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Sebastian Gallegos

June 2023



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Political Turnover Negatively Affects the Quality of Public Services: A Replication

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Political Turnover Negatively Affects the Quality of Public Services: A Replication¹

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Abstract

The politically motivated replacement in local governments is a pervasive fact in our modern democracies. Whether it has causal effects on the quality of public services, such as education, is a critical question and yet understudied. This paper uses a regression discontinuity design (RDD) for close elections to replicate Akthari, Moreira and Trucco (2022) who find negative effects on the quality of public education in Brazil (.05-.08 standard deviations of lower test scores). I first reproduce these main results, finding minor computational differences that have no effect on the conclusions. I also show that the estimates for Brazil are in general robust to different specifications following Brodeur, Cook and Heyes (2020). Finally, I implement the same RDD framework now applied to Chilean administrative records to find null effects on test scores. Taken together, these results suggest that political turnover has weakly negative effects on service quality.

Keywords: Replication; Robustness; Political Turnover, Regression Discontinuity, Quality of Public Services

JEL codes: D72, D73,H75,H76,J45,O17

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1 Introduction

Akthari, Moreira and Trucco (AER, 2022), henceforth AMT, investigate how political turnover affects bureaucracy and its performance. AMT use a regression discontinuity design applied to mayoral elections in Brazil to estimate causal effects. The authors argue that close elections generate an exogenous source of variation in political party turnover for the mayoral position. Among their main findings, they find that an arguably exogenous increase in the replacement rate of municipal school's personnel lowers test scores by .05-.08 standard deviations. These results suggests that political turnover negatively affects the quality of public services.

This is an important finding by itself, but the most important contribution of AMT's paper might be more related to their identification strategy than to their specific estimates. Their empirical strategy relies on data that most countries have, like information on close elections, educational personnel and students' test scores. This method could therefore be empirically implemented in many countries and potentially help in 'scaling' the research question and inform the externally validity of the findings.

In this paper I first aim to achieve computational reproducibility, using the authors data and writing similar codes. I find minor computational differences that have no effect on their main results. I also document how causal effects vary considering a host of different specifications, and implement a test for p-hacking following Brodeur, Cook and Heyes (2020).

I find that the main estimates are stable to the choices made by the authors in the original article, with one exception: the effects on individual test scores do not appear robust to the exclusion of school-level baseline scores. However, my takeaway is that these results do not pose a threat to AMT conclusions. The reason is that I understand that the policy variation occurs at the school level rather than at the individual level. I still missed a justification along these lines in the original paper. All specifications using individual test scores as an outcome vary the set of controls included in the regressions, but always include school-level baseline scores as a covariate.

This study ends up implementing the same RDD framework applied to Chilean administrative records to find null effects on test scores. Taken together, these results suggest that political turnover has a weak negative effect on service quality. Implementing this identification strategy in other contexts would inform the critical question in public economics of how political turnover affects bureaucracy and its performance.

2 Computational Reproducibility

This section compares AMT's main original findings with results that I reproduced with new code from the raw data. I build detailed versions of AMT's Tables 1 to 5 and present them along their original counterparts in Appendix A. The specifications discussed in this section are the same in both the reproduced and the original sets of estimates.

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The main takeaway from this section is that AMT's main results are reproducible. There are minor computational differences on a host of results, but these do not change the paper's conclusions or interpretations.

I start finding small discrepancies in the descriptive statistics (see Table A.1, corresponding to Table 1 in AMT). The population mean for the 'Party Turnover' column is 20,199 in the reproduced version but 20,096 in the original Table. All the rest of the statistics are the same. Regarding the effects of political turnover on new municipal personnel, my reproduced table (Table A.2a) rendered almost the same exact results as the original table (Table A.2b, corresponding to Table 2 in AMT).

I then turn to examine the educational outcomes, which proxy the quality of public services: test scores in 4th and 8th grade, headmaster's replacements and the share of new teachers in municipal schools. In the original paper the authors estimate effects on these outcomes using three bandwidths: one that is 'optimal' (following Calonico et al., 2019) and two other hand-chosen bandwidths (of 0.07 and 0.11).

My code reproduces the exact same estimates for all outcomes when imposing these last two bandwidths but produces slightly different estimates when using the optimal bandwidth. See the reproduced and original results in Tables A.3, A.4, A.5, and A.6, corresponding to Tables 3, 4 and 5 in AMT.

The reason is that the optimal bandwidth computed by my code is different than the one in AMT, even though computed using the same software, procedure and specification described in the paper.¹

The different bandwidths affect the estimation samples, but even so there are only small differences in the lower digits of the main estimates. Table 1 summarizes the main differences, reporting both the original and my reproduced estimates of political turnover on test scores (4th and 8th grade), headmaster's replacement and the share of new teachers.

	-	—						
	$4 \mathrm{th}$	Grade	8th	Grade	Hea	dmaster	New	Teachers
	Test	t Scores	Test	t Scores	Repla	acements	(5	share)
	Original	Reproduced	Original	Reproduced	Original	Reproduced	Original	Reproduced
$1{IncumbVoteMargin<0}$	-0.082	-0.070	-0.054	-0.053	0.278	0.277	0.117	0.111
	(0.028)	(0.025)	(0.023)	(0.023)	(0.027)	(0.030)	(0.018)	(0.018)
Observations	$325,\!554$	$414,\!675$	$245,\!302$	235,509	15,011	12,593	38,065	36,180
Optimal Bandwidth	0.078	0.105	0.151	0.140	0.157	0.124	0.130	0.122

Table 1: Original and Reproduced RDD Estimates for the Main Outcomes

Note: Table 1 reports estimates of political turnover on AMT's main outcomes: test scores (4th and 8th grade), headmaster replacement and share of new teachers. The 'original' columns show the same estimates reported in AMT (2022). The 'reproduced' columns show the estimates produced with new code from raw data.

The magnitude of the estimates on test scores is somewhat smaller (in absolute terms) for 4th grade (-.07 in the reproduced version versus the original estimate of -.08), and equal for 8th grade (-.053 versus -.054). The precision of the estimates is about the same.

¹We both use the *rdbwselect* package. I initially thought that the difference could be traced to my use of the most updated packages in Stata, downloaded from https://raw.githubusercontent.com/rdpackages/rdrobust/master/stata. But the last update to the package stems from year 2020, and authors seem to have run their final code in 2021, so I was expecting no differences.

The estimates for headmaster replacements and the share of new teachers are almost exactly the same in terms of magnitude and precision, despite differences in the optimal bandwidth and sample size.

I also present the corresponding graphical evidence for all these outcomes in Figure 1 and Figure 2, which correspond to Figures 4 and 5 in AMT. The figures show the reproduced and original graphs for each outcome.

Figure 1: Political Turnover and Fourth and Eighth-grade Test Scores (Figure 4 in AMT)



Note: Figure 1 shows original and reproduced figures of political turnover and fourth and eighth-grade Test Scores (Figure 4 in AMT). Each graph plots the mean of the y-axis variable within bins of the vote margin of the incumbent. In Figure 1a and Figure 1b the y-axis is test scores in 4th grade. In Figure 1c and Figure 1d the y-axis is test scores in 8th grade. In all graphs, the x-axis values to the right side of the zero are negative (political turnover), while values on the left side are positive (no political turnover).



Figure 2: Political Turnover and School Personnel Changes (Figure 5 in AMT)

Note: Figure 2 shows original and reproduced figures of Political Turnover and School Personnel Changes (Figure 5 in AMT). Each graph plots the mean of the y-axis variable within bins of the vote margin of the incumbent. In Figure 2a and Figure 2b the y-axis is the share of schools with a new headmaster. In Figure 2c and Figure 2d the y-axis is the share of teachers that are new to the school. In all graphs, the x-axis values to the right side of the zero are negative (political turnover), while values on the left side are positive (no political turnover).

3 Robustness to Specification

This section describes how the choice of the specification affects the estimates of political turnover on educational outcomes (test scores, as in AMT's Table 3) and on school personnel movements (Table 5 in AMT).

I implement two complementary approaches to perform this exercise. First, I compute the main estimates varying which controls are included in each regression and each corresponding bandwidth. Second, I implement the specification check for p-hacking proposed by Brodeur, Cook and Heyes (2020).

I find that the main estimates are stable to the choices made by the authors in the original article with one exception: the effects on individual test scores do not appear robust to the exclusion of school-level baseline scores. The point estimates lose statistical significance and shrink sustantially, in particular for 4th grade test scores, as shown in Figure 4.

However, my takeaway is that these results do not invalidate AMT conclusions. The reason is that I see the 'treatment' acting at the school level rather than at the individual level. I missed a justification along this lines in the original paper, because the specifications (using individual test scores as an outcome) vary which covariates are included while the school-level baseline scores are always kept as a control.

3.1 Testing Different Specifications

In the original article authors readily show how estimates change for three different bandwidths and whether they include all controls or none. However, there are no specifications varying the inclusion of different controls.

I start testing how the estimates on school personnel movements change with different specifications. Figure 3 displays the results for the share of new teachers (panel a) and the share of teachers that left municipal schools (panel b). The respective graphs plot the regression discontinuity estimates produced from the eight specifications. The first has no controls, and the eighth has all controls, ressembling AMT results. Specifications 2 to 7 display the results switching which controls are included or excluded from the estimation.

The graphs show that the effects on political turnover on the share of new teachers (Figure 3a) and the share of theacher who have left (Figure 3b) are robust to the inclusion and exclusion of controls. These results are computed using AMT's optimal bandwidth, but I repeat them with the two hand-chosen bandwidths and results are the same (see Table A.7, Table A.8, and Table A.9).



Figure 3: School Personnel Movements: Robustness to Different Specifications

Note: Figure 3 displays the results for the share of new teachers (panel a) and the share of teachers that left municipal schools (panel b). The respective graphs plot the regression discontinuity estimates produced from the eight specifications. using AMT's optimal bandwidth. The first has no controls, and the eighth has all controls, ressembling AMT results. Specifications 2 to 7 display the results switching which controls are included or excluded from the estimation. See the corresponding results in Table A.7. All coefficients are (individually) statistically significant at the 1% level.

Next, I test the robustness of the effects on individual 4th and 8th grade test scores. In this case AMT's set of controls consists in three groups: student-level demographics, school-level characteristics, and an election cycle dummy. They also include school-level baseline test scores in every specification, but I will come back to this later on.

The graphs to the left in Figure 4 show that the negative effects on the quality of public education in Brazil (.05-.08 standard deviations of lower test scores) are robust to the inclusion or exclusion of the student-level demographics, school-level characteristics, and an election cycle dummy. As before, these results are computed using AMT's optimal bandwidth, but I repeat them with the 0.07 and 0.11 bandwidths and results are the same (see Table A.10, Table A.11, and Table A.12).

As mentioned before, all specifications using individual test scores as an outcome in AMT include school-level baseline scores as another control. The original article does not include a particular theoretical nor empirical reason to do so, and describes the school-level baseline scores as just another control in their empirical stategy.



Figure 4: Test Scores: Robustness to Different Specifications

(a) Including School-Level Baseline Scores (left) and Excluding School-Level Baseline Scores (right)

(b) Including School-Level Baseline Scores (left) and Excluding School-Level Baseline Scores (right)



Note: Each graph Figure 4 plot the RD estimates of political turnover on 4th and 8th grade test scores against eight different specifications using AMT's optimal bandwidth. From the list of student-level demographics, school-level characteristics, and an election cycle dummy, the first specification has none of these controls, and the eighth has all of them, ressembling AMT's results. Specifications 2 to 7 display the results switching which controls are included or excluded from the estimation. The graphs to the left always include school level baseline scores as a covariate while 10 the graphs to the right exclude them. See the corresponding results in Table A.10 and Table A.13.

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The paper goes on to show that school-level baseline scores behave smoothly near the threshold (in Appendix Figure A.3) so I was not expecting to see meaninful changes in their magnitude (though point estimates would lose precision).

The graphs to the right in Figure 4 show the results this time excluding the school-level baseline scores from all specifications (and using AMT optimal bandwidth). As expected, the noise of the point estimates is larger compared to including the school-level baseline scores. But unexpectedly, the magnitude drops importantly in absolute terms. Taking specification 1 as an example, the estimates change from a significant -0.082 to a non statistically significant effect of -0.033 for 4th grade, and from -0.054 to a non-significant -0.037 for 8th grade. The drop in magnitude and significance also appears for the set of results computed using the 0.07 and 0.11 bandwidths, though it is always less pronounced for 8th grade compared to 4th grade (see Table A.13, Table A.14, and Table A.15).

