those who would have been admitted had the policy not existed. I focus on law school candidates, since they have to take a standard national exam after graduation to become lawyers, the OAB exam<sup>2</sup>. 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.

There is extensive literature on AA policies for higher education in Brazil. Assunção & Ferman (2015) use a difference-in-difference approach on the quota policy for pioneer universities in Brazil to evaluate effort incentives that result from the policy. Their findings indicate that, after the policy took place, black students performance dropped in Rio de Janeiro.

Francis & Tannuri-Pianto (2012) find that the racial quota policy was able to increase color and socioeconomic diversity in another major Brazilian university, UNB. They report that candidates who would have been admitted if the policy did not exist (displaced candidates) were admitted to other higher education institutions of comparable quality. They also estimate that displaced candidates would perform better than AA at UNB, if they had been granted admission. Menezes-Filho et al (2016) find that the quota policy for Brazilian federal universities does not have significant effects on the average admission score of admitted students. Estevan et al (2016) investigate a non quota AA policy at UNICAMP, another Brazilian university, and find that the policy increases the probability of public school students being admitted.

Mendes et al (2016) 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

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<sup>2</sup>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.

more advantageous background than AA admitted candidates, suggesting that the policy increases social diversity at university.

Difficulties in estimating the effects of AA policies at higher education level are generally related either to the lack of a clean cutoff in college admission or to unavailability of follow up data. USA 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 admittance process prevents a clear identification of students admitted due to affirmative action policies. Developing countries, like India and Brazil, are more likely to suffer from the second case. Both countries have college admission processes based on admission test score, but generally fail in keeping longitudinal records that allows tracking students after college.

In Brazil, the majority of the literature relies on ENADE's results<sup>3</sup>, a national exam applied to students of every major at their graduation year. Although registering and showing up for the exam is mandatory, there is no performance threshold to pass the exam. Additionally, the exam takes place at the very end of the graduation term, when students are more worried about passing their last college exams and turning in graduation thesis. These factors combined lead to high incidence of students' low effort at the exam, compromising ENADE as a good measure of college education.

Bertrand et al (2010) evaluated 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 was successful in distributing resources to relatively disadvantaged families. However, difficulties in tracking down candidates for the follow up survey may result in measure error for their estimates. In the US, Rothstein & Yoon (2008) use common knowledge on admission cutoff scores at the LSAT exam and college GPA for each university law school as a proxy for the regular cutoff score. 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 without AA policy, in which they find that it allows for the pool of black lawyers to increase. This approach allows them to identify only probable AA admitted students, which could lead to biased results.

This paper takes advantage of the fact that the AA policy was adopted at a prominent law school in Brazil, for which the admission process relies on a single score, and that OAB is a high-stakes exam for law students. I do not evaluate performance during law school education in this paper, treating it as a "black box". This evaluation concerns only the performance and candidate background characteristics that can be observed before entering law school and after its conclusion.

Thus, this paper contributes to the literature by providing evidence on the impact of

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<sup>3</sup>Waltenberg & Carvalho (2012) find that self-declared black quota students present lower scores on ENADE than others. Bittencourt et al (2015) used a differences-in-differences approach and found 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.

affirmative action policies on later outcomes. Consistent with the literature, a persistent gap between beneficiaries and displaced candidates 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 reported for AA students indicates that this affirmative action policy has a huge impact on beneficiaries.

The results presented here indicate that the policy has a strong positive effect on beneficiaries success rate at OAB exam, without diminishing displaced candidates success rate. According to my estimates, AA candidates admitted to UERJ experience a 33 percentage point increase in the probability of becoming an accredited lawyer. However, they still underperform displaced candidates at the OAB exam by 7.68 percentage points.

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 specific institution where they attend law school. Public School quota beneficiaries, on the other hand, present a significant difference at the cutoff score point, indicating that the policy increased their chances of passing OAB by up to 52 percentage points.

The dissertation is organized as follows: section 2 describes UERJ's admission process and quota policy, section 3 describes the OAB exam, section 4 and 5 details the data and empirical strategies used, section 6 presents the results and section 7 concludes.

## 2 UERJ - Quota Policy and Admission

In 2002, the State of Rio de Janeiro created the first Brazilian law that instated affirmative action for higher education. 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 law<sup>4</sup>, effective as of the 2003 admission process<sup>5</sup>. It remained the only university in Rio de Janeiro State to follow a quota policy in its admission system until 2011, when federal universities started to implement their own quota policy.

Rio de Janeiro State law 4151/2003 dictates that 20% of seats offered to each course are reserved to self-declared black students, 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 admittance process autonomy.

Brazilian universities admittance process 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 admittance, and no other criteria other than the test scores are considered. At the period analyzed, most universities held their own *Vestibular*, so candidates would have to apply and take separate exams for each

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<sup>4</sup>Two other state universities were also subjected to the AA law, however, they are both directed to rural and specific technical activities. None of them offer law education.

<sup>5</sup>More details on how the policy began can be found on Assunção & Ferman (2015).

institution of interest. This allowed top-scoring candidates to be offered a seat at more than one institution at the same *Vestibular* year.

Specifically, UERJ’s admittance 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”. Only candidates who answer more than 40% of the qualification test questions right 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, which will determine their test specific subjects (for example, candidates applying to law school take history and language as specific tests). Additionally, at the second round, all candidates have to write an argumentative essay. The final score is a combination of the second round scores and bonus points from the qualification round.<sup>6</sup>

### 3 OAB Exam

In Brazil, the requirements to become a lawyer (i.e, be able to practice law) consists of having a degree in law and passing the OAB Exam. Only graduated candidates and students about to graduate (5th year of law school) are allowed to take the exam<sup>7</sup>.

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 petition<sup>8</sup>, both specific to the legal area chosen by the candidate. The exam takes place 2 to 4 times per year, and candidates can retake it as many times necessary to pass the second phase.

### 4 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 Exam<sup>9</sup>. 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

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<sup>6</sup>A minimum of 70% of questions answered right grants a 20 point bonus, between 60 and 70% gives a 15 points bonus, and so on. The least bonus value is 5 points, given 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.

<sup>7</sup>Students who pass the exam but fail to graduate at law school, for any reason, are not granted the lawyer certification.

<sup>8</sup>Document used in lawsuits or judicial procedures in general.

<sup>9</sup>The OAB Exam is the Brazilian equivalent to the American BAR Exam. Passing this exam is a requirement to become a lawyer



from both admitted and non-admitted applicants for the university's Law School from 1997 to 2001 and 2003 to 2010<sup>10</sup>, with a total of 25,698 observations. This dataset lists applicants by name and contains their scores in each subject of UERJ admittance 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 others<sup>11</sup>. 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. These lists are available to public consultation on the Exam website<sup>12</sup>. I selected this period in order to match the time of graduation and OAB examination for law students 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 candidates, it was also the key used to combine the two datasets, identifying subjects who applied to UERJ Law School and later on passed the OAB Exam<sup>13</sup>.

Tables 3 and 4 describes some main features of UERJ's admittance process, by year, after its conclusion, and some data regarding admittance test scores and graduation of those who were admitted. From Table 3 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 4.

Other discrepancies between admittance test scores of non-AA and AA admitted candidates are displayed in Table 4 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

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<sup>10</sup>UERJ's admission office did not provide the vestibular data for the year of 2002.

<sup>11</sup>Table 2, in the appendix, presents all available variables in UERJ's dataset by year.

<sup>12</sup><http://oab.fgv.br/>

<sup>13</sup>No homonyms were found within the pool of UERJ Law School applicants.

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 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 in the first phase and 13p.p. in 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 on 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 and 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 database contains 12,906 observations over 5 years, including admitted and non-admitted candidates that applied as non-AA, 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 3). Candidates who applied to UERJ Law School for two or more years were also dropped from the sample.

## 5 Empirical Strategy

To identify the quota policy effects on UERJ 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 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 enrollment of UERJ’s not admitted, 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.

### 5.1 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 score 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 as controls in our regressions, which 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 law school due to their eligibility for the quota policy, which lowered the cutoff score only for this group.

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:<sup>14</sup>

$$\begin{aligned}
 OAB_i = & \beta_0 + \beta_1(AA_i \times Admitted_i) + \beta_2 Score_i \\
 & + \beta_3(AA_i \times Admitted_i \times Score_i) + \phi X_i + \varepsilon_i
 \end{aligned}
 \tag{1}$$

The  $(AA_i \times Admitted_i)$  variable is an indicator for individuals  $i$  that applied to UERJ 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  $\beta_1$  plus the product of  $\beta_3$  and the score value.

## 5.2 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 (henceforth, displaced) presents higher patterns of income and parents education, in addition to attending private schools their whole lives.<sup>15</sup> 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 law school in the absence of the quota policy<sup>16</sup>. 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 likely offered a seat in at least one other prestigious law school in Rio de Janeiro<sup>17</sup>, suggesting that the policy would have little, if any, effect on their chances of passing the OAB exam.

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<sup>14</sup>Appendix B presents a detailed explanation for using this model instead of a traditional Differences-in-Differences model.

<sup>15</sup>Table 7 displays evidence of such differences between displaced and displacer candidates

<sup>16</sup>We used the number of AA admitted candidates to determine how far down in the general ranking non-AA candidates would be admitted.

<sup>17</sup>For the year of 2010, I was able to gather information from the first draw of UFRJ and UFF, two prestigious law schools in Rio de Janeiro, and found that 72 from the 140 displaced candidates in that year were offered a seat in at least one of the two institutions.

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 characteristics vector  $X_i$ :

$$OAB_i = \alpha_0 + \alpha_1(AA_i \times Admitted_i) + \gamma X_i + \epsilon_i \quad (2)$$

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  $\alpha_1$  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. Similarly, a negative value means that the policy does not fill completely the existing gap between displacer and displaced candidates.

