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JEL Classification: N/A

Keywords: Political Business Cycles, elections, Standardized Exams, education

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Leave them Kids Alone!

National Exams as a Political Tool[*]

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January 2020

Abstract

This study examines whether standardized 12th grade national examination results are sensitive to coming legislative elections in Portugal. Using individual data for all exiting high-school students taking national exams between the years 2004 and 2018, our empirical investigation uncovers a 1.17 and 0.63 increase, on a scale of 0 to 20, in Mathematics and Portuguese scores, respectively, in the years where the exams occurred before legislative elections. The quality of students and the leniency of grading do not explain this rise in pre-election exam grades, suggesting the difficulty of the exam in itself is at stake. Further, we show that a unit increase in the average score of Mathematics and Portuguese exams, in those years, leads to a 1.46 percentage point rise in the vote share of the seating government.

Keywords: Political Business Cycles; Elections; Standardized Exams; Education;

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I. Introduction

Standardized national exams gather vast attention in the Portuguese society and media, given their importance to the future academic and professional life of students'. They are a determinant factor in the application for a bachelor's degree in public universities, in a country where the overwhelming majority of the academic offer is public, and where the wage premium for tertiary education is one of the highest among OECD countries (Strauss and Maisonneuve, 2009). National exams are generally held close to legislative elections, with the scores known around two and a half months before the elections.[1] Those devising the exams are nominated by the President of the Educational Evaluation Institute, in turn designated by the central government, through the minister of education. Naturally, concerns arise as to the incentives for the government to inflate exam scores when they may translate into political gains.

Literature regarding opportunistic political cycles is quite extensive and has matured over the past decades. The empirical results were initially mixed, but recent studies exploring disaggregated data support the idea that incumbent policymakers formulate strategies for the purpose of increasing their probability of reelection (e.g., Akhmedov and Zhuravskaya, 2004; Castro and Martins, 2018). This has been found to be particularly true when voters are less informed (e.g., Repetto, 2018), arguably the Portuguese case (e.g., Veiga and Veiga, 2007; Castro and Martins, 2016). Political cycles are more likely in areas of clear importance to the electorate, as is the case with education, and when the benefits to the voters arrive very close to the elections. Such is the case of national exams, especially when designed centrally, standardized, and the subject of intense public scrutiny.[2] Even though the literature has

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[1] National Exams are held every year, with the first exam period occurring in the 2nd half of June.

[2] See, for instance, https://www.publico.pt/2019/07/12/sociedade/noticia/notas-exames-portugues-matematica-melhoraram-1879673 (accessed December 26, 2019); or

presented evidence that the quality of education impacts voters' decisions (e.g., Firpo et al., 2016), this study is, to the best of our knowledge, the first to examine the effect of political cycles on the difficulty of standardized national exams.

In this paper, we take advantage of the rich public datasets available from the Ministry of Education in Portugal, providing data on students' individual characteristics, including gender, age, individual high-school grades, and performance at primary and secondary school national exams. We complement the individual data with information on the municipalities' socio-economic conditions.

Our results strongly support the hypothesis that political cycles impact national exam scores. We estimate that, when national exams are taken a few months prior to national legislative elections, on average, exam scores rise by 1.17 and 0.63, on a scale from 0 to 20, respectively in Mathematics and Portuguese Language 12th grade exams. Furthermore, the probability of passing the exams, that is, having more than 9.5 out of 20, increases by ten and eight percentage points in Mathematics and Portuguese exams, respectively. We investigate alternative explanatory mechanisms, other than the difficulty of the exam itself, which is decided in small committee, at the central level. All alternative explanations are unable to explain the quantitative increase in average scores in pre-electoral exam years, leading us to reject the hypothesis that the quality of examinees or graders' leniency explain our main result. Robustness tests using anticipated legislative elections, held, exceptionally, before national exams, show there is no exam scores inflation in those years. A positive effect of political cycles on standardized national scores is also found when 9th grade exam scores are analysed, but the quantitative impact is smaller, between a half and a third of 12th grade university entrance national exams.

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https://www.publico.pt/2015/06/23/sociedade/noticia/exame-de-matematica-foi-muito-mais-facil-que-o-do-ano-passado-1699859 (accessed December 26, 2019).

Lastly, we also quantify the impact on the vote share of the seating government of inflating 12th grade exam scores. Our estimates reveal that a unit increase in the municipality average score in Mathematics and Portuguese 12th grade exams leads to a rise of 1.46 percentage points in the vote share of the national incumbent's party, when elections occur *after* the exams.

The remainder of this study is organized as follows. The next section presents a review of the relevant literature. Section III describes the Portuguese educational system, with special emphasis on the national exams. Section IV explains the data and introduces the econometric model. Results are shown and discussed in Section V. Conclusions follow in Section VI.

II. Literature Review

The term "elections-year economics", or similar, is common across different countries and has led to the establishment of a body of literature known as political business cycles (PBCs, hereafter). The earliest evidence of PBCs can be traced back to Akerman (1947), who showed that economic cycles in the US were correlated with the presidential election cycle. Later, Downs (1957) proposed and modelled the hypothesis that politicians look to maximize the number of votes in their favour, "formulating policies in order to win elections, rather than win elections in order to formulate policies" (p.28). Along with studies presenting evidence that economic conditions impact election results (e.g., Kramer, 1971), Downs' work provided the support for Nordhaus' (1975) which argued that governments explore the short-term Phillips curve in order to create unusual favourable economic conditions right before elections.