3.2 Specification Check

In this section I implement the specification check proposed by Brodeur, Cook and Heyes (2020). Their method is stricter than just checking estimates for the exclusion or inclusion of some covariates (as we did in the previous section) because it examines both statistical significance and effect sizes after estimating a regression for each of the possible combinations of controls.

Suppose that we have k available covariates. Then the method computes 2^k regressions, which include a regression with no covariates and one with all covariates.² A set of four graphs (two distributions and two box-and-whisker plots) summarizes the results: (i) the distribution of the t-statistic for the coefficient of interest, called 't-curve', (ii) the distribution of the effect size, called 'effect-curve', (iii) a box-and-whisker plot of the t-statistics by number of controls, and (iv) a boxand-whisker plot of the effect sizes by number of controls.

I run the specification check for 4th and 8th grade test scores with AMT's 'optimal' bandwidth. Then I vary whether school-level baseline scores are always included as a regressor or whether we consider it just as another control.

The results in Figure 5 and Figure 6 show that if baseline scores are always included as a regressor (see Figure 5a and Figure 6a) then the coefficient of interest is always statistically significant with stable estimated effect sizes.

However, the specification check shows that if we treat baseline school-level scores as another control (thus including or excluding it from the regressions), then the estimates are far less robust (see Figure 5b and Figure 6b), consistent with Figure 4. The t-curves show that for about half of the regressions the coefficient of interest becomes statistically insignificant; and the effect curves show that the range and dispersion of the estimated effect widens importantly. The box-and-whisker plots show that both the statistical significance and the effect size recover once four controls are included in the regressions, which is when baseline school-level scores enter the specifications.

²Say we have three covariates x_1, x_2 and x_3 , so k = 3. Then the method computes $2^3 = 8$ regressions. One with no controls, three regressions with 1 control each, three regressions with 2 controls each $(x_1, x_2; x_1, x_3; \text{ and } x_2, x_3)$ and one with all controls.



Figure 5: Specification Check for 4th Grade Test Scores



(b) Including & Excluding School-Level Baseline Scores



Note: Figure 5 show two sets of graphs summarizing the results from the specification check described in the main text. The regressions used to produce the Figure 5a always include School-Level Baseline Scores, while those in Figure 5b do not. In both cases, all possible combinations of the following controls are used: whether the school is located in an urban or rural area, a summary variable on whether the school is connected to water network, sewage system, internet and if its trash is regularly collected, an indicator variable for gender, whether the student is white, and whether the student sees their mother reading), and a 2012 election-cycle indicator. The total permutations in both cases is 128, and the sample size is N=325,554.



Figure 6: Specification Check for 8th Grade Test Scores



(b) Including & Excluding School-Level Baseline Scores



Note: Figure 6 show two sets of graphs summarizing the results from the specification check described in the main text. The regressions used to produce the Figure 6a always include School-Level Baseline Scores, while those in Figure 6b do not. In both cases, all possible combinations of the following controls are used: whether the school is located in an urban or rural area, a summary variable on whether the school is connected to water network, sewage system, internet and if its trash is regularly collected, an indicator variable for gender, whether the student is white, and whether the student sees their mother reading), and a 2012 election-cycle indicator. The total permutations in both cases is 128, and the sample size is N=245,302.

4 Replication

We now turn our attention to our replication. I use the same RDD framework now applied to Chilean mayoral elections to examine effects on educational outcomes.

Context. As in Brazil, Chilean municipalities are decentralized units of local government that provide public services (like education), with a mayor as the head of the municipal board. The mayors are also elected in municipal elections that are held every four years and they can hold office for two consecutive terms.

There are different types of schools in Chile, which differ in their funding and administration. Public (municipal) schools concentrate about 35-40% of students, receive public funds and are administered by the mayor; voucher schools enroll about 45%-50% of the students, are funded with both public and private funds and administered by privates (similar to charter schools in the U.S.); and about 10-15% of students attend private schools which are both privately funded and administered.

Timeline. The Chilean timeline of elections and measurement of outcomes shares many similarities with the Brazilian case. Municipal elections are held in October (every four years) and the mayor takes office in January of the following year. The academic year also begins in March and ends in December, as customary in the Southern Hemisphere. The Chilean national standardized exam, known as SIMCE (*Sistema de Medición de Calidad de Educación*) is administered in October each year, while the Brazilian Prova exam is administered every two years in November.



Figure 7: Political Turnover and Fourth Grade Test Scores in Chile and Brazil

Note: The graphs in Figure 7 plot the mean of test scores in 4th grade. within bins of the vote margin of the incumbent for Chile (Figure 7a) and Brazil (Figure 7b). The Brazilian Figure is the same as in AMT. The x-axis values to the right side of the zero are negative (political turnover), while values on the left side are positive (no political turnover).

Data. I use publicly available data from Chilean mayoral elections for years 2004 and 2008.³ The standardized test scores come from the SIMCE taken by 4th graders. I use year 2004 to determine which incumbents are running in the 2008 election, and then combine the data with national standardized test scores. I use school-level baseline scores measured one year before the

³The election data comes from the Chilean Electoral Service, downloadable at https://www.servel.cl, while the educational data can be accessed at the National Agency of Education website https://www.agenciaeducacion.cl.

election (in October 2007) and outcomes measured at the individual level collected one after the election (in October 2009).

Results. We rely on the exact same specifications as in AMT's paper. Figure 7 and Table 2 report the estimates on political turnover on individual-level fourth-grade test scores in Chile (panel a) and Brazil (panel b). These last estimates are the same as in AMT, and added for comparison purposes. The results show a null effect on test scores in Chile. This finding is robust to the inclusion of additional controls and changing the using bandwidth in the estimation.

	Outcome: individual fourth-grade test scores (standardized)								
	(1)	(2)	(3)	(4)	(5)	(6)			
1 {IncumbentVoteMargin< 0}	0.040	0.041	-0.045	-0.029	0.011	0.034			
	(0.075)	(0.074)	(0.081)	(0.082)	(0.065)	(0.064)			
	[0.593]	[0.582]	[0.582]	[0.726]	[0.870]	[0.601]			
School-level baseline scores	0.273	0.209	0.282	0.223	0.290	0.234			
	(0.029)	(0.029)	(0.032)	(0.032)	(0.023)	(0.023)			
Observations	14,286	14,286	$11,\!159$	$11,\!159$	19,378	19,378			
R-squared	0.045	0.059	0.043	0.054	0.048	0.061			
Controls	No	Yes	No	Yes	No	Yes			
Clusters	543	543	417	417	715	715			
Using Bandwidth	0.091	0.091	0.070	0.070	0.110	0.110			
Optimal Bandwidth	0.091	0.091	0.091	0.091	0.091	0.091			

Table 2: Political Turnover and Fourth Grade Test Scores in Chile and Brazil (a) Chile

(b) Brazil

	Outcome	e: individu	al fourth-g	ade test so	ores (stand	lardized)
	(1)	(2)	(3)	(4)	(5)	(6)
1 {IncumbentVoteMargin< 0}	-0.082	-0.064	-0.091	-0.075	-0.067	-0.055
	(0.028)	(0.026)	(0.029)	(0.027)	(0.024)	(0.022)
	[0.003]	[0.014]	[0.002]	[0.005]	[0.005]	[0.012]
School-level baseline scores	0.869	0.739	0.864	0.737	0.861	0.732
	(0.014)	(0.014)	(0.015)	(0.015)	(0.012)	(0.012)
Observations	$325,\!554$	$325,\!554$	$295,\!170$	$295,\!170$	429,979	$429,\!979$
R-squared	0.218	0.252	0.213	0.248	0.218	0.252
Controls	No	Yes	No	Yes	No	Yes
Clusters	1669	1669	1538	1538	2101	2101
Using Bandwidth	0.0782	0.0782	0.0700	0.0700	0.110	0.110
Optimal Bandwidth	0.0782	0.0782	0.0782	0.0782	0.0782	0.0782

Note: Table 2 reports the estimates on political turnover on individual-level fourth-grade test scores in Chile (panel a) and Brazil (panel b), with standard errors in parentheses, and p-values in brackets. All specifications control for school-level, average test scores for the respective grader at baseline (one year before the respective election). Controls for Chile include whether the school is located in an urban or rural area, school socioeconomic status, an indicator variable for gender. The specifications for Brazil are the same as in the original AMT paper.

5 Conclusion

This manuscript replicates AMT's important paper, addressing whether political turnover affects personnel replacement and quality of public service. My results show that AMT's results are reproducible. I replicate the empirical strategy using Chilean data, finding null results on quality of public service, proxied by educational outcomes at public schools.

I believe that this exercise achieves the objective of drawing further attention to the importance of the science and practice of replication in economics, because of two reasons. First, the question is relevant for almost all of our modern democracies. Second, since it only requires data on elections outcomes and standardized test scores, AMT's identification strategy is implementable in most countries with some established information systems.

References

Akhtari, Mitra, Diana Moreira, and Laura Trucco. 'Political Turnover, Bureaucratic Turnover, and the Quality of Public Services.' American Economic Review 112, no. 2 (February 2022): 442-93. https://doi.org/10.1257/aer.20171867.

Brodeur, Abel, Nikolai Cook, and Anthony Heyes. 'A proposed specification check for p-hacking.' AEA Papers and Proceedings. Vol. 110. 2020.

Calonico, Sebastian, Matias D. Cattaneo, Max H. Farrell, and Rocío Titiunik. 2016. 'Regression Discontinuity Designs Using Covariates.' The Review of Economics and Statistics 2019; 101 (3): 442-451.

A Reproduced and Original Tables (1 to 5)

(a) Reproduced Table							
	No Party Turnover	Party Turnover	P-value				
Number of Municipalities	1,233	1,195	-				
Municipal Characteristics							
Population	18,300	20,199	0.723				
Ruling party from left	0.248	0.234	0.777				
Winning party from left	0.248	0.299	0.040				
Ruling party from right	0.566	0.573	0.359				
Wining party from right	0.566	0.519	0.573				
Number of Municipal Personnel	642.435	707.357	0.804				
New Personnel High Manager (% of category)	0.283	0.279	0.553				
New Personnel Low Manager (%of category)	0.230	0.221	0.356				
New Personnel Not Manager (% of category)	0.246	0.238	0.669				
New Personnel Education (% of category)	0.271	0.266	0.735				
New Personnel Health ($\%$ of category)	0.287	0.284	0.961				
New Personnel Construction (% of category)	0.195	0.196	0.373				
New Personnel Multiple (% of category)	0.220	0.213	0.772				
New Personnel Other (% of category)	0.261	0.262	0.862				
Personnel that Left High Manager (% of category)	0.245	0.254	0.842				
Personnel that Left Low Manager (% of category)	0.194	0.179	0.840				
Personnel that Left Not Manager (% of category)	0.164	0.163	0.264				
Personnel that Left Education (% of category)	0.194	0.196	0.333				
Personnel that Left Health (% of category)	0.177	0.176	0.482				
Personnel that Left Construction (% of category)	0.143	0.140	0.868				
Personnel that Left Multiple ($\%$ of category)	0.142	0.144	0.473				
Personnel that Left Other ($\%$ of category)	0.184	0.185	0.212				
School Characteristics							
Share urban	0.264	0.282	0.495				
Share connected to water network	0.388	0.412	0.845				
Share connected to sewage system	0.155	0.162	0.787				
Share with Internet	0.165	0.203	0.211				
Number of school staff	15.132	16.239	0.777				
Number of teachers per school	7.580	8.051	0.954				
Teacher age	36.573	36.599	0.443				
Share of female teachers	0.822	0.824	0.169				
Share of teachers born in same municipality	0.690	0.691	0.410				
Share of teachers with B.A.	0.434	0.444	0.480				
Share of teachers who took Concurso	0.663	0.684	0.200				
Share of teachers who are temporary	0.335	0.314	0.204				
Number of classrooms taught per teacher	1.874	1.901	0.250				
Number of schools taught per teacher	1.290	1.288	0.500				
Share of teachers who teach only in municipal schools	0.927	0.922	0.991				
Outcome of interest							
4th grade test scores (only in PB)	-0.158	-0.119	0.105				
8th grade test scores (only in PB)	-0.185	-0.161	0.216				
Dropout rate	0.044	0.039	0.849				
New headmaster (only in PB)	0.357	0.333	0.803				
Share of teachers who are new to the school	0.514	0.517	0.683				
Share of teachers who have left the school	0.501	0.510	0.478				
New Municipal Personnel (share)	0.251	0.240	0.923				
Municipal Personnel that Left (share)	0.170	0.166	0.447				

 Table A.1: Descriptive Statistics by Party Turnover in Close Elections (Table 1 in AMT)

Note: Table A.1a reproduces Table 1 in AMT (2022) with new code from raw data. Table 1b is the same as the original Table 1 in AMT (2022).