### 5.3 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 regression discontinuity design allows me to identify UERJ law school diploma effect, separately for AA and non-AA candidates, by using the cutoff score as an exogenous 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 lower score side of the (non-AA) cutoff as opposed to the higher side, thus, the effect of the policy on displaced candidates. In contrast, for AA candidates, the policy impacted the higher score side of the (AA) cutoff, so the lower 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.

The regression used in this exercise follows the regression discontinuity design (RDD) standard as suggested in Imbens & Lemieux (2010). I use the admission test score ( $Score_i$ ) as running variable, and investigate the existence of a discontinuity in OAB passage rates on the AA cutoff score point for AA candidates, and on the non-AA cutoff score point for non-AA candidates. The cutoff score was adjusted to zero in each year for both AA and non-AA pool of candidates, in order to enable pooling the available data.

$$OAB_i = \delta + \psi 1\{Score_i > 0\} + \varphi Score_i + \phi Score_i 1\{Score_i > 0\} + \xi_i \quad (3)$$

Parameters  $\psi$  and  $\phi$  determine any difference in level and slope, respectively, for OAB exam rate of passage regarding candidates that scored above cutoff in contrast to those scoring below cutoff.

## 6 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”.

### 6.1 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 8.9 p.p. and a 5.4 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: 34.4 p.p. on the first phase, 26.3 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, -0.4 and -0.3 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 (21 p.p.), decreasing as the score value increase (5 p.p.).

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 presented in columns (4) to (6) is maintained on (7) to (9). Although none of the coefficients related to the interaction are statistically significant, the “AA Admitted” coefficient increases in magnitude to 44.6 p.p. on the first phase, 33.6 p.p. on the second, and -7 for second phase with sample restriction, when controls are added to the model.

## 6.2 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.

Our 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 2.17 p.p. lower than displaced ones, but not significant. Columns (2) and (3) display a 6.66 p.p. lower passing rate for AA admitted candidates at the second phase and even lower, 7.68p.p., when the sample is restricted to the first phase. These results confirm that the policy is not enough to fill gap presented at the admission test scores, as it indicates 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 8 p.p. at the first phase and 4.6 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.

### 6.3 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 admittance 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.



## 7 Conclusion

Our analysis suggest that UERJ's affirmative action gives opportunities to those who otherwise would not have it, without diminishing the chances of success for others.

Critics of AA policies in higher education emphasize the displacing of candidates that would mean a more cost-efficient allocation of university spots. I.e, candidates who would have a higher chance of graduating. However, I find graduation rates for AA and non-AA students to be very similar.

The policy presents a strong positive effect on the chances of AA law students passing their lawyer certification exam, applied uniquely by OAB, an independent institution. Specifically for public school quota students, I find an increase in passage chances up to 68 p.p., and no evidence of decreasing chances for candidates that were not admitted due to the policy.

This study contributes to the literature on affirmative action by exploring the policy in a context of 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 - the law school of a single university in Brazil -, it allows to create a clearer image of affirmative action outcomes by more than one perspective.

Fryer & Loury (2005) list 7 mythologies concerning affirmative action, and try to use economic reasoning and research available at the time to demystify each one of them. They acknowledge the lack of empirical evidence for many of these matters as a difficulty. This dissertation addresses the statements made for 2 of those myths. In the "Many Non minority Citizens are Directly Affected by Affirmative Action" section, the authors state that society overestimates the cost for non beneficiaries. Our results indicate that, for those who are directly affected by the policy (displaced candidates), the estimated cost appears to be inexistent. As for "Affirmative Action Always Helps its Beneficiaries", contrary to what the paper states, we find that the policy has a strong positive effect on lawyer certification for AA beneficiaries.

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## Appendix

### A Data

Table 1: Descriptive Statistics

Admitted Placing Category	No			Yes		
	Non-AA	Black	Public School	Non-AA	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 Passage	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 Passage	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: 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
Owens 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

Table 3: 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 Affirmative Action	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 Affirmative Action	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 Affirmative Action	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 Affirmative Action	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 Affirmative Action	2556	190	153 (80%)	42	5.67	0.47

Table 4: 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 Affirmative Action	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 Affirmative Action	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 Affirmative Action	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 Affirmative Action	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 Affirmative Action	70.25	88.50	75.83	3.61

Figure 1

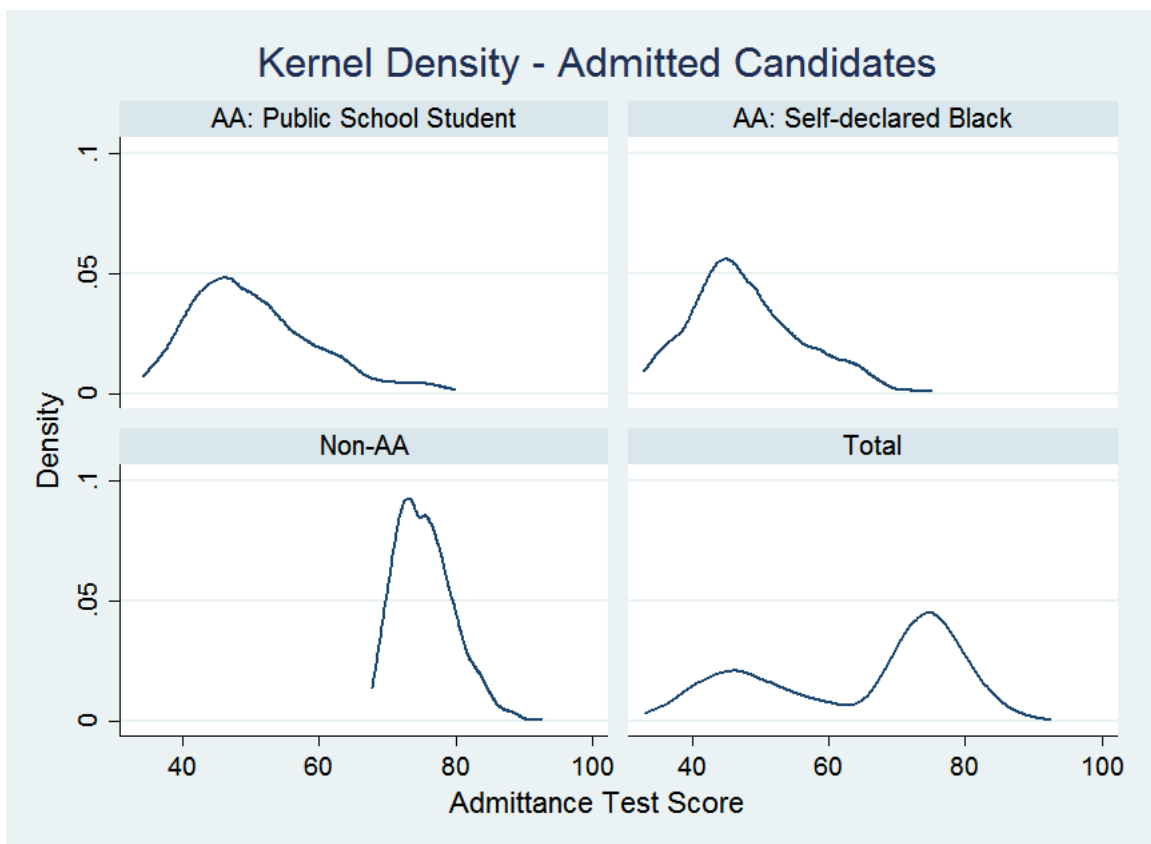


Table 5: OAB passage Rate for UERJ's Applicants and Mean Difference between AA and Non-AA

Panel A: Non-Admitted Applicants														
Admission Year	OAB - Phase 1					OAB - Phase 2					OAB - Phase 2 conditional on Phase 1			
	Mean Non-AA	Mean Black	Difference	Public School		Mean Non-AA	Mean Black	Difference	Public School		Mean Non-AA	Mean 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-AA	Mean Black	Difference	Public School		Mean Non-AA	Mean Black	Difference	Public School		Mean Non-AA	Mean 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-AA and Self-declared Black candidates and between Non-AA and Public School System candidates:

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

Number of observations in parentheses.