Later, Tufte (1978) would question the ability of governments to efficiently manoeuvre both the unemployment and the inflation rates, and, since then, empirical studies

have shifted attention to changes in budget deficits before elections. While most of these studies find evidence of political opportunism for developing countries (e.g., Vergne, 2009; and Shi and Svensson, 2006), voters from more developed democracies show some ability to punish such manipulation at the ballot box (e.g., Alesina et al., 1997). Brender and Drazen (2005) support such hypothesis, stating that fiscal manipulation in newer democracies is only possible due to the lack of experience from voters. More recently, Repetto (2018) emphasized the importance of public scrutiny and voters' information on the magnitude of spending manipulation, revealing that when Italian municipalities were required to make public their balance sheets before elections, pre-election spending was reduced by one-third. On the other hand, Castro and Martins (2018) showed that opportunism is common across Southern, Central and Nordic European countries, the difference being that "both Nordic and Central countries have been successful in mitigating the electoral effect over total spending" (p.53) by making adjustments in less observable areas to the electorate.

One might expect evidence to support the existence of PBCs in a country as Portugal, with a lower voter awareness, when compared to its EU counterparts. Veiga and Veiga (2007) examined Portuguese municipalities and confirmed such belief by presenting results that "clearly reveal the existence of opportunistic behaviour by local governments" (p.45), especially on items that are highly visible to voters. Similar findings were obtained by Castro and Martins (2014), who concluded that "Portuguese governments act opportunistically" (p.14), particularly half a year before elections, which might indicate the existence of myopic voters in Portugal. Veiga and Veiga (2007a) and Aidt et al. (2011) also suggest that pre-electoral manipulations pay off in Portugal and that "incumbents behave more opportunistically when their win-margin is small" (Aidt et al., 2011, p.21).

In recent years, a variety of empirical studies evaluating disaggregated levels of public expenditures have allowed researchers to show that education is one of the prime targets of

politicians who wish to gather political support close to elections. This evidence goes in line with Rogoff's model (1990), which predicted a shift of public expenditure towards more noticeable items. Akhmedov and Zhuravskaya (2004), analysing regional monthly data from Russia, reported "sizable and short-lived" (p.1) budget cycles, with emphasis on education, culture and healthcare which exhibited "significant increases during the two months prior to the elections of 14 percent on average" (p.16); Castro and Martins (2016), examining a group of 18 European countries, also exhibited results which indicate that the main categories targeted by politicians in pre-election periods are public services, education and social protection.

Such empirical studies indicate that governments see the perceived quality of education as a factor that significantly impacts voters' decision. Indeed, recent experimental studies have found evidence that supports this idea: Akhmedov and Zhuravskaya (2004) found that "a one-standard-deviation increase in the cycle in education spending leads to an increase in the probability of the incumbent's win of about 13 percentage points" (p.31), more than in any other category; Firpo et al. (2016) showed that mayors in Brazil "became electorally accountable for not improving school quality" (p.2) once national exam scores started being revealed, with greater effects in poorer municipalities, and in those where the fraction of children is larger; finally, Assunção and Estevan (2019), also analysing municipalities in Brazil, revealed that incumbent mayors seemed to be rewarded for increasing educational spending, with results showing that "a one percent increase in per capita education expenditures leads to a 1.45 percent increase in the probability of reelection" (p.16).

III. Institutional Background

The Portuguese educational system is organized into three categories: primary, secondary and tertiary education, all of which are provided by both private and public schools, but overwhelmingly by the latter.

Primary education, which starts in the year a child turns six, lasts for nine years and corresponds to the period between 1st and 9th grade. After, in secondary school, students decide whether to pursue a professional path, when the aim is to enter the labour market earlier, or an academic path. The latter is chosen mostly by those wishing to continue their studies, even if students from either path are eligible to apply for a bachelor's degree. Students who pursue an academic path must choose a specific field of study in secondary school: Sciences and Technology, Languages and Humanities, Arts, or Economics.

In order to conclude both primary and secondary education, students are required to take exams at the national level: two examinations in primary school, both by the 9th grade – Portuguese Language and Mathematics; four examinations in secondary school, two by the 11th grade, whose subjects depend on the area of study chosen by the student, and two by the 12th grade – again, Portuguese Language and, in most cases, Mathematics.[3]

Although both primary and secondary national exams are required for students to complete the respective level of education, the stakes are very distinct between them: while both account for 30% of students' final internal grade on that subject – the remaining 70% being the internal grade, given by their schoolteachers –, secondary national exams play the additional role of filtering the access to a bachelor degree. Indeed, students who wish to enrol in a public university, in Portugal, compete on the basis of their access score, a weighted average of exam results and the students' internal average score. Which exams are considered is degree-dependent, as well as their weight, but the access score must weight exams from

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[3] Students who choose the Languages and Humanities, or Arts field of study in secondary school are not required to take the 12th grade Mathematics national exam.