(b) Original Table

	No Party Turnover	Party Turnover	P-value
Number of Municipalities	1,233	1,195	-
Municipal Characteristics			
Population	18,299.92	20,095.88	.72
Ruling party from left	.25	.23	.78
Winning party from left	.25	.30	.04
Ruling party from right	.57	.57	.36
party from right	.57	.52	.57
Number of Municipal Personnel	642.43	707.36	.80
New Personnel High Manager (% of category)	.28	.28	.55
New Personnel Low Manager (%of category)	.23	.22	.36
New Personnel Not Manager (% of category)	.25	.24	.67
New Personnel Education (% of category)	.27	.27	.73
New Personnel Health (% of category)	.29	.28	.96
New Personnel Construction (% of category)	.20	.20	.37
New Personnel Multiple (% of category)	.22	.21	.77
New Personnel Other (% of category)	.26	.26	.86
Personnel that Left High Manager (% of category)	.24	.25	.84
Personnel that Left Low Manager (% of category)	.19	.18	.84
Personnel that Left Not Manager (% of category)	.16	.16	.26
Personnel that Left Education (% of category)	.19	.20	.33
Personnel that Left Health (% of category)	.18	.18	.48
Personnel that Left Construction (% of category)	.14	.14	.87
Personnel that Left Multiple (% of category)	.14	.14	.47
Personnel that Left Other (% of category)	.18	.19	.21
School Characteristics			
Share urban	.26	.28	.50
Share connected to water network	.39	.41	.84
Share connected to sewage system	.15	.16	.79
Share with Internet	.17	.20	.21
Number of school staff	15.13	16.24	.78
Number of teachers per school	7.58	8.05	.95
Teacher age	36.57	36.60	.44
Share of female teachers	.82	.82	.17
Share of teachers born in same municipality	.69	.69	.41
Share of teachers with B.A.	.43	.44	.48
Share of teachers who took Concurso	.66	.68	.20
Share of teachers who are temporary	.33	.31	.20
Number of classrooms taught per teacher	1.87	1.90	.25
Number of schools taught per teacher	1.29	1.29	.50
Share of teachers who teach only in municipal schools	.93	.92	.99
Outcome of interest			
4th grade test scores (only in PB)	16	12	.10
8th grade test scores (only in PB)	18	16	.22
Dropout rate	.044	.039	.85
New headmaster (only in PB)	.36	.33	.80
Share of teachers who are new to the school	.51	.52	.68
Share of teachers who have left the school	.50	.51	.48
New Municipal Personnel (share)	.25	.24	.92
Municipal Personnel that Left (share)	.17	.17	.45

Note: Table A.1a reproduces Table 1 in AMT (2022) with new code from raw data. Table 1b is the same as the original Table 1 in AMT (2022).

Optimal Bandwidth

		(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
Outcome:	New Mun	icipal perso	nnel(share)	Municipal personnel who left(share)			
	(1)	(2)	(3)	(4)	(5)	(6)	
Panel A.Municipal personn	el one year	after the el	ection				
$1{IncumbVoteMargin<0}$	0.0693	0.0715	0.0621	0.0249	0.0326	0.0204	
	(0.0188)	(0.0242)	(0.0196)	(0.0169)	(0.0220)	(0.0176)	
Observations	2,533	$1,\!656$	2,381	2,574	$1,\!656$	$2,\!381$	
R-squared	0.0315	0.0264	0.0318	0.0156	0.0116	0.0159	
Clusters	$2,\!157$	1,507	2,052	2,193	1,507	2,052	
Mean Dep Variable	0.306	0.317	0.308	0.226	0.235	0.227	
Using Bandwidth	0.119	0.070	0.110	0.121	0.070	0.110	
Optimal Bandwidth	0.119	0.119	0.119	0.121	0.121	0.121	
Panel B.Municipal Personr	nel from on	e to two yea	ers after the	election			
1{IncumbVoteMargin<0}	0.0152	0.0290	0.0147	0.0051	0.0165	0.0043	
	(0.0150)	(0.0208)	(0.0166)	(0.0136)	(0.0187)	(0.0150)	
Observations	2,832	1,650	2,373	2,780	1,650	2,373	
R-squared	0.0019	0.0031	0.0030	0.0065	0.0045	0.0060	
Clusters	2,360	1,503	2,047	2,326	1,503	2,047	
Mean Dep Variable	0.236	0.238	0.235	0.177	0.183	0.179	
Using Bandwidth	0.138	0.070	0.110	0.135	0.070	0.110	
Optimal Bandwidth	0.138	0.138	0.138	0.135	0.135	0.135	
		(b) Orig	ginal Table				
Outcome:	New Mur	nicipal perso	onnel(share)	Municipa	l personnel	who left(share)	
	(1)	(2)	(3)	(4)	(5)	(6)	
Panel A.Municipal personr	nel one year	[•] after the e	lection				
$1{IncumbVoteMargin < 0}$	0.0693	0.0715	0.0621	0.0233	0.0326	0.0204	
	(0.0188)	(0.0242)	(0.0196)	(0.0168)	(0.0220)	(0.0176)	
Observations	2,533	$1,\!656$	2,381	2,589	$1,\!656$	2,381	
R-squared	0.0315	0.0264	0.0318	0.0159	0.0116	0.0159	
Clusters	2157	1507	2052	2205	1507	2052	
Mean Dep Variable	0.306	0.317	0.308	0.226	0.235	0.227	
Using Bandwidth	0.119	0.0700	0.110	0.122	0.0700	0.110	
Optimal Bandwidth	0.119	0.119	0.119	0.122	0.122	0.122	
Panel B.Municipal Person	nel from on	e to two yea	ars after the	election			
1 { <i>IncumbVoteMargin</i> <0}	0.0169	0.0290	0.0147	0.0051	0.0165	0.0043	
	(0.0150)	(0.0208)	(0.0166)	(0.0136)	(0.0187)	(0.0150)	
Observations	2,826	1,650	2,373	2,780	1,650	2,373	
R-squared	0.0019	0.0031	0.0030	0.0065	0.0045	0.0060	
Clusters	2,357	1,503	2,047	2,326	1,503	2,047	
Mean Dep Variable	0.235	0.238	0.235	0.177	0.183	0.179	
Using Bandwidth	0.137	0.0700	0.110	0.135	0.0700	0.110	
-							

 Table A.2: Political Turnover and Municipal Personnel Replacement (Table 2 in AMT)

(a) Reproduced Table

Note: Table A.2a reproduces Table 2 in AMT (2022) with new code from raw data. Table A.2b is the same as the original Table 2 in AMT (2022).

0.137

0.135

0.135

0.135

0.137

0.137

Panel A	Outcom	e: individu	al fourth-g	rade test so	ores (stand	lardized)		
	(1)	(2)	(3)	(4)	(5)	(6)		
1 {IncumbentVoteMargin< 0}	-0.070	-0.059	-0.091	-0.075	-0.067	-0.055		
	(0.025)	(0.023)	(0.029)	(0.027)	(0.024)	(0.022)		
School-level baseline scores	0.863	0.734	0.864	0.737	0.861	0.732		
	(0.012)	(0.012)	(0.015)	(0.015)	(0.012)	(0.012)		
Observations	$414,\!675$	$414,\!675$	$295,\!170$	$295,\!170$	$429,\!979$	$429,\!979$		
R-squared	0.218	0.253	0.213	0.248	0.218	0.252		
Controls	No	Yes	No	Yes	No	Yes		
Clusters	2,045	2,045	1,538	1,538	2,101	2,101		
Using Bandwidth	0.105	0.105	0.070	0.070	0.110	0.110		
Optimal Bandwidth	0.105	0.105	0.140	0.140	0.140	0.140		
Panel B	Outcome: individual eight-grade test scores (standardized)							
1 {IncumbentVoteMargin< 0}	-0.053	-0.043	-0.050	-0.046	-0.059	-0.049		
	(0.023)	(0.023)	(0.030)	(0.029)	(0.025)	(0.025)		
School-level baseline scores	0.790	0.726	0.783	0.725	0.783	0.722		
	0.012	0.013	0.016	0.017	0.013	0.014		
Observations	235,509	235,509	126,855	126,855	191,169	191,169		
R-squared	0.163	0.175	0.158	0.170	0.157	0.169		
Controls	No	Yes	No	Yes	No	Yes		
Clusters	1,540	1,540	965	965	1,335	1,335		
Using Bandwidth	0.140	0.140	0.070	0.070	0.110	0.110		
Optimal Bandwidth	0.140	0.140	0.140	0.140	0.140	0.140		

Table A.3: Political Turnover and Fourth Grade and Eighth-grade Test Scores (Table 3 in AMT) (a) Reproduced Table

(b) Original Table

Panel A	Outcome	e: individua	al fourth-gi	rade test so	cores (stand	lardized)
	(1)	(2)	(3)	(4)	(5)	(6)
1 {IncumbentVoteMargin< 0}	-0.082	-0.064	-0.091	-0.075	-0.067	-0.055
	(0.028)	(0.026)	(0.029)	(0.027)	(0.024)	(0.022)
School-level baseline scores	0.869	0.739	0.864	0.737	0.861	0.732
	(0.014)	(0.014)	(0.015)	(0.015)	(0.012)	(0.012)
Observations	$325,\!554$	$325,\!554$	$295,\!170$	$295,\!170$	429,979	429,979
R-squared	0.218	0.252	0.213	0.248	0.218	0.252
Controls	No	Yes	No	Yes	No	Yes
Clusters	1669	1669	1538	1538	2101	2101
Using Bandwidth	0.0782	0.0782	0.0700	0.0700	0.110	0.110
Optimal Bandwidth	0.0782	0.0782	0.0782	0.0782	0.0782	0.0782
Panel B	Outcom	e: individu	al eight-gr	ade test sco	ores (stand	ardized)
$1 \{IncumbentVoteMargin < 0\}$	-0.054	-0.042	-0.050	-0.046	-0.059	-0.049
	(0.023)	(0.023)	(0.030)	(0.029)	(0.025)	(0.025)
School-level baseline scores	0.789	0.729	0.783	0.725	0.783	0.722
	(0.012)	(0.013)	(0.016)	(0.017)	(0.013)	(0.014)
Observations	$245,\!302$	$245,\!302$	126,855	$126,\!855$	$191,\!169$	191,169
R-squared	0.162	0.174	0.158	0.170	0.157	0.169
Controls	No	Yes	No	Yes	No	Yes
Clusters	1602	1602	965	965	1335	1335
Using Bandwidth	0.151	0.151	0.0700	0.0700	0.110	0.110
Optimal Bandwidth	0.151	0.151	0.151	0.151	0.151	0.151

Note: Table A.3a reproduces Table 3 in AMT (2022) with new code from raw data. Table A.3b is the same as the original Table 3 in AMT (2022).