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

	Non-AA Applicants	AA 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

Figure 2

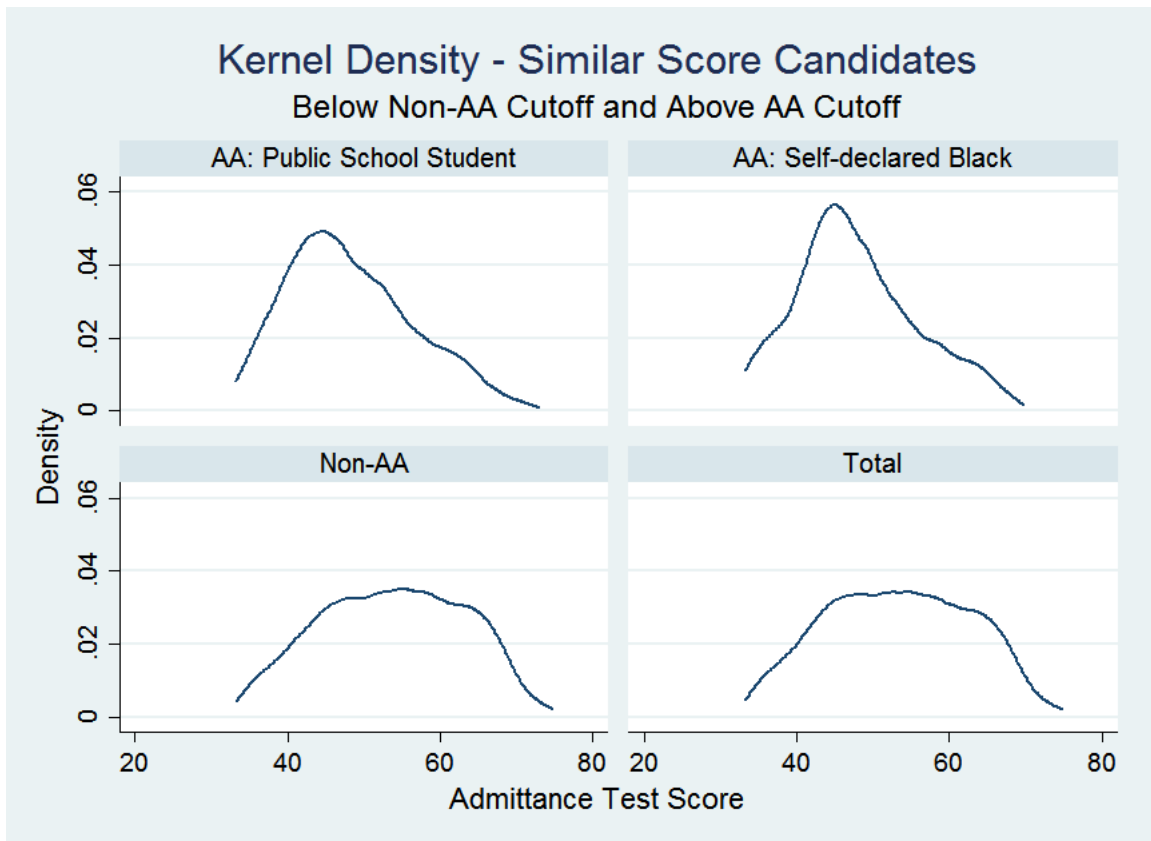


Figure 3

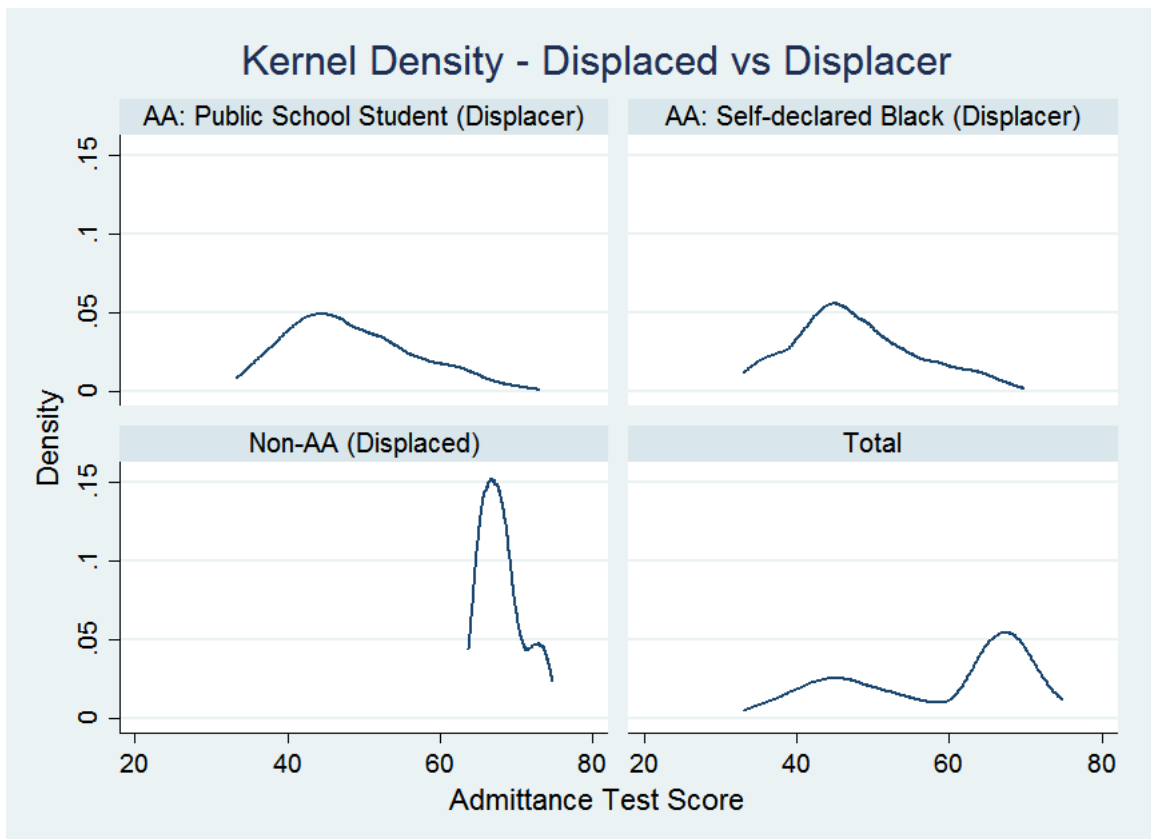


Table 7: Mean Difference: Displaced vs Displacer

	Non-AA (Displaced)	AA (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

## 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:

$$\begin{aligned} OAB_i = & \alpha_0 + \alpha_1 AA_i + \alpha_2 Admitted_i + \alpha_3 AA_i \times Admitted_i + \alpha_4 Score_i \\ & + \alpha_5 (AA_i \times Score_i) + \alpha_6 (Admitted_i \times Score_i) \\ & + \alpha_7 (AA_i \times Admitted_i \times Score_i) + \phi X_i + \varepsilon_i \end{aligned} \quad (4)$$

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  $Admitted_i = 0$ ):

$$[\alpha_0] + [\alpha_4] \times Score_i \quad (5)$$

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

$$[\alpha_0 + \alpha_1] + [\alpha_4 + \alpha_5] \times Score_i \quad (6)$$

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

$$[\alpha_0 + \alpha_2] + [\alpha_4 + \alpha_6] \times Score_i \quad (7)$$

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

$$[\alpha_0 + \alpha_1 + \alpha_2 + \alpha_3] + [\alpha_4 + \alpha_5 + \alpha_6 + \alpha_7] \times Score_i \quad (8)$$

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

$$\alpha_0 \geq 0 \tag{9}$$

$$\alpha_4 > 0, \quad \alpha_4 + \alpha_5 > 0, \quad \alpha_4 + \alpha_6 > 0, \quad \alpha_4 + \alpha_5 + \alpha_6 + \alpha_7 > 0 \tag{10}$$

From (i) and (ii):

$$\alpha_0 > \alpha_0 + \alpha_1 \quad \Rightarrow \quad \alpha_1 < 0 \tag{11}$$

$$\alpha_4 > \alpha_4 + \alpha_5 \quad \Rightarrow \quad \alpha_5 < 0 \tag{12}$$

From (i) and (iii):

$$\alpha_0 + \alpha_2 > \alpha_0 \quad \Rightarrow \quad \alpha_2 > 0 \tag{13}$$

$$\alpha_4 > \alpha_4 + \alpha_6 \quad \Rightarrow \quad \alpha_6 < 0 \tag{14}$$

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

$$\alpha_0 + \alpha_1 < \alpha_0 + \alpha_1 + \alpha_2 + \alpha_3 \quad \Rightarrow \quad \alpha_3 > -\alpha_2 \tag{15}$$

$$\alpha_0 + \alpha_2 > \alpha_0 + \alpha_1 + \alpha_2 + \alpha_3 \quad \Rightarrow \quad \alpha_3 < -\alpha_1 \tag{16}$$

Since  $\alpha_1 < 0$ , we can rewrite equations (15) and (16) as

$$-\alpha_2 < \alpha_3 < |\alpha_1| \tag{17}$$

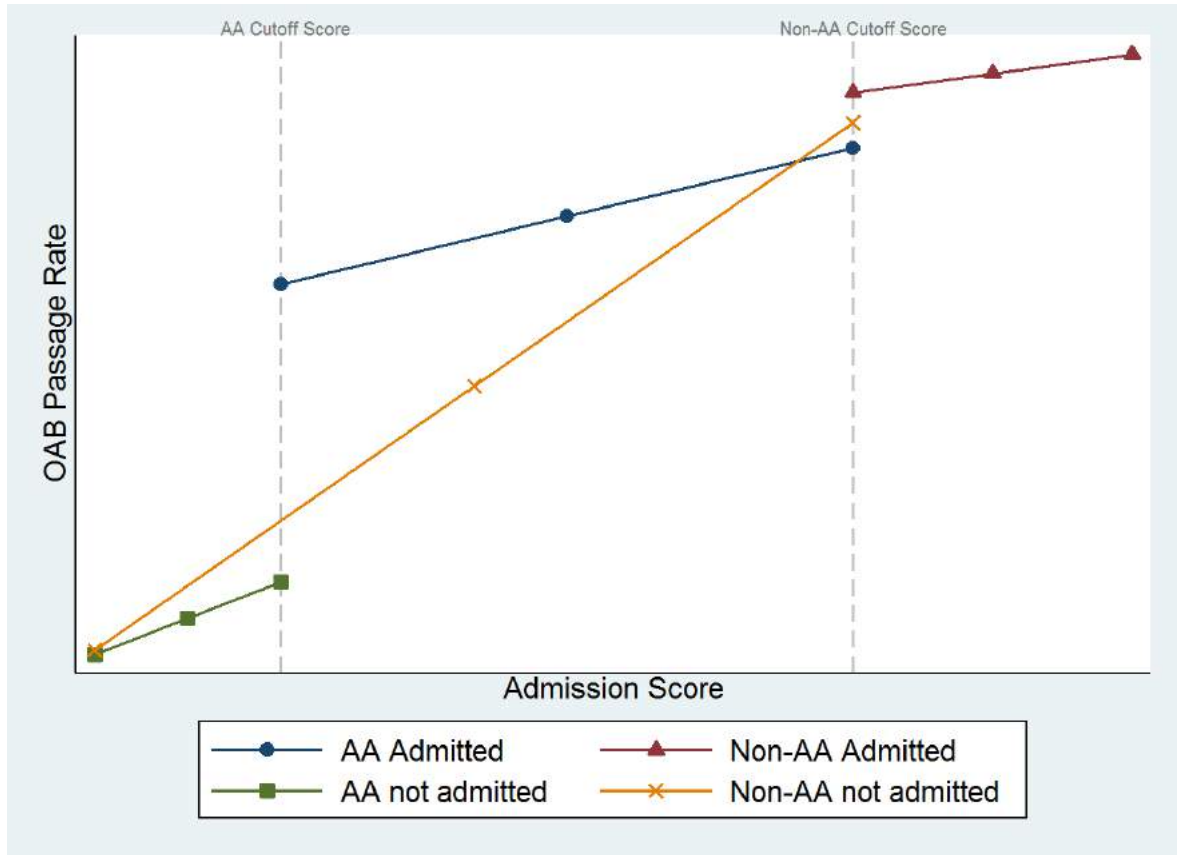
Lastly, from (i) and (iv)

$$\alpha_4 > \alpha_4 + \alpha_5 + \alpha_6 + \alpha_7 > 0 \tag{18}$$

Which can be rearranged into

$$-\alpha_4 + |\alpha_5 + \alpha_6| < \alpha_7 < |\alpha_5 + \alpha_6| \tag{19}$$

Figure 4



Considering that admission test scores range between 20 and 100 and the minimum AA and non-AA cutoff scores from 2006 and 2010<sup>18</sup>, 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 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

<sup>18</sup>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.