35% up to 50%. Application to private universities generally also requires national exams; nevertheless, they are allowed to use their own standards.

Given the importance of national exams as a standardized measure of students' ability, schools follow a very specific set of rules, different from ordinary evaluations. Firstly, the composition of national exams is under the responsibility of a small group of teachers (usually two to five, per subject), who are designated by the President of the Educational Evaluation Institute – henceforth, IAVE –, in turn appointed by the Portuguese government after being proposed to it by the Minister for Education. The Minister chooses from a short-list of six potential candidates presented by the General Council of IAVE, who is itself nominated by the Minister (Figure A1 presents a summary diagram). Furthermore, teachers who design the exam are mandated to sign a non-disclosure agreement, assuring the secrecy of the content. To guarantee unbiased evaluation, exams are graded by anonymous teachers selected from schools other than that attended by the student. Additionally, graders have no information regarding the student who is being evaluated.

For the purpose of this work, it is important to notice that the core of the Portuguese educational system has been stable since 1986, when the basic education law, the "*Lei de Bases do Sistema Educativo*", was approved. Nonetheless, in 2009, there was an increase of the mandatory schooling period from nine to the current twelve years. This increase, however, is not expected to have had a significant impact on the number, nor on the selection of students completing secondary national exams, since most cases in which this measure is binding correspond to students who have been retained before.[4] This implies that once these students turn eighteen, the minimum age to leave school, most will not be on the 12th grade

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[4] Generally, students who complete the 9th grade without any type of retention opt to continue studying through secondary school, so this measure has no effect on these students.

and so, unless they wish to continue studying beyond that age, they will not undertake national exams.[5]

IV. Data and Methodology

For the purpose of this study, we exploit the public datasets available at the Ministry of Education. They contain yearly information, from 2004 to 2018, on students' performance at both primary and secondary school national exams.

Each observation on the dataset corresponds to one exam made by a specific student. It is not possible to connect exams undertaken by the same student, due to anonymity rules. However, we have access to the students' internal grade, given by schoolteachers, in a specific subject, as well as information on the field of study selected in secondary school. From 2006 onwards, data on the students' gender and age is also available. In addition, we have information on the students' school, specifically its location and its public or private nature.

The students' internal grade is regarded as an important control variable, reason why we exclude external students from our analysis, as they are not associated with an internal grade.[6] External students are those not evaluated by a schoolteacher in the exam year, as well as students who decided to cancel their matriculation, which they can do, making their final score dependent only on the exam grade.[7] In addition, students who already passed an exam but decide to repeat it, to try to improve their grade, are also not considered in our study. We also ignore students taking exams in the second exam period, perceived as having a different degree of difficulty. Lastly, students whose age represents 0.01 percent or less of total

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[5] Figure A2 supports such hypothesis, presenting no significant increase in the growth rate of the number of exams done after 2012.

[6] Similar procedure was done in several other studies, namely Cerdeira et al. (2018)

[7] For students with an internal grade below 10, it is always optimal to cancel the enrolment. Being that the case, most of external students are expected to fall in the left tail of the score distribution.

observations have also been excluded – in the case of 12th grade national exams, students aged above 23.

After taking these restrictions into account, there were 3.480.166, from which 1.176.221 corresponded to 12th grade national exams.[8]

The final data set takes into account variables at the municipality level, which have been gathered to control for students' socio-economic and demographic conditions, linked through the school location. These socio-economic indicators include: the municipal unemployment rate, obtained from IEFP – Professional Job and Training Institute; the Financial Equilibrium Fund, per capita, acquired from DGO – Budget Directorate-General, corresponding to a transfer granted from the central government to each municipality based on the taxes payed by their inhabitants; the number of passenger cars sold per 100 people, taken from ACAP – Portugal's Auto Dealers Association; the percentage of births outside marriage, obtained from the National Statistics Office – henceforth, INE –; and the consumption of electricity for domestic purposes, measured as thousands of kilowatt hour (kwh) per capita, acquired from DGEG – Directorate General for Energy and Geology.

Data on educational attainment was not available at the municipality level, however, we exploit the fact that, in Portugal, older people have lower education attainment levels than their younger counterparts – the percentage of workers in the Portuguese economy with 9-12 years of education rose from 28%, in 1982, to 63% in 2006, (see Portugal et al., 2018). We use the percentage of people aged over 65 as an indicator for historically low education in the municipality. This data, along with the percentage of people aged from 15 to 24 years, the population density, and the crime rate – number of crimes per thousand inhabitants –, was also collected from INE. Lastly, and following Nunes, Reis, and Seabra (2015), the data collected from the Ministry of Education was used to construct a Herfindahl-Hirschman Index

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[8] Our final dataset has around 73% of the observations from the initial dataset.

(HHI) in order to proxy for competition between schools in the same municipality.[9] For further detail, descriptive statistics for all variables employed in this study are reported in Table 1 and Table 2.