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Headmaster Replacements								
(1)	(2)	(3)	(4)	(5)	(6)			
0.277 (0.030)	0.276 (0.030)	0.273 (0.040)	0.272 (0.039)	0.271 (0.032)	0.270 (0.032)			
12,593	12,593	7,517	7,517	11,196	11,196			
0.095	0.099	0.090	0.096	0.096	0.099			
No	Yes	No	Yes	No	Yes			
2,326	2,326	1,562	1,562	2,139	2,139			
0.442	0.442	0.454	0.454	0.446	0.446			
0.124	0.124	0.070	0.070	0.110	0.110			
0.124	0.124	0.124	0.124	0.124	0.124			
	(1) 0.277 (0.030) 12,593 0.095 No 2,326 0.442 0.124 0.124	$\begin{array}{c cccc} & & & & & \\ \hline (1) & (2) \\ \hline 0.277 & 0.276 \\ \hline 0.030) & (0.030) \\ \hline 12,593 & 12,593 \\ 0.095 & 0.099 \\ \hline No & Yes \\ 2,326 & 2,326 \\ 0.442 & 0.442 \\ 0.124 & 0.124 \\ \hline 0.124 & 0.124 \\ \hline 0.124 & 0.124 \\ \hline \end{array}$	Headmaster 1 (1) (2) (3) 0.277 0.276 0.273 (0.030) (0.030) (0.040) $12,593$ $12,593$ $7,517$ 0.095 0.099 0.090 NoYesNo $2,326$ $2,326$ $1,562$ 0.442 0.442 0.454 0.124 0.124 0.124 0.124 0.124 0.124	Headmaster Replacement(1)(2)(3)(4) 0.277 0.276 0.273 0.272 (0.030) (0.030) (0.040) (0.039) $12,593$ $12,593$ $7,517$ $7,517$ 0.095 0.099 0.090 0.096 NoYesNoYes $2,326$ $2,326$ $1,562$ $1,562$ 0.442 0.442 0.454 0.454 0.124 0.124 0.070 0.070 0.124 0.124 0.124 0.124	Headmaster Replacements(1)(2)(3)(4)(5) 0.277 0.276 0.273 0.272 0.271 (0.030) (0.030) (0.040) (0.039) (0.032) $12,593$ $12,593$ $7,517$ $7,517$ $11,196$ 0.095 0.099 0.090 0.096 0.096 NoYesNoYesNo $2,326$ $2,326$ $1,562$ $1,562$ $2,139$ 0.442 0.442 0.454 0.454 0.446 0.124 0.124 0.070 0.070 0.110 0.124 0.124 0.124 0.124 0.124			

Table A.4: Political Turnover and Headmaster Replacements (Table 4 in AMT) (a) Beproduced Table

Outcome:	Headmaster Replacements									
	(1)	(2)	(3)	(4)	(5)	(6)				
$1{IncumbVoteMargin<0}$	0.278	0.275	0.273	0.272	0.271	0.270				
	(0.027)	(0.026)	(0.040)	(0.039)	(0.032)	(0.032)				
Observations	15,011	15,011	7,517	7,517	$11,\!196$	$11,\!196$				
R-squared	0.099	0.103	0.090	0.096	0.096	$0,\!100$				
Controls	No	Yes	No	Yes	No	Yes				
Clusters	$2,\!648$	$2,\!648$	1,562	1,562	2,139	2,139				
Mean Dependent Variable	0.435	0.435	0.454	0.454	0.446	0.446				
Using Bandwidth	0.157	0.157	0.0700	0.0700	0.110	0.110				
Optimal Bandwidth	0.157	0.157	0.157	0.157	0.157	0.157				

Note: Table A.4a reproduces Table 4 in AMT (2022) with new code from raw data. Table A.4b is the same as the original Table 4 in AMT (2022).

	(a) Rep	roduced T	able					
Outcome:	Share of teachers new to school							
	(1)	(2)	(3)	(4)	(5)	(6)		
Panel A. Municipal								
$1 \{IncumbVoteMargin < 0\}$	0.111	0.113	0.112	0.113	0.101	0.103		
	(0.018)	(0.018)	(0.022)	(0.022)	(0.019)	(0.019)		
Observations	36,180	36,180	21,885	21,885	32,883	32,883		
R-squared	0.028	0.031	0.027	0.029	0.030	0.032		
Controls	No	Yes	No	Yes	No	Yes		
Clusters	2,213	2,213	1,509	1,509	2,056	2,056		
Mean Dep Variable	0.516	0.516	0.520	0.520	0.516	0.516		
Using Bandwidth	0.122	0.122	0.070	0.070	0.110	0.110		
Optimal Bandwidth	0.122	0.122	0.122	0.122	0.122	0.122		
Panel B.Non-NonMunicipal schools								
1 {IncumbVoteMargin<0}	0.010	0.015	0.037	0.037	0.021	0.025		
	(0.013)	(0.013)	(0.019)	(0.018)	(0.015)	(0.015)		
Observations	14,099	14,099	7,449	7,449	10,774	10,774		
R-squared	0.001	0.018	0.003	0.013	0.001	0.015		
Controls	No	Yes	No	Yes	No	Yes		
Clusters	2,505	2,505	1,521	1,521	2,064	2,064		
Mean Dep Variable	0.481	0.481	0.479	0.479	0.478	0.478		
Using Bandwidth	0.151	0.151	0.070	0.070	0.110	0.110		
Optimal Bandwidth	0.151	0.151	0.151	0.151	0.151	0.151		

Table A.5: Political Turnover and New Teachers in Municipal and Non-municipal Schools (Table 5.1 inAMT)

(b) Original Table

Outcome:		Share	e of teache	rs new to s	school	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Municipal						
1 {IncumbVoteMargin<0}	0.117	0.119	0.112	0.113	0.101	0.103
	(0.018)	(0.018)	(0.022)	(0.022)	(0.019)	(0.019)
Observations	38,065	38,065	21,885	21,885	32,883	32,883
R-squared	0.026	0.029	0.027	0.029	0.030	0.032
Controls	No	Yes	No	Yes	No	Yes
Clusters	2297	2297	1509	1509	2056	2056
Mean LHS	0.464	0.464	0.464	0.464	0.459	0.459
Using Bandwidth	0.130	0.130	0.0700	0.0700	0.110	0.110
Optimal Bandwidth	0.130	0.130	0.130	0.130	0.130	0.130
Panel B.Non-municipal schools						
1 {IncumbVoteMargin<0}	0.011	0.016	0.037	0.037	0.021	0.025
	(0.013)	(0.013)	(0.019)	(0.018)	(0.015)	(0.015)
Observations	13,819	13,819	7,449	7,449	10,774	10,774
R-squared	0.001	0.017	0.003	0.013	0.001	0.015
Controls	No	Yes	No	Yes	No	Yes
Clusters	2466	2466	1521	1521	2064	2064
Mean LHS	0.477	0.477	0.475	0.475	0.475	0.475
Using Bandwidth	0.147	0.147	0.0700	0.0700	0.110	0.110
Optimal Bandwidth	0.147	0.147	0.147	0.147	0.147	0.147

Note: Table A.5a reproduces Table 5.1 in AMT (2022) with new code from raw data. Table A.5b is the

(a) Reproduced Table											
Outcome:		Share of t	eachers tha	at have left	the school						
	(1)	(2)	(3)	(4)	(5)	(6)					
Panel C. Municipal											
$1 \{IncumbVoteMargin < 0\}$	0.112	0.114	0.106	0.107	0.098	0.099					
	(0.018)	(0.018)	(0.022)	(0.022)	(0.019)	(0.019)					
Observations	38,152	38,152	21,885	21,885	32,883	32,883					
R-squared	0.024	0.026	0.025	0.026	0.027	0.029					
Controls	No	Yes	No	Yes	No	Yes					
Clusters	2,300	2,300	1,509	1,509	2,056	2,056					
Mean Dep Variable	0.499	0.499	0.503	0.503	0.499	0.499					
Using Bandwidth	0.130	0.130	0.070	0.070	0.110	0.110					
Optimal Bandwidth	0.130	0.130	0.130	0.130	0.130	0.130					
Panel D.Non-municipal schools											
1 {IncumbVoteMargin<0}	0.012	0.014	0.039	0.038	0.023	0.025					
	(0.012)	(0.012)	(0.018)	(0.018)	(0.014)	(0.014)					
Observations	14,757	14,757	$7,\!449$	7,449	10,774	10,774					
R-squared	0.002	0.021	0.003	0.018	0.002	0.020					
Controls	No	Yes	No	Yes	No	Yes					
Clusters	2,588	2,588	1,521	1,521	2,064	2,064					
Mean Dep Variable	0.465	0.465	0.460	0.460	0.463	0.463					
Using Bandwidth	0.161	0.161	0.070	0.070	0.110	0.110					
Optimal Bandwidth	0.161	0.161	0.161	0.161	0.161	0.161					

Table A.6: Political Turnover and New Teachers in Municipal and Non-municipal Schools (Table 5.2 inAMT)

(b) Original Table

Outcome:	Share of teachers that have left the school								
	(1)	(2)	(3)	(4)	(5)	(6)			
Panel C. Municipal									
1 {IncumbVoteMargin<0}	0.114	0.115	0.106	0.107	0.098	0.099			
	(0.018)	(0.018)	(0.022)	(0.022)	(0.019)	(0.019)			
Observations	38,808	38,808	21,885	21,885	32,883	32,883			
R-squared	0.024	0.026	0.025	0.026	0.027	0.029			
Controls	No	Yes	No	Yes	No	Yes			
Clusters	2327	2327	1509	1509	2056	2056			
Mean LHS	0.448	0.448	0.449	0.449	0.444	0.444			
Using Bandwidth	0.133	0.133	0.0700	0.0700	0.110	0.110			
Optimal Bandwidth	0.133	0.133	0.133	0.133	0.133	0.133			
Panel D.Non-municipal schools									
1 {IncumbVoteMargin<0}	0.015	0.017	0.039	0.038	0.023	0.025			
	(0.012)	(0.012)	(0.018)	(0.018)	(0.014)	(0.014)			
Observations	14,427	$14,\!427$	$7,\!449$	7,449	10,774	10,774			
R-squared	0.001	0.021	0.003	0.018	0.002	0.020			
Controls	No	Yes	No	Yes	No	Yes			
Clusters	2551	2551	1521	1521	2064	2064			
Mean LHS	0.460	0.460	0.455	0.455	0.458	0.458			
Using Bandwidth	0.156	0.156	0.0700	0.0700	0.110	0.110			
Optimal Bandwidth	0.156	0.156	0.156	0.156	0.156	0.156			

Note: Table A.6a reproduces Table 5.2 in AMT (2022) with new code from raw data. Table A.6b is the