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  $\alpha_1$ ,  $\alpha_2$ ,  $\alpha_5$  and  $\alpha_6$ , due to multicollinearity concerning  $\alpha_3$  and  $\alpha_7$ .

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.

## **C Results**

## C.1 The Boost Effect

Table 8: The Boost Effect

	OAB Passage 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	0.0896*** (0.0194)	0.0547*** (0.0194)	-0.0401*** (0.0152)	0.3440*** (0.1146)	0.2630** (0.1147)	-0.0686 (0.0921)	0.4465*** (0.1179)	0.3362*** (0.1182)	-0.0712 (0.0980)
Interaction AA x Score				0.0110*** (0.0006)	0.0111*** (0.0006)	0.0025*** (0.0006)	0.0092*** (0.0007)	0.0094*** (0.0007)	0.0023*** (0.0006)
				-0.0040* (0.0023)	-0.0030 (0.0023)	0.0009 (0.0018)	-0.0035 (0.0024)	-0.0022 (0.0024)	0.0011 (0.0019)
Observations	8,495	8,495	4,565	8,495	8,495	4,565	7,696	7,696	4,126
R-squared	0.0025	0.0009	0.0015	0.0388	0.0381	0.0068	0.0916	0.0887	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
Controls	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: Catch Up Effect

	OAB Passage 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 (AA admitted candidate) Score	-0.0217 (0.0253)	-0.0666** (0.0260)	-0.0768*** (0.0199)	0.0835 (0.0532)	0.0465 (0.0545)	-0.0426 (0.0409)	0.1881*** (0.0639)	0.1646** (0.0655)	-0.0167 (0.0503)
				0.0052** (0.0023)	0.0056** (0.0024)	0.0017 (0.0018)	0.0039 (0.0024)	0.0046* (0.0025)	0.0016 (0.0019)
Observations	1,451	1,451	914	1,451	1,451	914	1,325	1,325	832
R-squared	0.0005	0.0045	0.0161	0.0040	0.0083	0.0171	0.0730	0.0770	0.0400
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
Controls	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

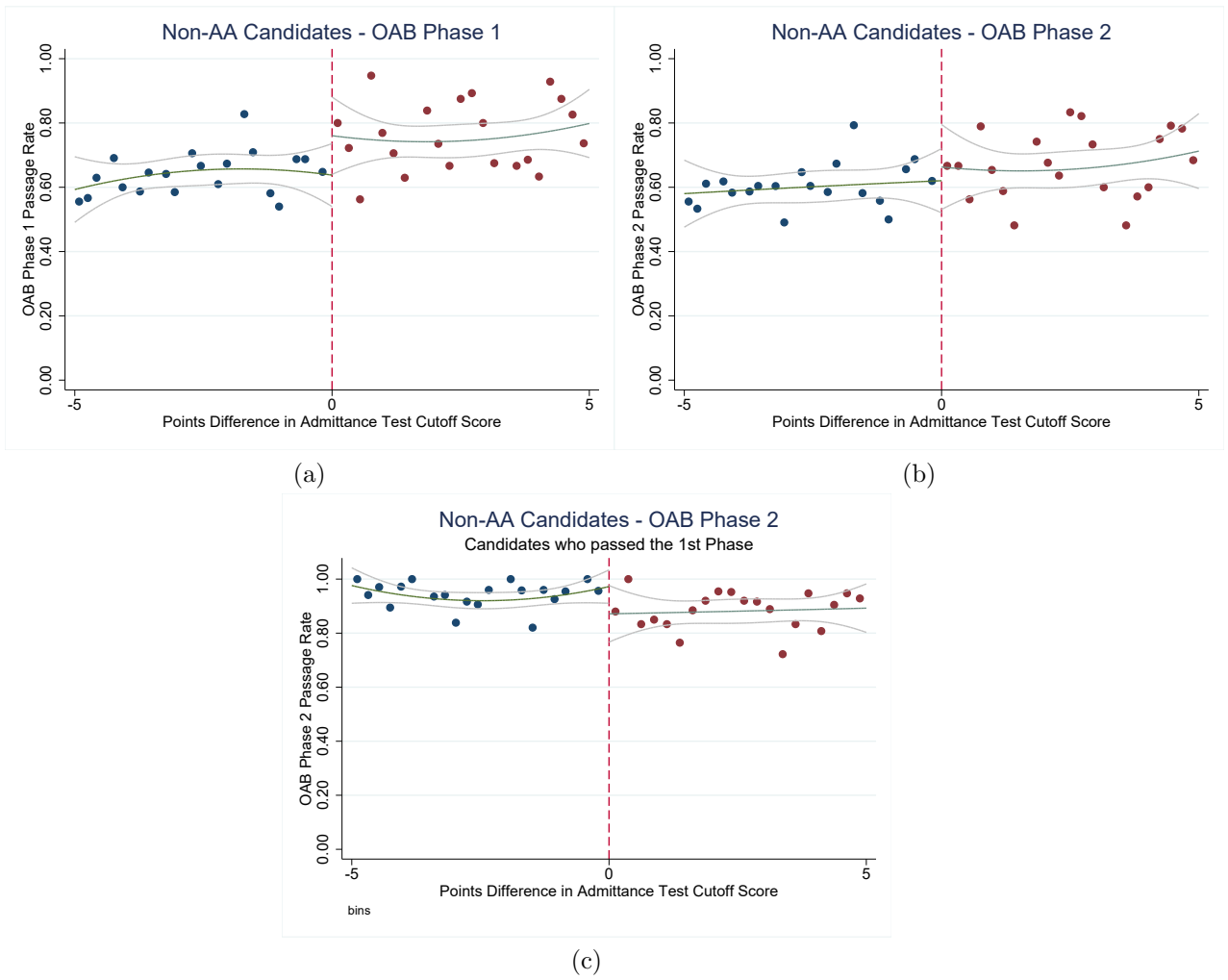
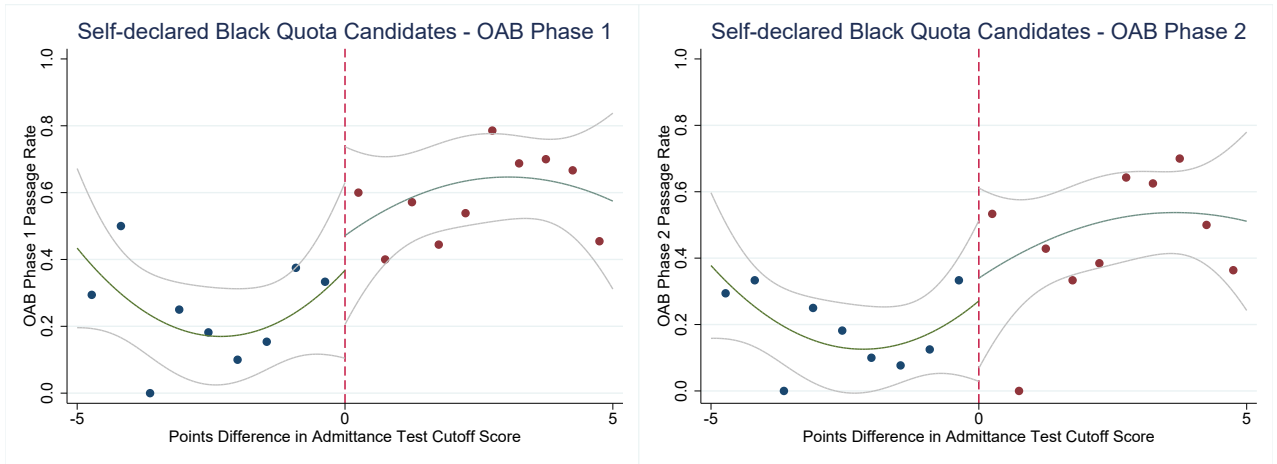
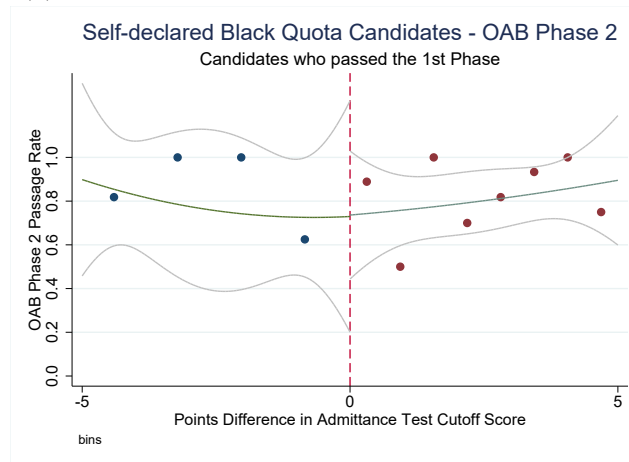