The benchmark specification is derived from a standard Ordinary Least Squares (OLS) regression, as presented below:

$$EXAM\ GRADE_{eismt} = \beta LEG_t + \delta Student_{eit} + \lambda Municipality_{mt} + \sum_{c=1}^{C} FSc_i + \alpha_s + \varepsilon_{eismt} \qquad (1)$$

where the outcome variable is the exam grade, on a scale from 0 to 20, obtained at exam e, by a certain student i, who attended school s in municipality m, and made the exam at year t. LEG_t, our variable of interest, is a binary indicator taking the value of one in years when national exams occur before legislative elections. Anticipated elections, unexpected in their timing, took place in February of 2005 and 2011, and are not considered as part of LEG_t. $Student_{eit}$ comprises individual characteristics, including a binary variable indicating whether the student is over eighteen – an indicator of retention –, the student's gender, and the student's internal grade on the exam's specific subject; $Municipality_{mt}$ is a vector of socio-economic and demographic variables in municipality m, at year t, which include: the unemployment rate, the percentage of people aged 15 to 24, the percentage of people aged more than 65, the financial equilibrium fund per capita, the number of cars sold per 100 inhabitants, and the percentage of births outside marriage. Fixed effects at the school and field of study level are introduced to account for specific shocks. ε_{eismt} accounts for clustered standard errors, at the school level. Standard errors were not cluster at the year level given the

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[9] The HHI is computed, for each municipality, and for each year, as the sum of the squared school's student shares: $HHI_{mt} = \sum_{i=1}^{NSM}(s_{it})^2$, where $s_{it} = \frac{EXAMS_{it}}{\sum_{i=1}^{NSM} EXAMS_{it}}$; $EXAMS_{it}$ is the number of exams taken in school i, at year t, and NSM is the number of schools in the municipality.

issue of too small a number of clusters; nevertheless, we also present our main findings with standard errors clustered at the year level in appendix.

Table 1. Descriptive Statistics – National Exams

12th Grade Exams

Variable:	Mean	SD	Range	Expected Sign
Exam Grade	10,62	3,94	0-20	
Legislative	0,15	0,36	0-1	+
Internal Grade	13,21	2,63	10-20	+
Male	0,44	0,50	0-1	?
Over 18	0,06	0,25	0-1	-
Age	17,31	0,68	16-23	*
Year	2012,23	3,73	2006-2018	*
Mathematics	0,41	0,49	0-1	*
Unemp. Rate	7,61	2,74	1,79-18,3	-
HHI	0,42	0,32	0,04-1	-
% Pop aged 15-24	10,75	1,30	6,64-14,8	+
% Pop aged >65	19,98	5,00	9,48-43,7	-
FEF (€ per capita)	17,34	13,21	6,27-128	+
Cars sold per 100 inhabitants	1,67	1,13	0,06-19,05	+
% births outside marriage	43,85	13,59	3,57-86,7	-
* Not introduced in the model				

9th Grade Exams

Variable:	Mean	SD	Range	Expected Sign
Exam Grade	2,85	0,98	1-5	
Legislative	0,15	0,36	0-1	+
Internal Grade	3,16	0,82	1-5	+
Male	0,48	0,50	0-1	?
Over 15	0,09	0,29	0-1	-
Age	14,38	0,73	14-19	*
Year	2012,04	3,77	2006-2018	*
Mathematics	0,50	0,50	0-1	*
Unemp. Rate	7,58	2,74	1,79-18,3	-
HHI	0,22	0,25	0,02-1	-
% Pop aged 15-24	10,88	1,31	5,79-14,78	+
% Pop aged >65	19,51	5,09	9,48-45,68	-
FEF (€ per capita)	17,68	14,05	6,27-188,02	+
Cars sold per 100 inhabitants	1,60	1,10	0,04-19,05	+
% births outside marriage	43,23	14,18	3,57-94,1	-
* Not introduced in the model				

We also quantify the political support gained by inflating national exam scores, through municipal results obtained by the national incumbent's party at legislative elections.

This data was obtained from the General Secretariat of the Ministry of Internal Affairs – SGMAI.

The following equation, derived from a standard OLS regression, is estimated for the purpose of examining the impact of national exam scores on legislative elections:

$$Incumbent's\ vote\ share_{mt} = \beta Z_{mt} + \theta EG_{mt} + \delta IG_{mt} + \lambda M_{mt} + \tau_t + \alpha_m + \varepsilon_{mt} \qquad (2)$$

where our dependent variable is the share of votes on the national incumbent's party, at municipality m, at legislative elections held in year t. EG_{mt} is the average score in the Mathematics and Portuguese exams, in municipality m, at year t. Z_{mt}, our main variable of interest, is the interaction between EG_{mt} and a dummy variable which takes the value 1 when legislative elections are held *after* the national exams, and 0 *before*. IG_{mt} is the average students' internal grade at the specific exam subject, in municipality m, at year t. M_{mt} is a vector of socio-economic and demographic variables in municipality m, at year t, which include: the unemployment rate, the percentage of people aged 15 to 24, the percentage of people aged more than 65, the population density, the crime rate, and electricity consumption. Year and municipal fixed effects are introduced to account for specific shocks. ε_{mt} accounts for clustered standard errors, at municipality level.