B Robustness to Specification

27

			Share	of teachers	new to the	school		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Municipal	. ,	()	()	()	()	()	()	
1 {IncumbVoteMargin<0}	0.117	0.117	0.117	0.119	0.119	0.119	0.119	0.119
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Observations	38,065	38,065	38,065	38,065	38,065	38,065	38,065	38,065
R-squared	0.026	0.026	0.026	0.028	0.028	0.028	0.028	0.029
Sewer controls	No	No	Yes	No	Yes	No	Yes	Yes
Urban school controls	No	Yes	No	No	Yes	No	Yes	Yes
Year controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
All school controls	No	No	No	No	No	No	No	Yes
Clusters	2,297	2,297	2,297	2,297	2,297	2,297	2,297	2,297
Mean LHS	0.464	0.464	0.464	0.464	0.464	0.464	0.464	0.464
Using Bandwidth	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.130
Panel B.Non-municipal schools								
1 {IncumbVoteMarain<0}	0.011	0.015	0.013	0.012	0.016	0.014	0.016	0.016
,	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Observations	13.819	13.819	13.819	13.819	13.819	13.819	13.819	13.819
B-squared	0.001	0.013	0.009	0.001	0.014	0.009	0.016	0.017
Sewer controls	No	No	Yes	No	Yes	No	Yes	Yes
Urban school controls	No	Yes	No	No	Yes	No	Yes	Yes
Year controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
All school controls	No	No	No	No	No	No	No	Ves
Clusters	2.466	2.466	2.466	2.466	2.466	2.466	2.466	2.466
Mean LHS	0.477	0.477	0.477	0.477	0.477	0.477	0.477	0.477
Using Bandwidth	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147
			Share of t	eachers tha	t have left	the school		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel C. Municipal								
1 (In numb Vata Mannin < 0)	0.114	0.114	0.114					
1 { <i>incumo voiemargin</i> $\langle 0$ }	0.114	0.114	0.114	0.114	0.114	0.114	0.114	0.115
1 {Incumo voiemargin<0}	(0.018)	(0.018)	(0.014)	0.114 (0.018)	0.114 (0.018)	0.114 (0.018)	0.114 (0.018)	0.115 (0.018)
Observations	(0.018) 38,808	(0.018) 38,808	(0.014) (0.018) 38,808	0.114 (0.018) 38,808	0.114 (0.018) 38,808	0.114 (0.018) 38,808	0.114 (0.018) 38,808	0.115 (0.018) 38,808
Observations R-squared	(0.014) (0.018) 38,808 0.024	(0.018) (0.018) 38,808 0.024	(0.018) (0.018) 38,808 0.024	$\begin{array}{c} 0.114 \\ (\ 0.018) \\ 38,808 \\ 0.024 \end{array}$	$\begin{array}{c} 0.114 \\ (\ 0.018) \\ 38,808 \\ 0.024 \end{array}$	$\begin{array}{c} 0.114 \\ (\ 0.018) \\ 38,808 \\ 0.025 \end{array}$	$\begin{array}{c} 0.114 \\ (\ 0.018) \\ 38,808 \\ 0.025 \end{array}$	$\begin{array}{c} 0.115 \\ (\ 0.018) \\ 38,808 \\ 0.026 \end{array}$
Observations R-squared Sewer controls	(0.018) 38,808 0.024 No	(0.018) 38,808 0.024 No	0.114 (0.018) 38,808 0.024 Yes	0.114 (0.018) 38,808 0.024 No	0.114 (0.018) 38,808 0.024 Yes	0.114 (0.018) 38,808 0.025 No	0.114 (0.018) 38,808 0.025 Yes	0.115 (0.018) 38,808 0.026 Yes
Observations R-squared Sewer controls Urban school controls	0.114 (0.018) 38,808 0.024 No No	(0.014 (0.018) 38,808 0.024 No Yes	0.114 (0.018) 38,808 0.024 Yes No	0.114 (0.018) 38,808 0.024 No No	0.114 (0.018) 38,808 0.024 Yes Yes	0.114 (0.018) 38,808 0.025 No No	0.114 (0.018) 38,808 0.025 Yes Yes	0.115 (0.018) 38,808 0.026 Yes Yes
Observations R-squared Sewer controls Urban school controls Year controls	(0.018) 38,808 0.024 No No	(0.018) 38,808 0.024 No Yes No	(0.014 (0.018) 38,808 0.024 Yes No Yes	0.114 (0.018) 38,808 0.024 No No Yes	0.114 (0.018) 38,808 0.024 Yes Yes Yes	0.114 (0.018) 38,808 0.025 No No Yes	0.114 (0.018) 38,808 0.025 Yes Yes Yes	0.115 (0.018) 38,808 0.026 Yes Yes Yes
Observations R-squared Sewer controls Urban school controls Year controls All school controls	(0.018) 38,808 0.024 No No No	(0.018) 38,808 0.024 No Yes No No	(0.018) 38,808 0.024 Yes No Yes No	0.114 (0.018) 38,808 0.024 No No Yes No	0.114 (0.018) 38,808 0.024 Yes Yes Yes No	0.114 (0.018) 38,808 0.025 No No Yes No	0.114 (0.018) 38,808 0.025 Yes Yes Yes No	0.115 (0.018) 38,808 0.026 Yes Yes Yes Yes
Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters	0.114 (0.018) 38,808 0.024 No No No No 2.327	(0.018) 38,808 0.024 No Yes No No 2.327	0.114 (0.018) 38,808 0.024 Yes No Yes No 2.327	0.114 (0.018) 38,808 0.024 No Yes No 2.327	0.114 (0.018) 38,808 0.024 Yes Yes Yes No 2.327	0.114 (0.018) 38,808 0.025 No Yes No 2.327	0.114 (0.018) 38,808 0.025 Yes Yes Yes No 2.327	0.115 (0.018) 38,808 0.026 Yes Yes Yes Yes 2.327
Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters Mean LHS	0.114 (0.018) 38,808 0.024 No No No 2,327 0.448	(0.018) 38,808 0.024 No Yes No No 2,327 0.448	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448	0.114 (0.018) 38,808 0.024 Yes Yes Yes No 2,327 0.448	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448	0.114 (0.018) 38,808 0.025 Yes Yes Yes No 2,327 0.448	0.115 (0.018) 38,808 0.026 Yes Yes Yes Yes 2,327 0.448
Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters Mean LHS Using Bandwidth	0.114 (0.018) 38,808 0.024 No No No 2,327 0.448 0.133	(0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.024 Yes Yes Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.025 Yes Yes Yes No 2,327 0.448 0.133	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133
Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters Mean LHS Using Bandwidth Panel D.Non-municipal schools	0.114 (0.018) 38,808 0.024 No No 2,327 0.448 0.133	(0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.024 Yes Yes Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.025 Yes Yes No 2,327 0.448 0.133	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133
Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters Mean LHS Using Bandwidth Panel D.Non-municipal schools 1 {IncumbVoteMargin<0}	0.114 (0.018) 38,808 0.024 No No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.024 Yes Yes Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133	0.114 (0.018) 38,808 0.025 Yes Yes No 2,327 0.448 0.133	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133
Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters Mean LHS Using Bandwidth Panel D.Non-municipal schools 1 {IncumbVoteMargin<0}	0.114 (0.018) 38,808 0.024 No No No 2,327 0.448 0.133 0.015 (0.013)	0.114 (0.018) 38,808 0.024 No Yes No No 2,327 0.448 0.133 0.019 (0.012)	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133 0.018 (0.012)	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.013 (0.012)	0.114 (0.018) 38,808 0.024 Yes Yes No 2,327 0.448 0.133 0.017 (0.012)	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133 0.015 (0.012)	0.114 (0.018) 38,808 0.025 Yes Yes No 2,327 0.448 0.133 0.018 (0.012)	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133 0.017 (0.012)
Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters Mean LHS Using Bandwidth Panel D.Non-municipal schools 1 {IncumbVoteMargin<0} Observations	0.114 (0.018) 38,808 0.024 No No No 2,327 0.448 0.133 0.015 (0.013) 14,427	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.019 (0.012) 14,427	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.013 (0.012) 14,427	0.114 (0.018) 38,808 0.024 Yes Yes Yes No 2,327 0.448 0.133 0.017 (0.012) 14,427	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133 0.015 (0.012) 14,427	0.114 (0.018) 38,808 0.025 Yes Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133 0.017 (0.012) 14,427
I {Incumb VoteMargin<0}	0.114 (0.018) 38,808 0.024 No No No 2,327 0.448 0.133 0.015 (0.013) 14,427 0.001	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.019 (0.012) 14,427 0.015	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.012	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.013 (0.012) 14,427 0.004	0.114 (0.018) 38,808 0.024 Yes Yes No 2,327 0.448 0.133 0.017 (0.012) 14,427 0.017	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133 0.015 (0.012) 14,427 0.014	0.114 (0.018) 38,808 0.025 Yes Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.021	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133 0.017 (0.012) 14,427 0.021
I {Incumo vote Margin<0}	0.114 (0.018) 38,808 0.024 No No No 2,327 0.448 0.133 0.015 (0.013) 14,427 0.001 No	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.019 (0.012) 14,427 0.015 No	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.012 Yes	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.013 (0.012) 14,427 0.004 No	0.114 (0.018) 38,808 0.024 Yes Yes No 2,327 0.448 0.133 0.017 (0.012) 14,427 0.017 Yes	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133 0.015 (0.012) 14,427 0.014 No	0.114 (0.018) 38,808 0.025 Yes Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.021 Yes	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133 0.017 (0.012) 14,427 0.021 Yes
I {Incumo votemargin<0}	0.114 (0.018) 38,808 0.024 No No No 2,327 0.448 0.133 0.015 (0.013) 14,427 0.001 No No	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.019 (0.012) 14,427 0.015 No Yes	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.012 Yes No	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.013 (0.012) 14,427 0.004 No No	0.114 (0.018) 38,808 0.024 Yes Yes No 2,327 0.448 0.133 0.017 (0.012) 14,427 0.017 Yes Yes	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133 0.015 (0.012) 14,427 0.014 No No	0.114 (0.018) 38,808 0.025 Yes Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.021 Yes Yes	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133 0.017 (0.012) 14,427 0.021 Yes Yes
I {Incumo vote Margin<0}	0.114 (0.018) 38,808 0.024 No No No 2,327 0.448 0.133 0.015 (0.013) 14,427 0.001 No No No	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.019 (0.012) 14,427 0.015 No Yes No	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.012 Yes No Yes	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.013 (0.012) 14,427 0.004 No No Yes	0.114 (0.018) 38,808 0.024 Yes Yes No 2,327 0.448 0.133 0.017 (0.012) 14,427 0.017 Yes Yes Yes	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133 0.015 (0.012) 14,427 0.014 No No Yes	0.114 (0.018) 38,808 0.025 Yes Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.021 Yes Yes Yes	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133 0.017 (0.012) 14,427 0.021 Yes Yes Yes
Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters Mean LHS Using Bandwidth Panel D.Non-municipal schools 1 {IncumbVoteMargin<0} Observations R-squared Sewer controls Urban school controls Year controls All school controls	0.114 (0.018) 38,808 0.024 No No No 2,327 0.448 0.133 0.015 (0.013) 14,427 0.001 No No No No	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.019 (0.012) 14,427 0.015 No Yes No No	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.012 Yes No Yes No	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.013 (0.012) 14,427 0.004 No No Yes No	0.114 (0.018) 38,808 0.024 Yes Yes No 2,327 0.448 0.133 0.017 (0.012) 14,427 0.017 Yes Yes Yes No	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133 0.015 (0.012) 14,427 0.014 No No Yes No	0.114 (0.018) 38,808 0.025 Yes Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.021 Yes Yes Yes No	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133 0.017 (0.012) 14,427 0.021 Yes Yes Yes Yes
Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters Mean LHS Using Bandwidth Panel D.Non-municipal schools 1 {IncumbVoteMargin<0} Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters	0.114 (0.018) 38,808 0.024 No No 2,327 0.448 0.133 0.015 (0.013) 14,427 0.001 No No No No No No No	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.019 (0.012) 14,427 0.015 No Yes No No 2,551	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.012 Yes No Yes No Yes No 2,551	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.013 (0.012) 14,427 0.004 No No Yes No 2,551	0.114 (0.018) 38,808 0.024 Yes Yes No 2,327 0.448 0.133 0.017 (0.012) 14,427 0.017 Yes Yes Yes No 2,551	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133 0.015 (0.012) 14,427 0.014 No No Yes No 2,551	0.114 (0.018) 38,808 0.025 Yes Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.021 Yes Yes Yes No 2,551	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133 0.017 (0.012) 14,427 0.021 Yes Yes Yes Yes Yes Yes Yes
Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters Mean LHS Using Bandwidth Panel D.Non-municipal schools 1 {IncumbVoteMargin<0} Observations R-squared Sewer controls Urban school controls Year controls All school controls Clusters Mean LHS	0.114 (0.018) 38,808 0.024 No No No 2,327 0.448 0.133 0.015 (0.013) 14,427 0.001 No No No No No No No No No No	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 0.019 (0.012) 14,427 0.015 No Yes No No 2,551 0.460	0.114 (0.018) 38,808 0.024 Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.012 Yes No Yes No 2,551 0.460	0.114 (0.018) 38,808 0.024 No Yes No 2,327 0.448 0.133 (0.012) 14,427 0.004 No No Yes No 2,551 0.460	0.114 (0.018) 38,808 0.024 Yes Yes No 2,327 0.448 0.133 0.017 (0.012) 14,427 0.017 Yes Yes Yes Yes No 2,551 0.460	0.114 (0.018) 38,808 0.025 No Yes No 2,327 0.448 0.133 0.015 (0.012) 14,427 0.014 No No Yes No 2,551 0.460	0.114 (0.018) 38,808 0.025 Yes Yes No 2,327 0.448 0.133 0.018 (0.012) 14,427 0.021 Yes Yes Yes Yes No 2,551 0.460	0.115 (0.018) 38,808 0.026 Yes Yes Yes 2,327 0.448 0.133 0.017 (0.012) 14,427 0.021 Yes Yes Yes Yes Yes Yes 2,551 0.460

Table A.7: Speci	fication Test	1 (of 3)	for Table	5 in AMT
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Notes: Table A.7 shows how the RD estimates change as we vary the controls included in the specifications. See the