Figure 5: Diploma Effect for Non-AA Candidates



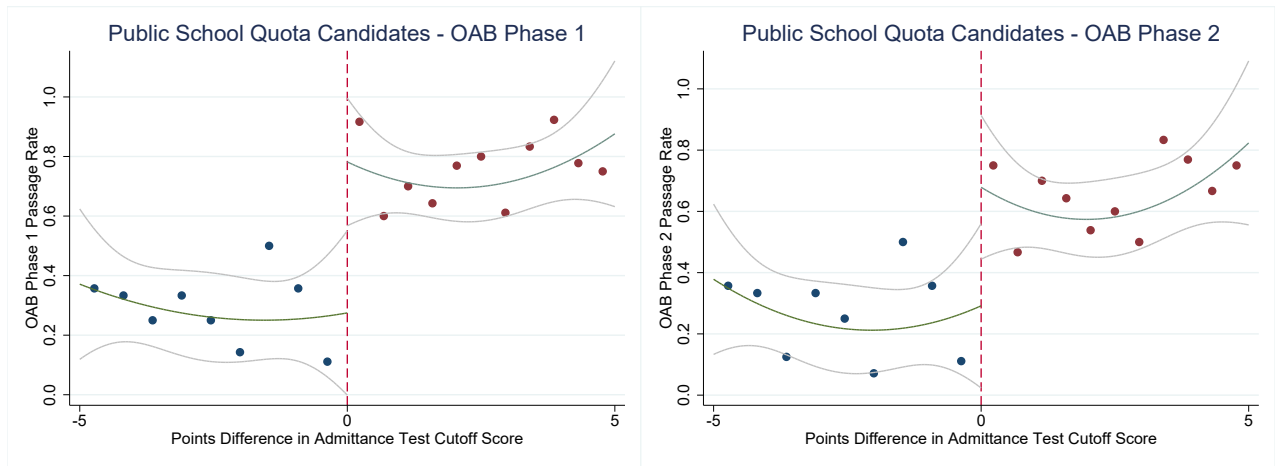
(a)

(b)



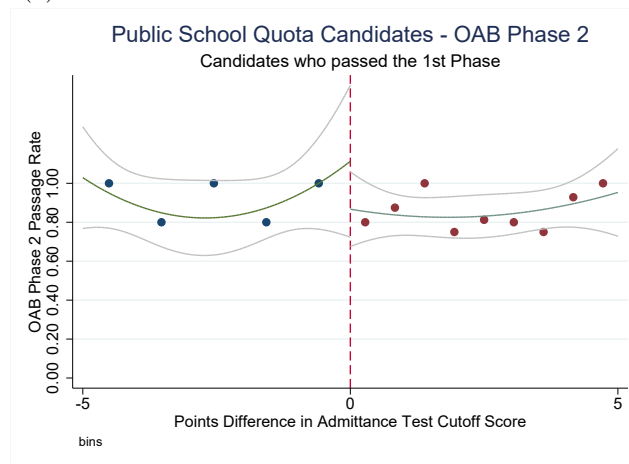
(c)

Figure 6: Diploma Effect for Self-declared Black Candidates



(a)

(b)



(c)

Figure 7: Diploma Effect for Public School Candidates

## D Diploma Effects: bandwidth, polynomial and bin variations

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

Panel A: Non-AA Candidates												
	1st phase				2nd phase				2nd phase (restricted)			
	1	2	3	4	1	2	3	4	1	2	3	4
Polynomial Order												
Coefficient	0.04	-0.08	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)			
	1	2	3	4	1	2	3	4	1	2	3	4
Polynomial Order												
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)			
	1	2	3	4	1	2	3	4	1	2	3	4
Polynomial Order												
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-AA 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-AA 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-AA 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	0.06	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)			
	1	2	3	4	1	2	3	4	1	2	3	4
Polynomial Order												
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)			
	1	2	3	4	1	2	3	4	1	2	3	4
Polynomial Order												
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