Table 2. Descriptive Statistics – Legislative Elections

Variable	Mean	SD	Range
Incumbent's vote share	33,95	10,73	6,5-70,72
Average Exam Score	10,39	1,36	4,25-13,57
Elections after Exams	0,50	0,50	0-1
Average Students' Internal Grade	13,03	0,63	10,88-15,04
Unemployment Rate	7,47	2,42	1,48-15,66
Crime Rate	31,55	12,34	6,7-150,9
Electricity consumption	1,21	0,27	0,75-3,03
Population Density	353,07	901,87	5,1-7426,8
% of people aged 15-24	10,82	1,35	6,85-15,29
% of people aged +65	22,54	6,27	9,34-43,66

V. Results

V.1. Benchmark Specification

V.1.1. For 12th Grade National Exams

Our main focus is to investigate whether the results of secondary school national examinations respond to the political cycle.

Our benchmark specification, presented in Table 3, strongly supports our hypothesis: exam scores are higher in years when legislative elections are held approximately three months after the national exams. Indeed, our main variable of interest is constantly associated with a positive and statistically significant coefficient, for both the subjects of Mathematics and Portuguese Language. Concerning the magnitude of the effects, LEG_t suggests an increase of about 1.17 and 0.63, on average, respectively in the Mathematics and Portuguese exam scores, for a scale of 0 to 20. These coefficients represent approximately 11% and 5% of the average score of the Mathematics and Portuguese exams, respectively, in our analysis.

It is quite reassuring that the coefficient estimates are extremely similar irrespective of whether municipal control variables are, or not, included, as is the case of columns (1) and (3) of Table 3. Furthermore, Table A1, which also considered the years of 2004 and 2005, presents similar results to the ones obtained in Table 3.

Regarding the control variables, the student's internal grade is a strong significant predictor of her exam score. This is important as the internal grade is a powerful indicator of the student's ability, specifically to perform in tests in that specific subject. The binary variable indicating whether examinees are over eighteen years old is associated with a statistically significant negative coefficient for both exams, as most of these students have suffered some type of retention. However, since students' internal grade are being controlled

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for, these results are indicative that older examinees have unobserved characteristics that negatively impact exam performance, such as a lower ability to deal with high pressure assessment, or a specific and systematic divergence between teachers' evaluations and national exams.

Table 3. Impact of Legislative Elections on National Exams

Sample: 12th Grade, 2006 to 2018

Subject:	Mathematics		Portuguese	
	(1)	(2)	(3)	(4)
Legislatives after Exams (2009/2015)	**1.150***	**1.174***	**0.577***	**0.629***
	(0.033)	**(0.036)**	**(0.025)**	**(0.026)**
Student's Internal Grade	1.196***	1.203***	0.860***	0.866***
	(0.005)	(0.005)	(0.003)	(0.004)
Male	0.248***	0.276***	-0.163***	-0.149***
	(0.012)	(0.012)	(0.010)	(0.010)
Over 18	-0.293***	-0.258***	-0.681***	-0.662***
	(0.033)	(0.033)	(0.017)	(0.017)
Unemployment Rate		-0.247***		-0.125***
		(0.014)		(0.010)
HHI (School Concentration Index)		-0.729		0.115
		(0.491)		(0.294)
Percentage of people aged 15-24		-0.676***		0.323***
		(0.069)		(0.040)
Percentage of people aged >65		-0.386***		0.070***
		(0.027)		(0.016)
Financial Equilibrium Fund (€/capita)		0.115***		0.031***
		(0.015)		(0.010)
Cars sold per 100 inhabitants		0.008*		-0.018***
		(0.004)		(0.003)
Percentage of births outside marriage		0.176***		0.015
		(0.038)		(0.026)
Municipal Control Variables	No	Yes	No	Yes
Field of Study Dummies	Yes	Yes	Yes	Yes
School Dummies	Yes	Yes	Yes	Yes
N	391,857	372,583	630,961	598,915
Adjusted R-squared	0.615	0.632	0.451	0.460

Notes: Dependent Variable is the Exam Score, obtained at a 12th Grade National Exam, on a scale from 0 to 20; Regressor of interest is a binary indicator which takes the value of one if the exam was performed previously to Legislative Elections, that is, in year 2009 or 2015; Municipal Control Variables are only included in columns (2) and (4); Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

Outcomes of the gender variable may be interpreted in a similar way: there is a wider gender gap between teacher assessment and exam score in Mathematics, benefiting girls over

boys, in line with previous findings (see Angelo and Reis 2018, in Portugal; and Marcenaro-Guitierrez and Vignoles 2015, in Spain). Columns (2) and (4) of Table A3, which adopts as dependent variable "Exam Inflation" – the difference between the exam score and the internal student grade –, confirms the hypothesis of a gender gap. Concerning the control variables pertaining to the municipality, the unemployment rate and the Financial Equilibrium Fund (FEF), per capita, are the only variables with a consistent and statistically significant effect over both exam scores. As expected, the unemployment rate is associated with a lower exam classification: a one percentage point increase in the municipality unemployment rate leads, on average, to a decrease of 0.24 and 0.12 in the Mathematics and Portuguese exam scores, respectively. It is important to notice that these only represent about a fifth of the estimates found for our regressor of interest. Regarding the value of the FEF, a proxy for municipality's wealth, a positive effect on the scores is found.