	1		Share	of teachers	new to the	school		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Municipal								
1 {IncumbVoteMargin<0}	0.112	0.112	0.112	0.113	0.113	0.113	0.113	0.113
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Observations	21,885	21,885	21,885	21,885	21,885	21,885	21,885	21,885
R-squared	0.027	0.027	0.027	0.028	0.028	0.028	0.028	0.029
Sewer controls	No	No	Yes	No	Yes	No	Yes	Yes
Urban school controls	No	Yes	No	No	Yes	No	Yes	Yes
Year controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
All school controls	No	No	No	No	No	No	No	Yes
Clusters	1.509	1.509	1.509	1.509	1.509	1.509	1.509	1.509
Mean LHS	0.464	0.464	0.464	0.464	0.464	0.464	0.464	0.464
Using Bandwidth	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070
Panel B Non-municipal schools								
1 {IncumbVoteMarain<0}	0.037	0.040	0.038	0.037	0.040	0.038	0.040	0.037
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0010)	(0.018)
Observations	7 //0	7 440	7 440	7 440	7 440	7 440	7 //0	7 //0
P coupred	0.002	0.000	0.000	0.002	0.000	0.000	0.012	0.012
Comprovements	0.005 No	0.009 No	0.009 Vec	0.005 No	0.009 Vez	0.009 No	0.012 Vec	0.015 Vec
Sewer controls	INO N.	INO Vez	res	INO N.	Yes	INO N.	Yes	Yes
Urban school controls	NO	res	INO N	INO	res	INO	res	res
Year controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
All school controls	No	No	No	No	No	No	No	Yes
Clusters	1,521	1,521	1,521	1,521	1,521	1,521	1,521	1,521
Mean LHS	0.475	0.475	0.475	0.475	0.475	0.475	0.475	0.475
			Share of t	eachers that	t have left	the school		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel C. Municipal								
1 {IncumbVoteMargin<0}	0.106	0.106	0.107	0.107	0.107	0.107	0.107	0.107
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Observations	21,885	21,885	21,885	21,885	21,885	21,885	21,885	21,885
R-squared	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.026
Sewer controls	No	No	Yes	No	Yes	No	Yes	Yes
Urban school controls	No	Yes	No	No	Yes	No	Yes	Yes
Year controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
All school controls	No	No	No	No	No	No	No	Yes
Clusters	1.509	1.509	1.509	1.509	1.509	1.509	1.509	1.509
Mean LHS	0.449	0.449	0 449	0 449	0 449	0.449	0 449	0 449
Using Bandwidth	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070
Panel D.Non-municipal schools								
1 {IncumbVoteMarain<0}	0.039	0.042	0.040	0.037	0.040	0.038	0.040	0.038
2 (110001100 / 0001100/g010 (0)	(0.019)	(0.019)	(0.018)	(0.018)	(0.019)	(0.018)	(0.019)	(0.018)
Observations	$7,\!449$	$7,\!449$	$7,\!449$	$7,\!449$	$7,\!449$	$7,\!449$	$7,\!449$	$7,\!449$
R-squared	0.003	0.009	0.010	0.008	0.014	0.015	0.017	0.018
Sewer controls	No	No	Yes	No	Yes	No	Yes	Yes
Urban school controls	No	Yes	No	No	Yes	No	Yes	Yes
Year controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
All school controls	No	No	No	No	No	No	No	Yes
Clusters	1,521	1,521	1,521	1,521	1,521	1,521	1,521	1,521
Mean LHS	0.455	0.455	0.455	0.455	0.455	0.455	0.455	0.455
Using Bandwidth	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070

Table A.8:	Specification	Test 2	$({\rm of}\ 3)$	for	Table !	5 in	AMT
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	1		Share	of teachers	new to the	school		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Municipal	. /	. /	. /	. /	. /	. /	. /	. /
1 {IncumbVoteMargin<0}	0.101	0.101	0.101	0.102	0.102	0.102	0.102	0.103
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Observations	32,883	32,883	32,883	32,883	32,883	32,883	32,883	32,883
R-squared	0.030	0.030	0.030	0.031	0.031	0.031	0.031	0.032
Sewer controls	No	No	Yes	No	Yes	No	Yes	Yes
Urban school controls	No	Yes	No	No	Yes	No	Yes	Yes
Year controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
All school controls	No	No	No	No	No	No	No	Yes
Clusters	2,056	2,056	2,056	2,056	2,056	2,056	2,056	2,056
Mean LHS	0.459	0.459	0.459	0.459	0.459	0.459	0.459	0.459
Using Bandwidth	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110
Panel B.Non-municipal schools								
1 {IncumbVoteMargin<0}	0.021	0.024	0.022	0.021	0.025	0.023	0.025	0.025
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Observations	10,774	10,774	10,774	10,774	10,774	10,774	10,774	10,774
R-squared	0.001	0.011	0.009	0.001	0.011	0.009	0.014	0.015
Sewer controls	No	No	Yes	No	Yes	No	Yes	Yes
Urban school controls	No	Yes	No	No	Yes	No	Yes	Yes
Year controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
All school controls	No	No	No	No	No	No	No	Yes
Clusters	2.064	2.064	2.064	2.064	2.064	2.064	2.064	2.064
Mean LHS	0.475	0.475	0.475	0.475	0.475	0.475	0.475	0.475
Using Bandwidth	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110
			Share of t	eachers tha	at have left	the school		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel C. Municipal	()	()	()	()	()	()	()	()
1 {IncumbVoteMargin<0}	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.099
	(0.019)	(0.019)	(0.019)	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)
Observations	32.883	32.883	32.883	32.883	32.883	32.883	32.883	32.883
R-squared	0.027	0.027	0.028	0.028	0.028	0.028	0.028	0.029
Sewer controls	No	No	Yes	No	Yes	No	Yes	Yes
Urban school controls	No	Yes	No	No	Yes	No	Yes	Yes
Year controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
All school controls	No	No	No	No	No	No	No	Yes
Clusters	2.056	2.056	2.056	2.056	2.056	2.056	2.056	2.056
Mean LHS	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.444
Using Bandwidth	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110
Panel D.Non-municipal schools								
1 {IncumbVoteMargin<0}	0.023	0.026	0.025	0.020	0.024	0.022	0.024	0.025
	(0.015)	(0.014)	(0.014)	(0.014)	(0.015)	(0.014)	(0.015)	(0.014)
Observations	10,774	10,774	10,774	10,774	10,774	10,774	10.774	10.774
R-squared	0.002	0.012	0.012	0.006	0.016	0.015	0.020	0.020
Sewer controls	No	No	Yes	No	Yes	No	Yes	Yes
Urban school controls	No	Yes	No	No	Yes	No	Yes	Yes
Year controls	No	No	Ves	Ves	Ves	Ves	Ves	Ves
All school controls	No	No	No	No	No	No	No	Ves
Clusters	2 064	2 064	2 064	2 064	2 064	2 064	2 064	2 064
Mean LHS	2,004	2,004	2,004 0.459	2,004 0.459	2,004 0.459	2,004 0.459	2,004 0.459	2,004 0.459
Using Bondwidth	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
Using Danuwiutii	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110

Table A.9:	Specification	Test 3	$({\rm of}\ 3)$	for	Table	$5 ext{ in}$	h AMT
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Panel A		Outcom	e: individu	al fourth-gi	rade test sc	ores (stand	ardized)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
1 {Incumbent VoteMargin< 0}	-0.082	-0.076	-0.083	-0.066	-0.076	-0.064	-0.067	-0.064	
	(0.028)	(0.028)	(0.028)	(0.026)	(0.027)	(0.026)	(0.026)	(0.026)	
School-level baseline scores	0.869	0.865	0.802	0.797	0.798	0.797	0.741	0.739	
	(0.014)	(0.014)	(0.015)	(0.013)	(0.015)	(0.013)	(0.014)	(0.014)	
Observations	$325,\!554$	$325,\!554$	$325,\!554$	$325,\!554$	$325,\!554$	$325,\!554$	$325,\!554$	$325,\!554$	
R-squared	0.218	0.219	0.223	0.248	0.224	0.249	0.252	0.252	
Year Control	No	Yes	No	Yes	No	Yes	Yes	Yes	
Student Controls	No	No	No	Yes	No	Yes	Yes	Yes	
School Controls	No	No	Yes	No	Yes	No	Yes	Yes	
Clusters	1,669	$1,\!669$	$1,\!669$	1,669	1,669	$1,\!669$	$1,\!669$	$1,\!669$	
Using Bandwidth	0.0782	0.0782	0.0782	0.0782	0.0782	0.0782	0.0782	0.0782	
	Outcome: individual eight-grade test scores (standardized)								
Panel B		Outcom	ne: individu	al eight-gr	ade test sco	ores (standa	ardized)		
Panel B	(1)	Outcom (2)	ne: individu (3)	(4)	ade test sco (5)	ores (standa (6)	ardized) (7)	(8)	
Panel B 1 {IncumbentVoteMargin< 0}	(1)	Outcom (2) -0.049	ne: individu (3) -0.052	(4) -0.047	ade test sco (5) -0.046	$\frac{(6)}{-0.044}$	ardized) (7) -0.045	(8)	
Panel B 1 {IncumbentVoteMargin< 0}	(1) -0.054 (0.028)	Outcom (2) -0.049 (0.028)	ne: individu (3) -0.052 (0.028)		ade test sco (5) -0.046 (0.027)		ardized) (7) -0.045 (0.026)	(8) -0.042 (0.026)	
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores	(1) -0.054 (0.028) 0.789	Outcon (2) -0.049 (0.028) 0.786	ne: individu (3) -0.052 (0.028) 0.765				(7) -0.045 (0.026) 0.730	(8) -0.042 (0.026) 0.729	
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores	(1) -0.054 (0.028) 0.789 (0.012)	Outcon (2) -0.049 (0.028) 0.786 (0.012)	$ \begin{array}{c} \text{(3)} \\ \hline & (3) \\ \hline & (0.052 \\ & (0.028) \\ & 0.765 \\ & (0.013) \end{array} $	$ \begin{array}{c} $			(7) -0.045 (0.026) 0.730 (0.013)	(8) -0.042 (0.026) 0.729 (0.013)	
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations	(1) -0.054 (0.028) 0.789 (0.012) 245,302	Outcom (2) -0.049 (0.028) 0.786 (0.012) 245,302	(3) -0.052 (0.028) 0.765 (0.013) 245,302	$ \begin{array}{c} $		(6) -0.044 (0.026) 0.748 (0.012) 245,302	(7) -0.045 (0.026) 0.730 (0.013) 245,302	(8) -0.042 (0.026) 0.729 (0.013) 245,302	
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared	$(1) \\ -0.054 \\ (0.028) \\ 0.789 \\ (0.012) \\ 245,302 \\ 0.162 \\$	Outcom (2) -0.049 (0.028) 0.786 (0.012) 245,302 0.163	e: individu (3) -0.052 (0.028) 0.765 (0.013) 245,302 0.163	(4) -0.047 (0.026) 0.750 (0.012) 245,302 0.173	ade test sco (5) -0.046 (0.027) 0.762 (0.012) 245,302 0.164	(6) -0.044 (0.026) 0.748 (0.012) 245,302 0.173	rdized) (7) -0.045 (0.026) 0.730 (0.013) 245,302 0.174	$(8) \\ -0.042 \\ (0.026) \\ 0.729 \\ (0.013) \\ 245,302 \\ 0.174 $	
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control	(1) -0.054 (0.028) 0.789 (0.012) 245,302 0.162 No	Outcom (2) (0.049 (0.028) 0.786 (0.012) 245,302 0.163 Yes	e: individu (3) -0.052 (0.028) 0.765 (0.013) 245,302 0.163 No	(4) -0.047 (0.026) 0.750 (0.012) 245,302 0.173 No	ade test sco (5) -0.046 (0.027) 0.762 (0.012) 245,302 0.164 Yes	(6) -0.044 (0.026) 0.748 (0.012) 245,302 0.173 Yes	rdized) (7) -0.045 (0.026) 0.730 (0.013) 245,302 0.174 No	(8) -0.042 (0.026) 0.729 (0.013) 245,302 0.174 Yes	
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control Student Controls	(1) -0.054 (0.028) 0.789 (0.012) 245,302 0.162 No No	Outcom (2) -0.049 (0.028) 0.786 (0.012) 245,302 0.163 Yes No	e: individu (3) -0.052 (0.028) 0.765 (0.013) 245,302 0.163 No No	(4) -0.047 (0.026) 0.750 (0.012) 245,302 0.173 No Yes	ade test sco (5) -0.046 (0.027) 0.762 (0.012) 245,302 0.164 Yes No	(6) -0.044 (0.026) 0.748 (0.012) 245,302 0.173 Yes Yes	(7) -0.045 (0.026) 0.730 (0.013) 245,302 0.174 No Yes	(8) -0.042 (0.026) 0.729 (0.013) 245,302 0.174 Yes Yes	
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control Student Controls School Controls	(1) -0.054 (0.028) 0.789 (0.012) 245,302 0.162 No No No	Outcom (2) -0.049 (0.028) 0.786 (0.012) 245,302 0.163 Yes No No No	e: individu (3) -0.052 (0.028) 0.765 (0.013) 245,302 0.163 No No Yes	(4) -0.047 (0.026) 0.750 (0.012) 245,302 0.173 No Yes No	(5) -0.046 (0.027) 0.762 (0.012) 245,302 0.164 Yes No Yes	(6) -0.044 (0.026) 0.748 (0.012) 245,302 0.173 Yes Yes No	(7) -0.045 (0.026) 0.730 (0.013) 245,302 0.174 No Yes Yes	(8) -0.042 (0.026) 0.729 (0.013) 245,302 0.174 Yes Yes Yes Yes	
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control Student Controls School Controls Clusters	(1) -0.054 (0.028) 0.789 (0.012) 245,302 0.162 No No No No 1,602	Outcon (2) -0.049 (0.028) 0.786 (0.012) 245,302 0.163 Yes No No No 1,602	e: individu (3) -0.052 (0.028) 0.765 (0.013) 245,302 0.163 No No Yes 1,602	(4) -0.047 (0.026) 0.750 (0.012) 245,302 0.173 No Yes No 1,602	ade test sco (5) -0.046 (0.027) 0.762 (0.012) 245,302 0.164 Yes No Yes 1,602	(6) -0.044 (0.026) 0.748 (0.012) 245,302 0.173 Yes Yes No 1,602	rdized) (7) -0.045 (0.026) 0.730 (0.013) 245,302 0.174 No Yes Yes 1,602	(8) -0.042 (0.026) 0.729 (0.013) 245,302 0.174 Yes Yes Yes Yes 1,602	