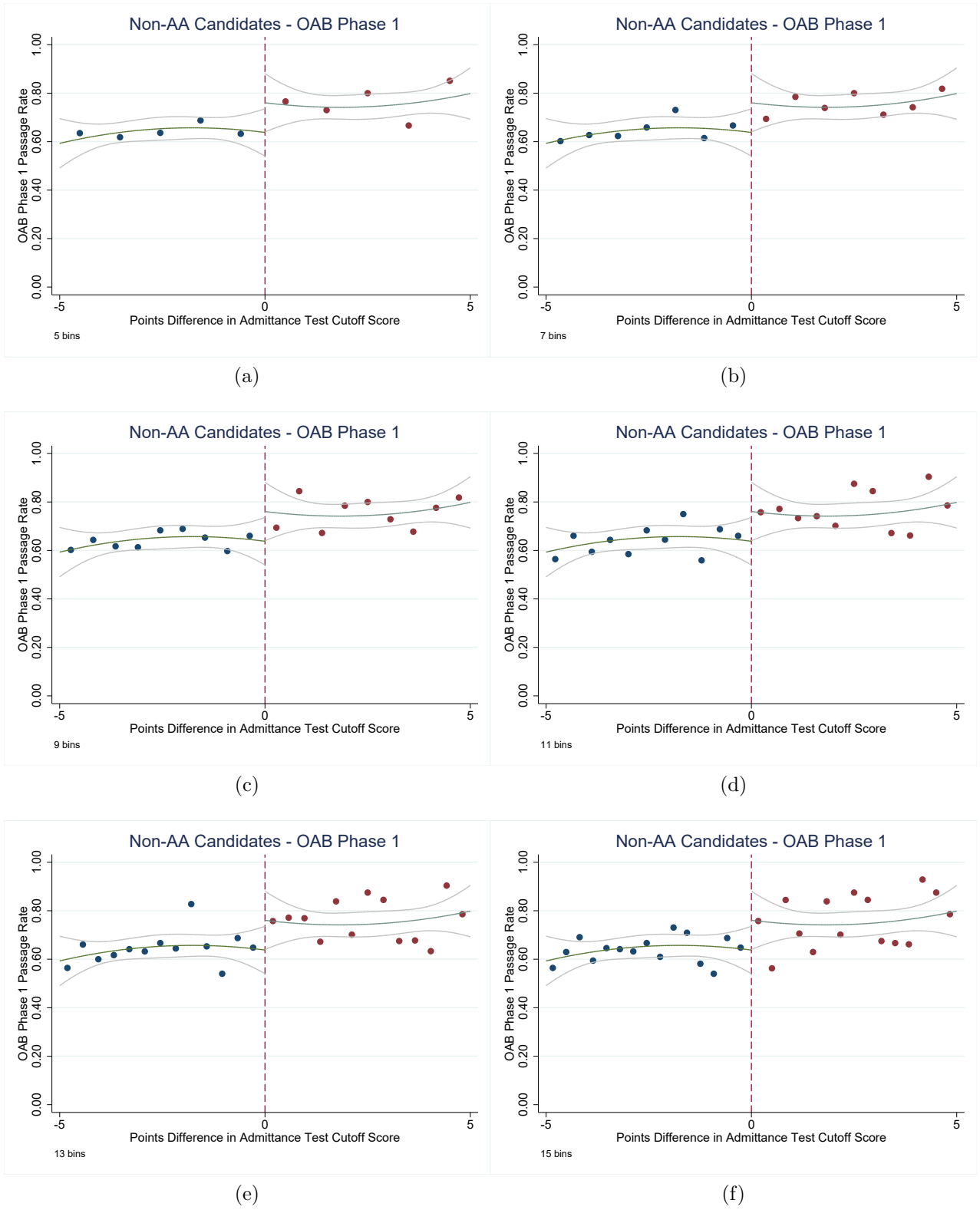


Figure 8: Bin Variation - OAB 1st Phase for Non-AA Candidates

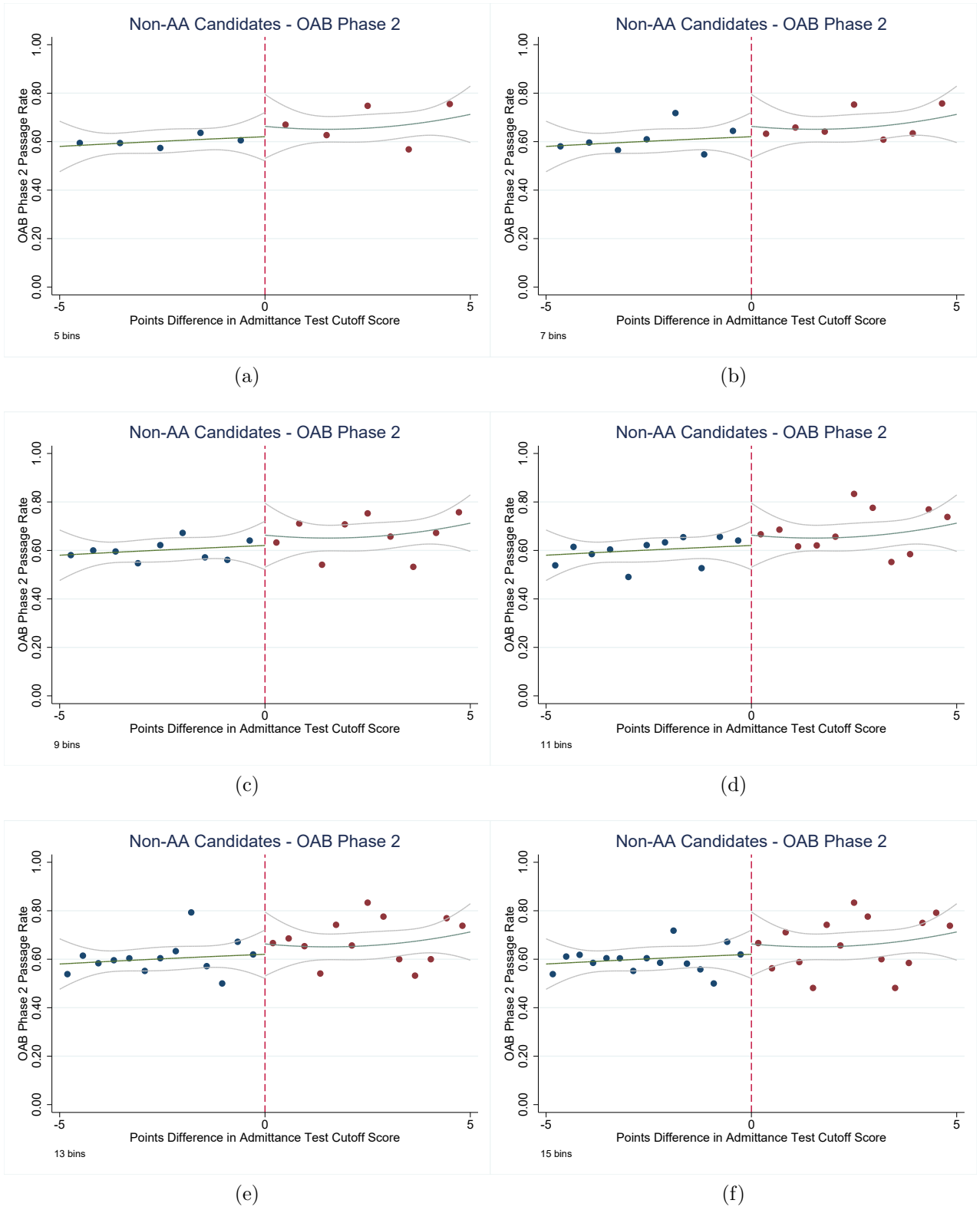


Figure 9: Bin Variation - OAB 2nd Phase for Non-AA Candidates

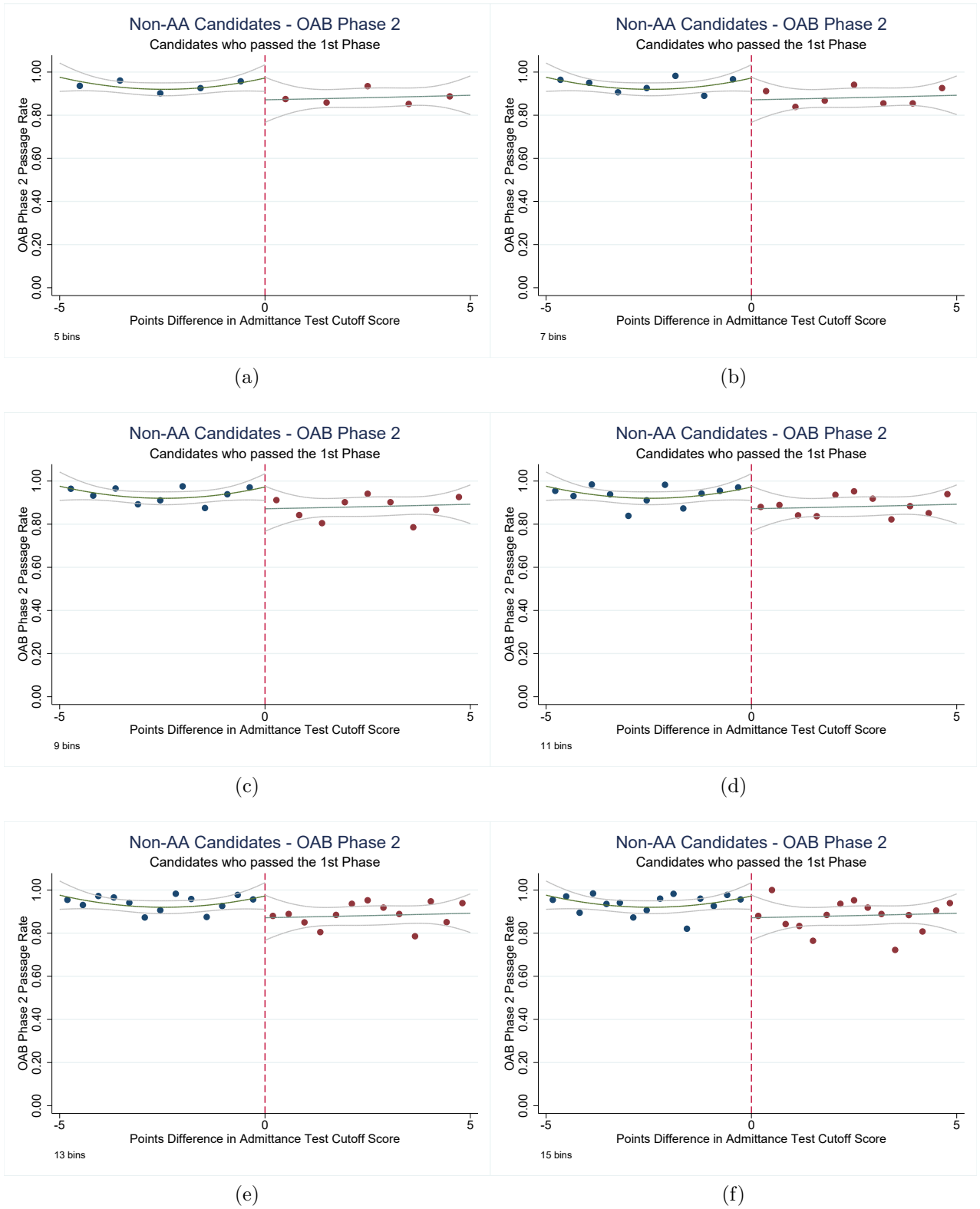


Figure 10: Bin Variation - OAB 2nd Phase for Non-AA Candidates (who passed the 1st Phase)