Table 4. Heterogenous Impact of Legislative Elections on National Exams

Sample: 12th Grade, 2006 to 2018

Subjects:	Mathematics			Portuguese		
Dep.Var.:	Less than 5	Pass	More than 15	Less than 5	Pass	More than 15
	(1)	(2)	(3)	(4)	(5)	(6)
Legislatives after Exams (2009/2015)	**-0.033*****	**0.106*****	**0.083*****	**-0.010*****	**0.080*****	**0.036*****
	(0.002)	**(0.004)**	**(0.003)**	**(0.001)**	**(0.003)**	**(0.003)**
Student's Internal Grade	-0.025***	0.095***	0.102***	-0.006***	0.085***	0.080***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Male	-0.006***	0.025***	0.022***	0.003***	-0.027***	-0.001
	(0.001)	(0.002)	(0.001)	(0.000)	(0.001)	(0.001)
Over 18	0.036***	-0.067***	0.027***	0.035***	-0.135***	0.032***
	(0.003)	(0.004)	(0.002)	(0.002)	(0.003)	(0.002)
Municipal Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Field of Study Dummies	Yes	Yes	Yes	Yes	Yes	Yes
School Dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	372,583	372,583	372,583	598,916	598,916	598,916
Adjusted R-squared	0.114	0.383	0.472	0.031	0.245	0.262

Notes: Dependent Variable is a binary indicator which, in columns (1) and (4), takes the value one if a 12th grade Exam Score is lower than 4.5; in columns (2) and (5) if it is positive, that is, higher than 9.4; and in columns (3) and (6) if it is higher than 14.4; Regressor of interest is a binary indicator which takes the value of one if the exam was performed previously to Legislative Elections, that is, in year 2009 or 2015; Municipal Control Variables are the same as the ones presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

Further examination on the impact of coming elections on 12th grade national exams is presented in Table 4, using linear probability models. Findings are in line with those in Table 3, showing that the probability of passing the Mathematics and Portuguese exam increases by around ten and eight percentage points, respectively, when the exam takes place a few months before legislative elections. More, results from Table 4 indicate that the effect of LEG_t is greater around the key passing grades, relative to grades lower than five – in columns (1) and (4) –, or higher than fifteen – in columns (3) and (6) –, for both subjects. Table A4 supports these findings, showing that coming legislative elections have a higher impact on these grades.

V.1.2. For 9th Grade National Exams

As mentioned, this study is focused on secondary national exams due to the immense attention they gather in the Portuguese society. However, analysing 9th grade exam results, an

Table 5. Impact of Legislative Elections on 9th Grade National Exams

Sample: 9th Grade, 2006 to 2018

Subject:	Mathematics		Portuguese	
	(1)	(2)	(3)	(4)
Legislatives after Exams (2009/2015)	**0.159***	**0.142***	**0.026***	**0.052***
	(0.005)	**(0.005)**	**(0.004)**	**(0.004)**
Student's Internal Grade	0.838***	0.840***	0.596***	0.590***
	(0.002)	(0.002)	(0.002)	(0.002)
Male	0.059***	0.058***	-0.065***	-0.068***
	(0.002)	(0.002)	(0.002)	(0.001)
Over 15	-0.286***	-0.272***	-0.258***	-0.271***
	(0.004)	(0.004)	(0.003)	(0.003)
Municipal Control Variables	No	Yes	No	Yes
School Dummies	Yes	Yes	Yes	Yes
N	1,154,544	1,106,071	1,149,401	1,101,120
Adjusted R-squared	0.620	0.624	0.376	0.403

Notes: Dependent Variable is the Exam Score, obtained at a 9th Grade National Exam, on a scale from 0 to 5; Regressor of interest is a binary indicator which takes the value one if the exam was performed previously to Legislative Elections, that is, in year 2009 or 2015; Municipal Control Variables, presented at columns (2) and (4), are the same as the ones presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

important threshold in the Portuguese national educational system, allows us to check the relative importance of political cycles in the two cases.

Using the exact same specification as before for 9th grade national exams, our results confirm a statistically significant positive effect on exam scores in years where elections follow exams. The magnitude of the effect is reduced: after multiplying the coefficients by four[10], to allow for different grading scales, we find an increase of 0.57 in Mathematics and 0.21 in Portuguese exam scores. This is a very significant impact, though about a half and a third, respectively, of the impact of coming elections on the 12th grade national exams.

V.2. Robustness Tests

V.2.1. Anticipated Legislative Elections

Table 6. Impact of Legislative Elections Before vs. After the National Exams

Sample: 12th Grade, Years with Legislative Elections

Subject:	Mathematics		Portuguese	
	(1)	(2)	(3)	(4)
Legislatives after Exams (2009/2015)	**1.662*****	**1.269*****	**1.504*****	**0.597*****
	(0.073)	**(0.037)**	**(0.060)**	**(0.026)**
Student's Internal Grade	1.261***	1.207***	0.854***	0.879***
	(0.006)	(0.004)	(0.005)	(0.003)
Municipal Control Variables	Yes	Yes	Yes	Yes
Field of Study Dummies	Yes	Yes	Yes	Yes
School Dummies	Yes	Yes	Yes	Yes
N	112,510	431,918	183,817	684,151
Adjusted R-squared	0.680	0.624	0.457	0.443

Notes: Dependent Variable is the Exam Score, obtained at a 12th Grade National Exam, on a scale from 0 to 20; Regressor of interest is a binary indicator which takes the value one if the exam was performed previously to Legislative Elections, that is, in year 2009 or 2015; Period of analysis: 2004 to 2018 in columns (2) and (4); Columns (1) and (3) only have into account the four years of Legislative Elections (2005, 2009, 2011 and 2015); Municipal Control Variables are the same as the ones presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

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[10] Important to notice that 9th grade exams follow a scale of 0 to 5, while secondary national exams a scale of 0 to 20.