Table A.10:	Specification	Test 1	(of 3)	for Table	e 3 in AMT
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Note: Table A.10 shows how the RD estimates change as we vary the controls included in the specifications. See the main text for details.

Panel A		Outcome: individual fourth-grade test scores (standardized)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)			
1 {IncumbentVoteMargin< 0}	-0.091	-0.087	-0.092	-0.075	-0.087	-0.074	-0.077	-0.075			
	(0.029)	(0.029)	(0.029)	(0.027)	(0.028)	(0.027)	(0.027)	(0.027)			
School-level baseline scores	0.864	0.861	0.799	0.793	0.796	0.792	0.738	0.737			
	(0.015)	(0.015)	(0.015)	(0.014)	(0.015)	(0.014)	(0.015)	(0.015)			
Observations	$295,\!170$	$295,\!170$	$295,\!170$	$295,\!170$	$295,\!170$	$295,\!170$	$295,\!170$	$295,\!170$			
R-squared	0.213	0.214	0.218	0.244	0.219	0.244	0.247	0.248			
Year Control	No	Yes	No	Yes	No	Yes	Yes	Yes			
Student Controls	No	No	No	Yes	No	Yes	Yes	Yes			
School Controls	No	No	Yes	No	Yes	No	Yes	Yes			
Clusters	1,538	1,538	1,538	1,538	1,538	1,538	1,538	1,538			
Using Bandwidth	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700			
	Outcome: individual eight-grade test scores (standardized)										
Panel B		Outcom	ne: individu	al eight-gr	ade test sco	ores (standa	ardized)				
Panel B	(1)	Outcom (2)	ne: individu (3)	(4)	ade test sco (5)	ores (standa (6)	ardized) (7)	(8)			
Panel B 1 {IncumbentVoteMargin< 0}	(1)	Outcom (2) -0.048	ne: individu (3) -0.052	(4) -0.044	ade test sco (5) -0.051	$\frac{(6)}{-0.044}$	ardized) (7) -0.046	(8)			
Panel B 1 {IncumbentVoteMargin< 0}	(1) -0.050 (0.029)	Outcon (2) -0.048 (0.029)	ne: individu (3) -0.052 (0.029)		ade test sco (5) -0.051 (0.028)		ardized) (7) -0.046 (0.027)	(8) -0.046 (0.027)			
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores	(1) -0.050 (0.029) 0.783	Outcom (2) -0.048 (0.029) 0.782	e: individu (3) -0.052 (0.029) 0.762		ade test sco (5) -0.051 (0.028) 0.761		(7) -0.046 (0.027) 0.725	(8) -0.046 (0.027) 0.725			
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores	(1) -0.050 (0.029) 0.783 (0.016)	Outcom (2) -0.048 (0.029) 0.782 (0.016)	$ \begin{array}{c} \text{(3)} \\ \hline (3) \\ -0.052 \\ (0.029) \\ 0.762 \\ (0.016) \end{array} $	$ \begin{array}{c} $				(8) -0.046 (0.027) 0.725 (0.017)			
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations	$(1) \\ -0.050 \\ (0.029) \\ 0.783 \\ (0.016) \\ 126,855 \end{cases}$	Outcom (2) -0.048 (0.029) 0.782 (0.016) 126,855	(3) -0.052 (0.029) 0.762 (0.016) 126,855	(4) -0.044 (0.027) 0.742 (0.016) 126,855	$\begin{array}{c} \text{ade test sco} \\ \hline (5) \\ \hline -0.051 \\ (\ 0.028) \\ 0.761 \\ (\ 0.016) \\ 126,855 \end{array}$		(7) -0.046 (0.027) 0.725 (0.017) 126,855	(8) -0.046 (0.027) 0.725 (0.017) 126,855			
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared	$(1) \\ -0.050 \\ (0.029) \\ 0.783 \\ (0.016) \\ 126,855 \\ 0.158 \\ (11)$	Outcon (2) -0.048 (0.029) 0.782 (0.016) 126,855 0.158	e: individu (3) -0.052 (0.029) 0.762 (0.016) 126,855 0.159	$ \begin{array}{c} (4) \\ -0.044 \\ (0.027) \\ 0.742 \\ (0.016) \\ 126,855 \\ 0.170 \\ \end{array} $	$\begin{array}{c} \text{ade test scolution} \\ \hline (5) \\ \hline -0.051 \\ (0.028) \\ 0.761 \\ (0.016) \\ 126,855 \\ 0.159 \end{array}$		(7) -0.046 (0.027) 0.725 (0.017) 126,855 0.170	(8) -0.046 (0.027) 0.725 (0.017) 126,855 0.170			
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control	(1) -0.050 (0.029) 0.783 (0.016) 126,855 0.158 No	Outcon (2) -0.048 (0.029) 0.782 (0.016) 126,855 0.158 Yes	e: individu (3) -0.052 (0.029) 0.762 (0.016) 126,855 0.159 No	(4) -0.044 (0.027) 0.742 (0.016) 126,855 0.170 No	ade test sco (5) -0.051 (0.028) 0.761 (0.016) 126,855 0.159 Yes		(7) -0.046 (0.027) 0.725 (0.017) 126,855 0.170 No	$(8) \\ -0.046 \\ (0.027) \\ 0.725 \\ (0.017) \\ 126,855 \\ 0.170 \\ Yes$			
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control Student Controls	(1) -0.050 (0.029) 0.783 (0.016) 126,855 0.158 No No	Outcom (2) -0.048 (0.029) 0.782 (0.016) 126,855 0.158 Yes No	e: individu (3) -0.052 (0.029) 0.762 (0.016) 126,855 0.159 No No	(4) -0.044 (0.027) 0.742 (0.016) 126,855 0.170 No Yes	ade test sco (5) -0.051 (0.028) 0.761 (0.016) 126,855 0.159 Yes No	(6) -0.044 (0.027) 0.742 (0.016) 126,855 0.170 Yes Yes	(7) -0.046 (0.027) 0.725 (0.017) 126,855 0.170 No Yes	(8) -0.046 (0.027) 0.725 (0.017) 126,855 0.170 Yes Yes			
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control Student Controls School Controls	(1) -0.050 (0.029) 0.783 (0.016) 126,855 0.158 No No No	Outcom (2) -0.048 (0.029) 0.782 (0.016) 126,855 0.158 Yes No No No	e: individu (3) -0.052 (0.029) 0.762 (0.016) 126,855 0.159 No No Yes	(4) -0.044 (0.027) 0.742 (0.016) 126,855 0.170 No Yes No	ade test sco (5) -0.051 (0.028) 0.761 (0.016) 126,855 0.159 Yes No Yes	(6) -0.044 (0.027) 0.742 (0.016) 126,855 0.170 Yes Yes No	(7) -0.046 (0.027) 0.725 (0.017) 126,855 0.170 No Yes Yes Yes	(8) -0.046 (0.027) 0.725 (0.017) 126,855 0.170 Yes Yes Yes Yes			
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control Student Controls School Controls Clusters	(1) -0.050 (0.029) 0.783 (0.016) 126,855 0.158 No No No No 965	Outcon (2) -0.048 (0.029) 0.782 (0.016) 126,855 0.158 Yes No No 965	ee: individu (3) -0.052 (0.029) 0.762 (0.016) 126,855 0.159 No No Yes 965	(4) -0.044 (0.027) 0.742 (0.016) 126,855 0.170 No Yes No 965	ade test sco (5) -0.051 (0.028) 0.761 (0.016) 126,855 0.159 Yes No Yes 965	(6) -0.044 (0.027) 0.742 (0.016) 126,855 0.170 Yes Yes No 965	ardized) (7) -0.046 (0.027) 0.725 (0.017) 126,855 0.170 No Yes Yes 965	(8) -0.046 (0.027) 0.725 (0.017) 126,855 0.170 Yes Yes Yes Yes 965			

Table A.11:	Specification	Test 2 $$	(of 3)	for Table	e 3 in AMT
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Note: Table A.11 shows how the RD estimates change as we vary the controls included in the specifications. See the main text for details.