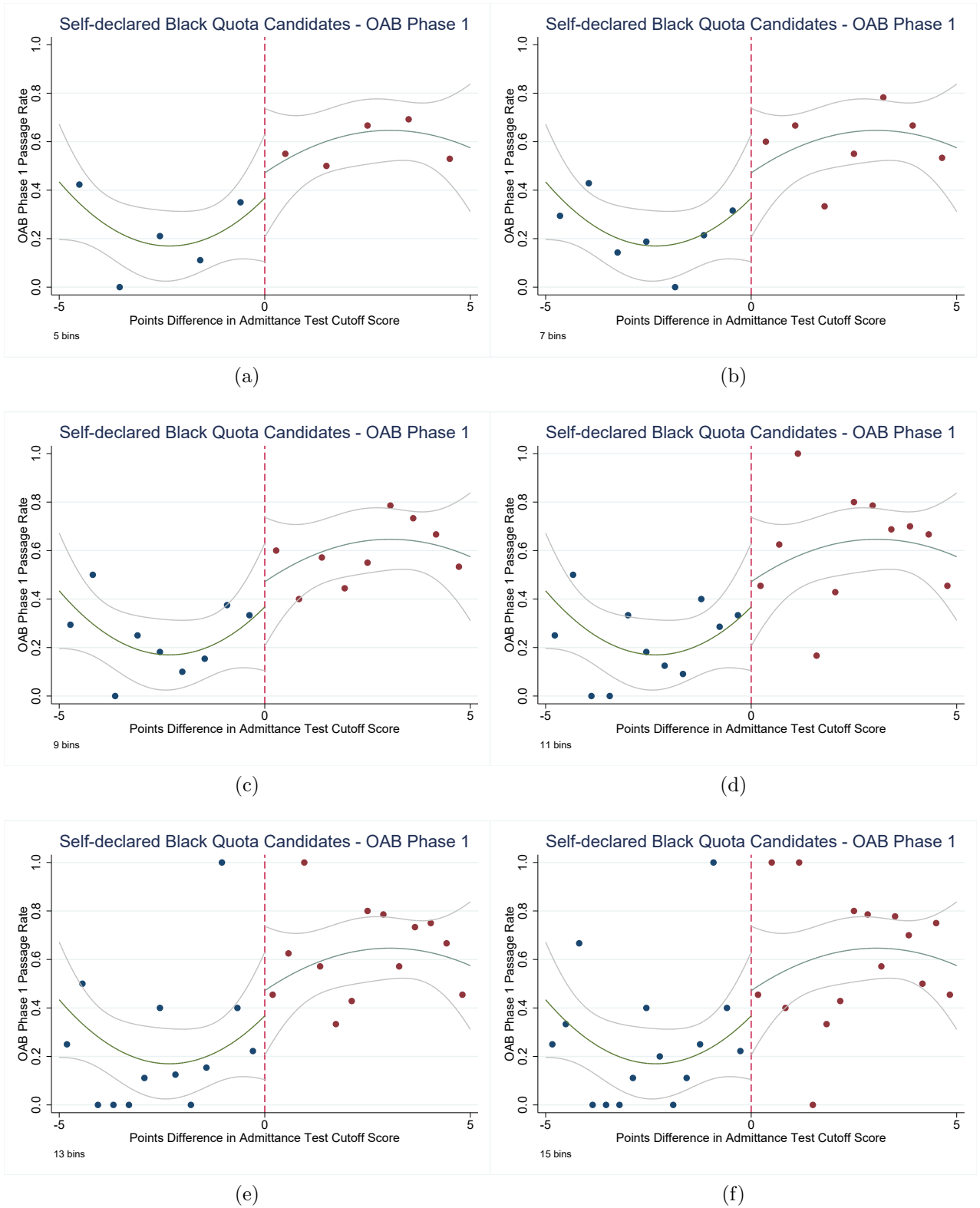


Figure 11: Bin Variation - OAB 1st Phase for Self-declared Black Candidates

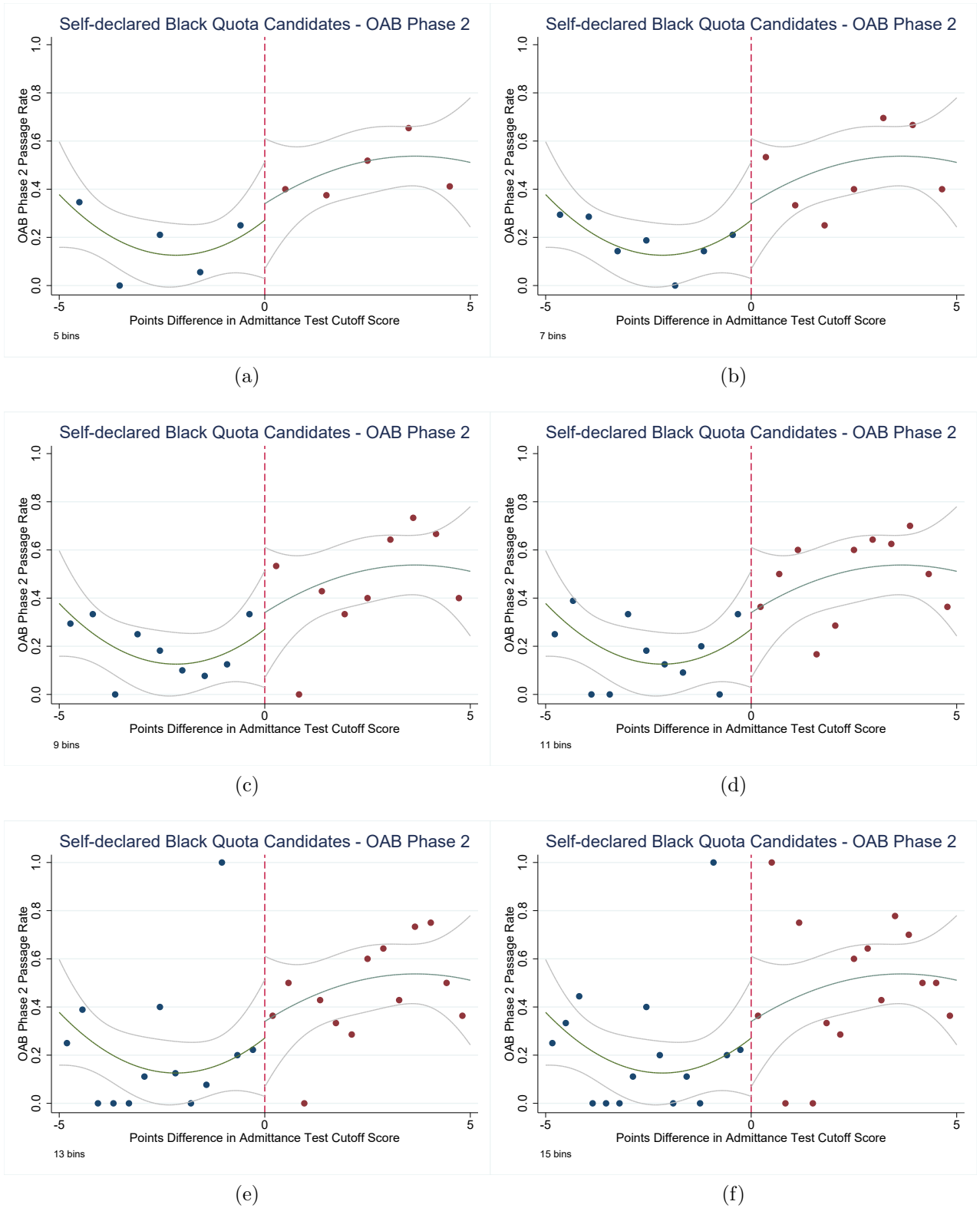


Figure 12: Bin Variation - OAB 2nd Phase for Self-declared Black Candidates

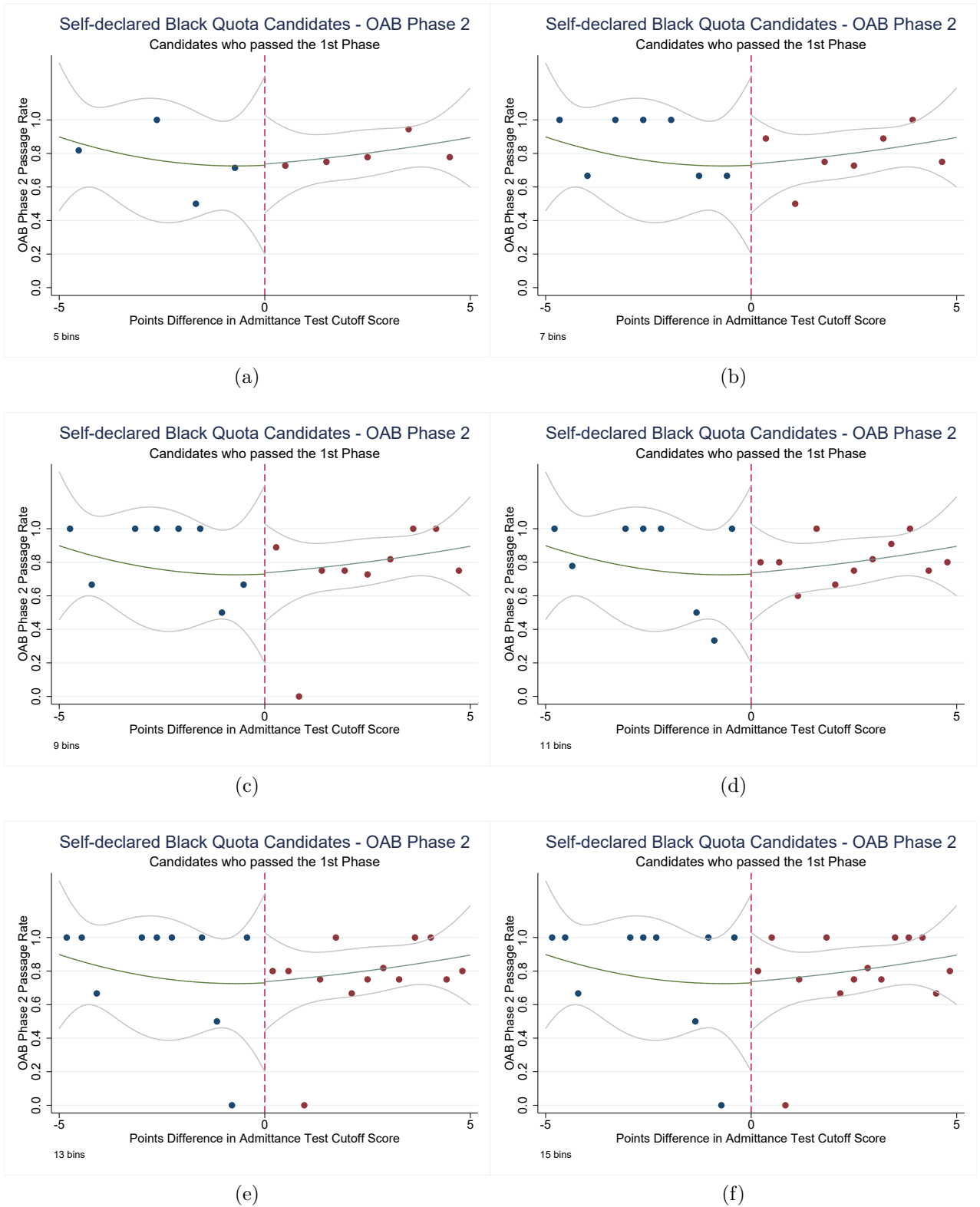


Figure 13: Bin Variation - OAB 2nd Phase for Self-declared Black Candidates (who passed 1st Phase)