Legislative elections frequently take place in the beginning of October, once every four years. In the Portuguese political system, elections are rarely anticipated and held before the government reaches the end of its mandate. That, however, was the case in 2005 and 2011, when Portuguese governments collapsed and anticipated elections were held in February. This is of particular interest to this study since, in those years, elections took place unexpectedly, and before the national exams. Being that the case, in these two years exam scores could not have influenced voters' decision, and there would be no electoral gain to the seating government if, in any way, exam scores were inflated.

In order to assess the impact of legislative elections that occur *before*, not *after* the exams, we use the benchmark specification, but including only years where legislative elections occur, excluding years without elections. Results presented in columns (1) and (3) of Table 6 reveal how, when exams occur before elections and there is a potential electoral gain, grades increase, on average, by 1.66 and 1.50 in Mathematics and Portuguese exams, respectively, relative to years when exams come after elections, and there is no electoral gain to be made. These coefficients reveal an even larger effect than the ones in Table 3, which indicates that exam scores are not inflated when elections are held before the exams.

V.2.2. Local Elections

Portuguese voters also exert their choice of rules in local elections, where mayors are chosen. These are held regularly every four years, in the beginning of October, in years that do not necessarily coincide with those of national elections, and were never subject to anticipation. Local elections are of considerable importance to Portuguese voters as mayors are responsible for the provision of important local public services, such as local health care, sewage, distribution of water and energy, among others. Importantly, education, more specifically secondary education, is entirely financed by, and under the regulatory scope of

the central government. If we assume, as in Arceneaux (2006), that voters correctly connect the provision of public goods to the appropriate government level, there would be no electoral gain of inflating secondary national exams grades during years of local elections. Furthermore, even if voters are not well informed as to which government level provides secondary education, the electoral gain should still be diminished as voters would reward the mayor's party which, in many municipalities, does not coincide with the central government.

Table 7. Impact of Legislative vs. Local Elections

Sample: 12th Grade, 2006 to 2018

Subject:	Mathematics		Portuguese	
Type of Election:	Legislative	Local	Legislative	Local
	(1)	(2)	(3)	(4)
Election years	**1.174*****	**-0.006**	**0.629*****	**0.065*****
	(0.036)	**(0.027)**	**(0.026)**	**(0.024)**
Student's Internal Grade	1.203***	1.202***	0.866***	0.865***
	(0.005)	(0.005)	(0.004)	(0.004)
Male	0.276***	0.275***	-0.149***	-0.150***
	(0.012)	(0.012)	(0.010)	(0.010)
Over 18	-0.258***	-0.279***	-0.662***	-0.664***
	(0.033)	(0.033)	(0.017)	(0.017)
Municipal Control Variables	Yes	Yes	Yes	Yes
Field of Study Dummies	Yes	Yes	Yes	Yes
School Dummies	Yes	Yes	Yes	Yes
N	372,583	372,583	598,915	598,915
Adjusted R-squared	0.632	0.624	0.460	0.456

Notes: Dependent Variable is the Exam Score, obtained at a 12th Grade National Exam, on a scale from 0 to 20; Election years is a binary indicator, which takes the value one when an exam was performed in 2009 or in 2015, for columns (1) and (3), and, for columns (2) and (4), when an exam was taken in 2009, 2013 or 2017, which correspond to the local elections' years; Municipal Control Variables are the same as the ones presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

Columns (2) and (4) of Table 7 present the estimated impact on national exam scores, for years with local elections. The estimates show an increase of 0.06 and a decrease of 0.006, in Mathematics and Portuguese exams, respectively. This is a very small effect, statistically significant only in the case of Mathematics, where it represents around five percent of the impact for legislative elections occurring after the exams.

V.3. Alternative Mechanisms

V.3.1 Can the varying quality of the student body explain exam inflation in election years?

We now analyse whether any variation in student ability across time explains our results. It does not. We already control for students' ability in the specific exam subject through inclusion of the student's internal grade. But other psychological traits, including the capacity to deal with pressure may, however unlikely it may be, systematically change across time.

Taking advantage of the fact that most students taking the 12th grade exams also took the 9th grade exams three years before, we run the benchmark regression with 9th grade scores as dependent variable, but replacing the main explanatory variable by a binary variable taking the value 1 when there were three years left to legislative elections occurring after national exams, and 0 otherwise.