Panel A	Outcome: individual fourth-grade test scores (standardized)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 {IncumbentVoteMargin< 0}	-0.067	-0.062	-0.071	-0.054	-0.065	-0.053	-0.058	-0.055
	(0.024)	(0.024)	(0.024)	(0.023)	(0.024)	(0.023)	(0.022)	(0.022)
School-level baseline scores	0.861	0.858	0.795	0.790	0.791	0.789	0.733	0.732
	(0.012)	(0.012)	(0.013)	(0.011)	(0.013)	(0.011)	(0.012)	(0.012)
Observations	429,979	429,979	429,979	429,979	$429,\!979$	429,979	429,979	429,979
R-squared	0.218	0.218	0.222	0.248	0.223	0.248	0.252	0.252
Year Control	No	Yes	No	Yes	No	Yes	Yes	Yes
Student Controls	No	No	No	Yes	No	Yes	Yes	Yes
School Controls	No	No	Yes	No	Yes	No	Yes	Yes
Clusters	2,101	2,101	$2,\!101$	2,101	2,101	2,101	2,101	2,101
Using Bandwidth	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100
	Outcome: individual eight-grade test scores (standardized)							
Panel B		Outcon	ne: individu	ıal eight-gr	ade test sco	ores (standa	ardized)	
Panel B	(1)	Outcon (2)	ne: individu	ual eight-gr (4)	ade test sco (5)	bres (standa (6)	ardized) (7)	(8)
Panel B 1 {IncumbentVoteMargin< 0}	(1)	Outcon (2) -0.055	ne: individu (3) -0.056	(4) -0.053	ade test sco (5) -0.052	$\frac{(6)}{-0.052}$	ardized) (7) -0.051	(8)
Panel B 1 {IncumbentVoteMargin< 0}	$(1) \\ -0.059 \\ (0.024)$	(2) -0.055 (0.024)	(3) -0.056 (0.024)				ardized) (7) -0.051 (0.022)	(8) -0.049 (0.022)
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores	(1) -0.059 (0.024) 0.783	Outcom (2) -0.055 (0.024) 0.781	(3) -0.056 (0.024) 0.759		ade test sco (5) -0.052 (0.024) 0.757		ardized) (7) -0.051 (0.022) 0.722	(8) -0.049 (0.022) 0.722
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores	(1) -0.059 (0.024) 0.783 (0.013)	Outcom (2) -0.055 (0.024) 0.781 (0.013)	(3) -0.056 (0.024) 0.759 (0.014)	$ \begin{array}{r} \text{(4)} \\ \hline & (4) \\ \hline & -0.053 \\ (\ 0.023) \\ & 0.743 \\ (\ 0.013) \end{array} $			(7) -0.051 (0.022) 0.722 (0.014)	(8) -0.049 (0.022) 0.722 (0.014)
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations	(1) -0.059 (0.024) 0.783 (0.013) 191,169	Outcom (2) -0.055 (0.024) 0.781 (0.013) 191,169	(3) -0.056 (0.024) 0.759 (0.014) 191,169	$ \begin{array}{r} \text{(4)} \\ \hline & (0.053) \\ (0.023) \\ 0.743 \\ (0.013) \\ 191,169 \end{array} $		(6) -0.052 (0.023) 0.742 (0.013) 191,169	(7) -0.051 (0.022) 0.722 (0.014) 191,169	(8) -0.049 (0.022) 0.722 (0.014) 191,169
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared	$(1) \\ -0.059 \\ (0.024) \\ 0.783 \\ (0.013) \\ 191,169 \\ 0.157 \\ (0.157) \\ (0.100) \\ ($	Outcon (2) -0.055 (0.024) 0.781 (0.013) 191,169 0.157	(3) -0.056 (0.024) 0.759 (0.014) 191,169 0.158	(4) -0.053 (0.023) 0.743 (0.013) 191,169 0.168	ade test sco (5) -0.052 (0.024) 0.757 (0.014) 191,169 0.158	ores (standa) (6) -0.052 (0.023) 0.742 (0.013) 191,169 0.168 -0.052	(7) -0.051 (0.022) 0.722 (0.014) 191,169 0.169	(8) -0.049 (0.022) 0.722 (0.014) 191,169 0.169
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control	(1) -0.059 (0.024) 0.783 (0.013) 191,169 0.157 No	Outcon (2) -0.055 (0.024) 0.781 (0.013) 191,169 0.157 Yes	(3) -0.056 (0.024) 0.759 (0.014) 191,169 0.158 No	(4) -0.053 (0.023) 0.743 (0.013) 191,169 0.168 No	ade test sco (5) -0.052 (0.024) 0.757 (0.014) 191,169 0.158 Yes	ores (standa (6) -0.052 (0.023) 0.742 (0.013) 191,169 0.168 Yes	(7) -0.051 (0.022) 0.722 (0.014) 191,169 0.169 No	(8) -0.049 (0.022) 0.722 (0.014) 191,169 0.169 Yes
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control Student Controls	(1) -0.059 (0.024) 0.783 (0.013) 191,169 0.157 No No	Outcon (2) -0.055 (0.024) 0.781 (0.013) 191,169 0.157 Yes No	(3) -0.056 (0.024) 0.759 (0.014) 191,169 0.158 No No	(4) -0.053 (0.023) 0.743 (0.013) 191,169 0.168 No Yes	ade test sco (5) -0.052 (0.024) 0.757 (0.014) 191,169 0.158 Yes No	ores (standa (6) -0.052 (0.023) 0.742 (0.013) 191,169 0.168 Yes Yes Yes	(7) -0.051 (0.022) 0.722 (0.014) 191,169 0.169 No Yes	(8) -0.049 (0.022) 0.722 (0.014) 191,169 0.169 Yes Yes
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control Student Controls School Controls	(1) -0.059 (0.024) 0.783 (0.013) 191,169 0.157 No No No	Outcon (2) -0.055 (0.024) 0.781 (0.013) 191,169 0.157 Yes No No	(3) -0.056 (0.024) 0.759 (0.014) 191,169 0.158 No No Yes	(4) -0.053 (0.023) 0.743 (0.013) 191,169 0.168 No Yes No	ade test sco (5) -0.052 (0.024) 0.757 (0.014) 191,169 0.158 Yes No Yes	(6) -0.052 (0.023) 0.742 (0.013) 191,169 0.168 Yes Yes No	(7) -0.051 (0.022) 0.722 (0.014) 191,169 0.169 No Yes Yes Yes	(8) -0.049 (0.022) 0.722 (0.014) 191,169 0.169 Yes Yes Yes Yes
Panel B 1 {IncumbentVoteMargin< 0} School-level baseline scores Observations R-squared tex Year Control Student Controls School Controls Clusters	(1) -0.059 (0.024) 0.783 (0.013) 191,169 0.157 No No No 1,335	Outcon (2) -0.055 (0.024) 0.781 (0.013) 191,169 0.157 Yes No No 1,335	(3) -0.056 (0.024) 0.759 (0.014) 191,169 0.158 No No Yes 1,335	(4) -0.053 (0.023) 0.743 (0.013) 191,169 0.168 No Yes No 1,335	(5) -0.052 (0.024) 0.757 (0.014) 191,169 0.158 Yes No Yes 1,335	(6) -0.052 (0.023) 0.742 (0.013) 191,169 0.168 Yes Yes No 1,335	(7) -0.051 (0.022) 0.722 (0.014) 191,169 0.169 No Yes Yes 1,335	(8) -0.049 (0.022) 0.722 (0.014) 191,169 0.169 Yes Yes Yes 1,335

Table A.12:	Specification	Test 3 ((of 3) fc	or Table 3	in AMT
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Note: Table A.12 shows how the RD estimates change as we vary the controls included in the specifications. See the main text for details.

Panel A	Outcome: individual fourth-grade test scores (standardized)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 {Incumbent VoteMargin< 0}	-0.033	-0.020	-0.049	-0.014	-0.035	-0.009	-0.030	-0.023
	(0.073)	(0.072)	(0.057)	(0.063)	(0.056)	(0.063)	(0.051)	(0.050)
School-level baseline scores	No	No	No	No	No	No	No	No
	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Observations	$325,\!554$	$325,\!554$	$325,\!554$	$325,\!554$	$325,\!554$	$325,\!554$	$325,\!554$	$325,\!554$
R-squared	0.000	0.004	0.078	0.076	0.081	0.077	0.133	0.134
Year Control	No	Yes	No	Yes	No	Yes	Yes	Yes
Student Controls	No	No	No	Yes	No	Yes	Yes	Yes
School Controls	No	No	Yes	No	Yes	No	Yes	Yes
Clusters	$1,\!669$	$1,\!669$	$1,\!669$	1,669	$1,\!669$	$1,\!669$	$1,\!669$	$1,\!669$
Using Bandwidth	0.0782	0.0782	0.0782	0.0782	0.0782	0.0782	0.0782	0.0782
Panel B		Outcom	ne: individu	al eight-gr	ade test sco	ores (standa	ardized)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 {Incumbent VoteMargin< 0}	-0.037	-0.026	-0.029	-0.029	-0.019	-0.022	-0.022	-0.015
	(0.073)	(0.072)	(0.057)	(0.063)	(0.056)	(0.063)	(0.051)	(0.050)
School-level baseline scores	No	No	No	No	No	No	No	No
	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Observations	$245,\!302$	$245,\!302$	$245,\!302$	$245,\!302$	$245,\!302$	$245,\!302$	$245,\!302$	$245,\!302$
R-squared	0.001	0.003	0.035	0.036	0.037	0.037	0.063	0.064
tex Year Control	No	Yes	No	No	Yes	Yes	No	Yes
Student Controls	No	No	No	Yes	No	Yes	Yes	Yes
School Controls	No	No	Yes	No	Yes	No	Yes	Yes
Clusters	$1,\!602$	$1,\!602$	$1,\!602$	$1,\!602$	$1,\!602$	$1,\!602$	$1,\!602$	$1,\!602$
Using Bandwidth	0.1506	0.1506	0.1506	0.1506	0.1506	0.1506	0.1506	0.1506

 Table A.13:
 Specification Test 1 (of 3) for Table 3 in AMT (Excluding School Level Baseline Scores)

Note: Table A.13 shows how the RD estimates change as we vary the controls included in the specifications. See the main text for details.

Panel A	Outcome: individual fourth-grade test scores (standardized)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 {Incumbent VoteMargin< 0}	-0.025	-0.016	-0.045	-0.010	-0.036	-0.007	-0.030	-0.025
	(0.074)	(0.073)	(0.058)	(0.064)	(0.057)	(0.064)	(0.052)	(0.052)
School-level baseline scores	No	No	No	No	No	No	No	No
	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Observations	$295,\!170$	$295,\!170$	$295,\!170$	$295,\!170$	$295,\!170$	$295,\!170$	$295,\!170$	$295,\!170$
R-squared	0.001	0.004	0.074	0.075	0.077	0.075	0.129	0.130
Year Control	No	Yes	No	Yes	No	Yes	Yes	Yes
Student Controls	No	No	No	Yes	No	Yes	Yes	Yes
School Controls	No	No	Yes	No	Yes	No	Yes	Yes
Clusters	1,538	1,538	1,538	1,538	1,538	1,538	1,538	1,538
Using Bandwidth	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700
Panel B		Outcom	ne: individu	al eight-gr	ade test sco	ores (standa	ardized)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 {Incumbent VoteMargin< 0}	-0.024	-0.022	-0.040	-0.019	-0.038	-0.018	-0.033	-0.033
	(0.074)	(0.073)	(0.058)	(0.064)	(0.057)	(0.064)	(0.052)	(0.052)
School-level baseline scores	No	No	No	No	No	No	No	No
	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Observations	126,855	126,855	126,855	126,855	$126,\!855$	126,855	126,855	126,855
R-squared	0.001	0.002	0.030	0.038	0.031	0.038	0.060	0.060
tex Year Control	No	Yes	No	No	Yes	Yes	No	Yes
Student Controls	No	No	No	Yes	No	Yes	Yes	Yes
School Controls	No	No	Yes	No	Yes	No	Yes	Yes
Clusters	965	965	965	965	965	965	965	965
Using Bandwidth	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700

Table A.14: Specification Test 2 (of 3) for Table 3 in AMT (Excluding School Level Baseline Scores)

Note: Table A.14 shows how the RD estimates change as we vary the controls included in the specifications. See the main text for details.

Panel A	Outcome: individual fourth-grade test scores (standardized)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 {Incumbent VoteMargin< 0}	-0.048	-0.035	-0.068	-0.030	-0.054	-0.025	-0.049	-0.042
	(0.060)	(0.059)	(0.048)	(0.052)	(0.047)	(0.052)	(0.043)	(0.043)
School-level baseline scores	No	No	No	No	No	No	No	No
	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Observations	429,979	429,979	429,979	$429,\!979$	$429,\!979$	429,979	429,979	429,979
R-squared	0.000	0.004	0.077	0.076	0.080	0.077	0.133	0.134
Year Control	No	Yes	No	Yes	No	Yes	Yes	Yes
Student Controls	No	No	No	Yes	No	Yes	Yes	Yes
School Controls	No	No	Yes	No	Yes	No	Yes	Yes
Clusters	2,101	2,101	2,101	2,101	2,101	2,101	2,101	2,101
Using Bandwidth	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100
Panel B		Outcom	ne: individu	al eight-gra	ade test sco	ores (standa	ardized)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 {IncumbentVoteMargin< 0}	-0.070	-0.062	-0.057	-0.060	-0.050	-0.055	-0.049	-0.046
	(0.060)	(0.059)	(0.048)	(0.052)	(0.047)	(0.052)	(0.043)	(0.043)
School-level baseline scores	No	No	No	No	No	No	No	No
	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Observations	191,169	191,169	191,169	$191,\!169$	$191,\!169$	$191,\!169$	191,169	$191,\!169$
R-squared	0.000	0.002	0.033	0.036	0.034	0.037	0.061	0.061
tex Year Control	No	Yes	No	No	Yes	Yes	No	Yes
Student Controls	No	No	No	Yes	No	Yes	Yes	Yes
School Controls	No	No	Yes	No	Yes	No	Yes	Yes
Clusters	1,335	1,335	1,335	1,335	1,335	1,335	1,335	1,335
Using Bandwidth	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100

 Table A.15: Specification Test 3 (of 3) for Table 3 in AMT (Excluding School Level Baseline Scores)

Note: Table A.15 shows how the RD estimates change as we vary the controls included in the specifications. See the main text for details.