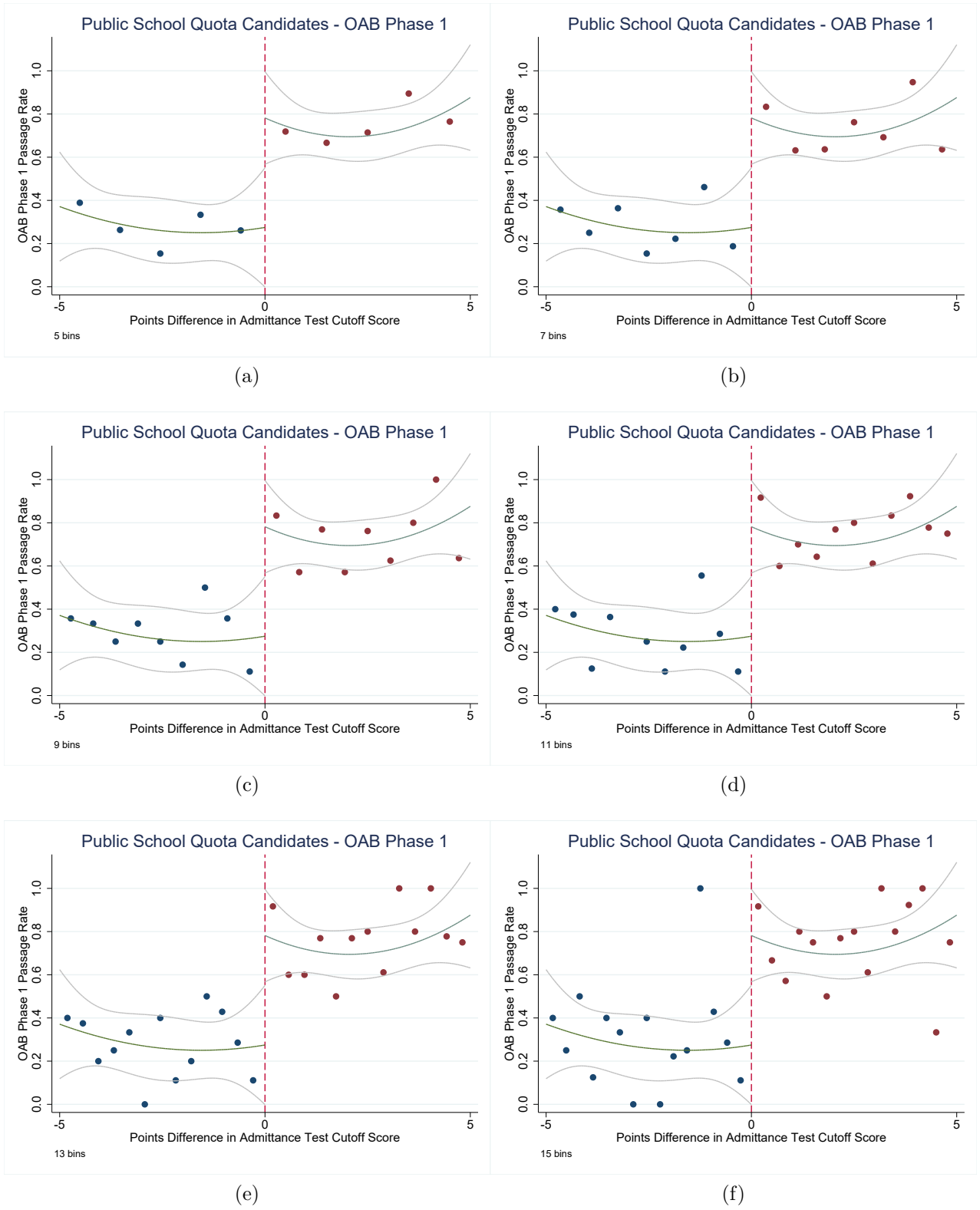


Figure 14: Bin Variation - OAB 1st Phase for Public School Quota Candidates

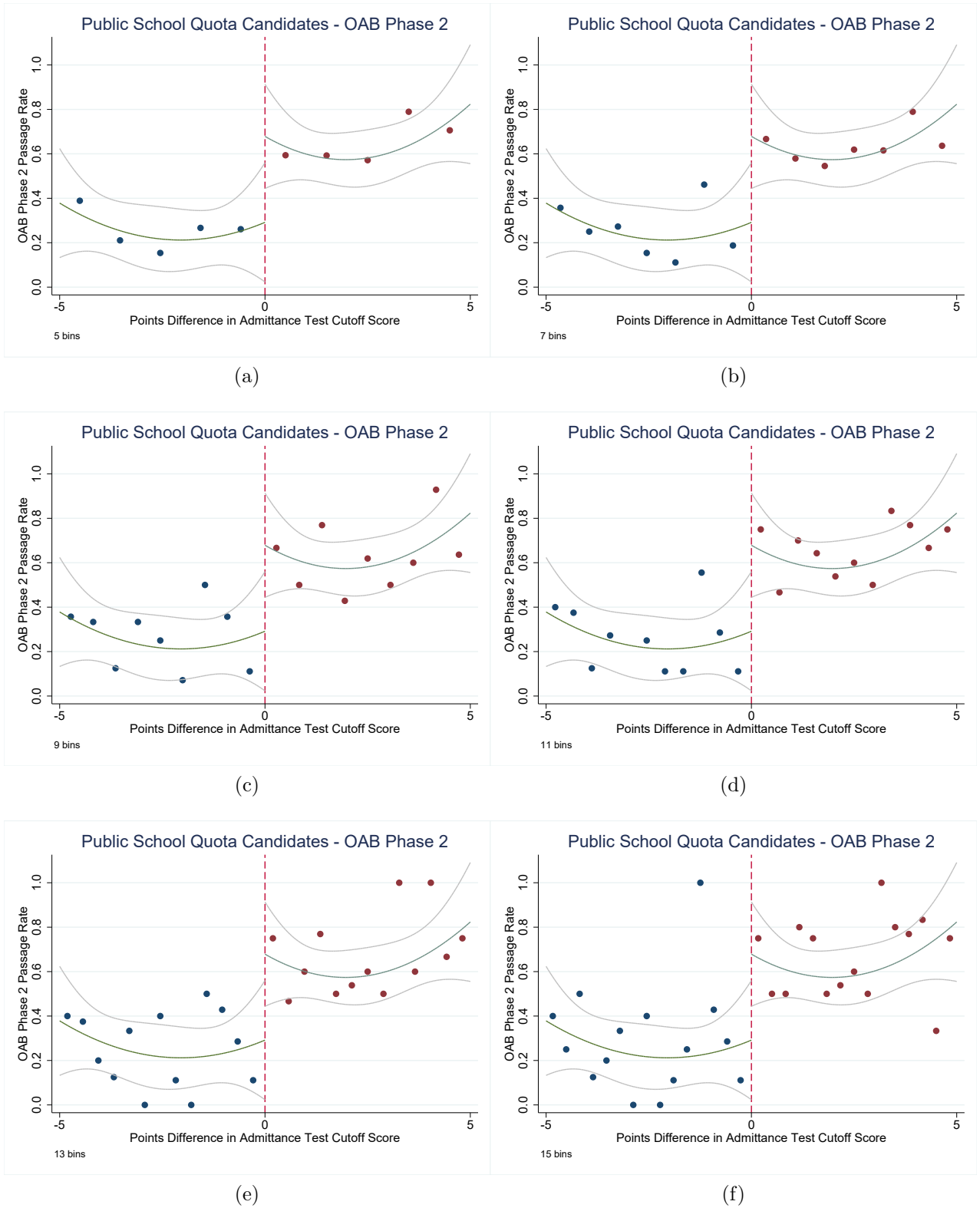


Figure 15: Bin Variation - OAB 2nd Phase for Public School Quota Candidates



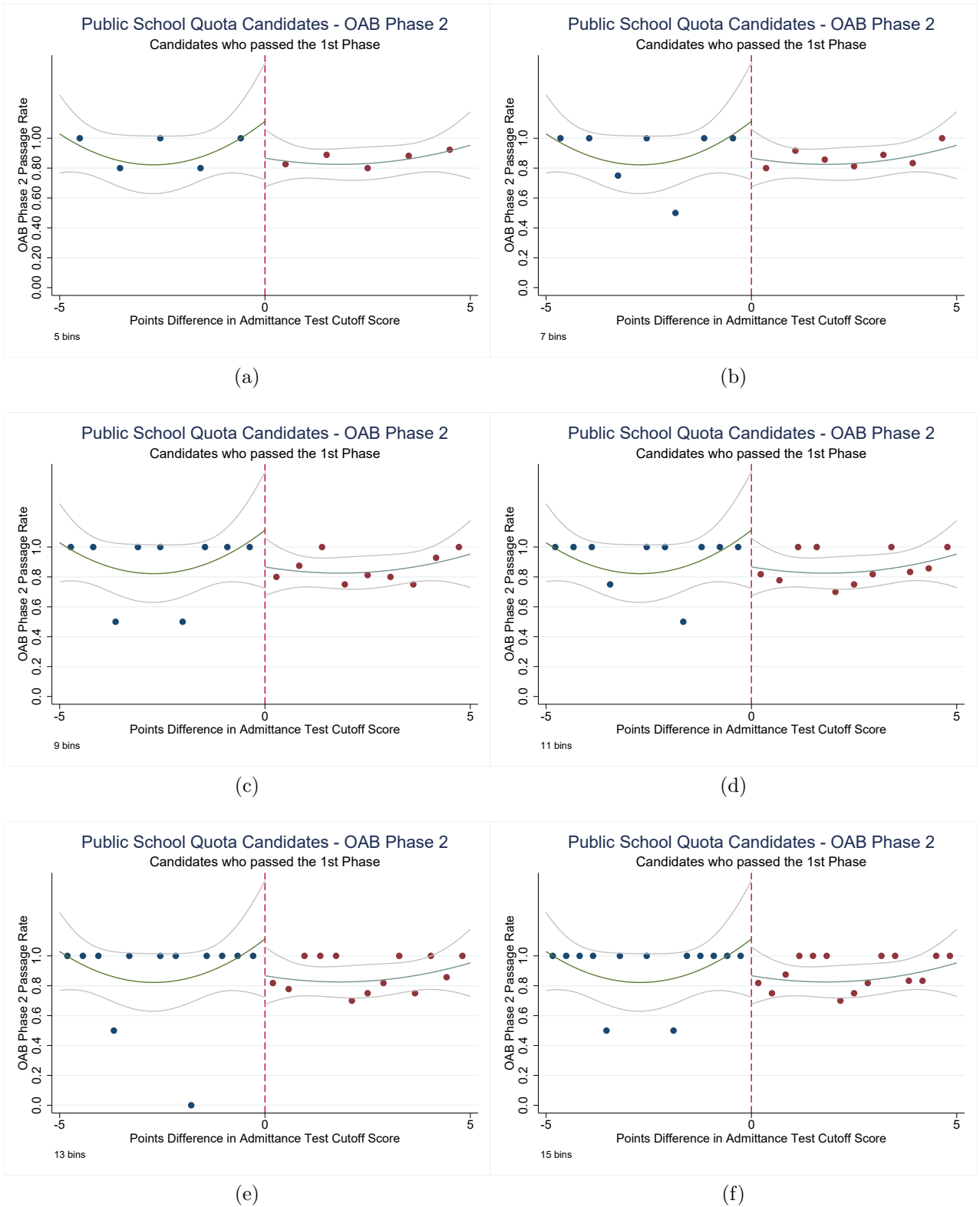


Figure 16: Bin Variation - OAB 2nd Phase for Public School Quota Candidates (who passed the 1st Phase)