Results in Table 8 support the idea that higher scores in 12th grade national exams in years where legislative elections follow are not explained away by the different quality of students.[11] Indeed, when we take the 9th grade national exam scores as benchmark for the ability of students from a certain year to perform high-stakes exams, our estimates suggest that the coefficients in Table 3 may have over-estimated the difficulty of Portuguese exams on coming legislative elections' years by about 0.62, and under-estimated the difficulty of the Mathematics exams, in the same years, by approximately 0.31, on the scale of 0 to 20. Performing a back-of-the-envelope estimation which takes the difference between the coefficients reported in Table 3 and those presented in Table 8, would correct the effect of the

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[11] Table A5 presents the results also considering the year 2016, which is not done here since we wanted to control for the students' quality in Table 3, that does not take into account students who made the 12th grade exams in 2019.

variable of interest to about 0.86 and 1.25, in the Mathematics and Portuguese exam scores, respectively.

Table 8. Can the quality of the student body explain exam inflation in election years?

Sample: 9th Grade, 2006 to 2018

Subject:	Mathematics	Portuguese
	(1)	(2)
Three years before Legislative Elections (2006, 2012)	**0.078***	**-0.154***
	(0.006)	**(0.005)**
Student's Internal Grade	0.841***	0.590***
	(0.002)	(0.002)
Male	0.058***	-0.068***
	(0.002)	(0.001)
Over 15	-0.272***	-0.271***
	(0.004)	(0.003)
Municipal Control Variables	Yes	Yes
School Dummies	Yes	Yes
N	1,106,071	1,101,120
Adjusted R-squared	0.623	0.407

Notes: Dependent Variable is the Exam Score, obtained at a 9th Grade National Exam, on a scale from 0 to 5; The regressor of interest is a binary indicator, which takes value one three years before regular Legislative Elections occur, that is, 2006 and 2012; Municipal Control Variables are the same as the ones presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

Table A6 supports the hypothesis that the quality of students taking the 12th grade national exams in years when legislative elections follow is not higher than for other years. An analysis of students' internal grades reveals that students had slightly worse internal grades in those years, especially in Portuguese, in line with estimates from Table 8.

V.3.2. Can exam graders' variable rigour explain exam inflation in election years?

An additional alternative explanation for higher exam scores when legislative elections occur after exams may be related with different rigor by graders. This is also a difficult candidate for explanation, given the number of graders involved. There is no specific method to assess graders' rigor across years, but we have devised an original and informative proxy, based on the distribution of exam grades. An in-depth analysis of the exam scores

distribution reveals a much smaller occurrence of scores just under, as compared to above, the cut-off points that rounds grades to the higher mark – see Figure A3.[12]

Assuming that teachers who are more likely to score exams just above the cut-off are also more likely to give better scores in general, Table 9 can be seen as an investigation of exam graders' variation of rigor. Indeed, the probability of scoring just above a cut-off point – any score with 5 decimal points – does not increase in coming legislative election years as coefficients in columns (1) and (3) are statistically indistinguishable from zero for the variable of interest. In sum, the increase in exam scores when legislative elections take place after the national exams cannot be explained by lower rigor from exam graders.

V.4. Heterogeneity

In order to examine whether results differ in magnitudes across specific groups, the baseline specification was also estimated using only certain sub-samples of the dataset. Estimates in Table A7 and Table A8 reveal a larger effect of coming legislative elections in the sub-sample of female students, and of students who attended a private school, compared with their counterparts. More, Table A9 shows a larger increase in Mathematics exam scores for the metropolitan areas of Lisbon and Porto, compared with the rest of the country; while for Portuguese exam scores, the opposite effect is found. However, the variable of interest is statistically significant for all six groups, and the estimates are not substantially different across groups, which suggests exam inflation in coming legislative election years cannot be attributed to characteristics such as gender, nature of the school, or area of residence.

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[12] Even though national exams are analysed in a continuous way for the entrance in public universities, the students' final internal grade is computed using the integer of the exam score.

Table 9. Can exam graders' variable rigour explain exam inflation in election years?

Sample: 12th Grade, 2006 to 2018

Subject:	Mathematics		Portuguese	
Dep.Var.:	.5	.4	.5	.4
	(1)	(2)	(3)	(4)
Legislatives after Exams (2009/2015)	**-0.0010**	**-0.0016*****	**0.0019**	**-0.0001**
	(0.0023)	**(0.0004)**	**(0.0019)**	**(0.0003)**
Student's Internal Grade	0.0002	-0.0007***	-0.0007**	-0.0004***
	(0.0003)	(0.0001)	(0.0003)	(0.0000)
Male	0.0010	-0.0007**	0.0002	0.0001
	(0.0015)	(0.0003)	(0.0012)	(0.0002)
Over 18	-0.0104***	0.0019***	-0.0085***	0.0012***
	(0.0034)	(0.0007)	(0.0028)	(0.0004)
Municipal Control Variables	Yes	Yes	Yes	Yes
Field of Study Dummies	Yes	Yes	Yes	Yes
School Dummies	Yes	Yes	Yes	Yes
N	372,583	372,583	598,916	598,916
Adjusted R-squared	0.0027	0.0026	0.0029	0.0024

Notes: Dependent Variable is a binary indicator, which takes the value one when the Exam Grade is just above a cut-off point, that is, with 5 decimal points, in columns (1) and (3); while in columns (2) and (4) takes the value one when the grade is just below a cut-off point, that is, with 4 decimal points. Regressor of interest is a binary indicator which takes the value one if the exam was performed previously to Legislative Elections, that is, in 2009 or 2015; Municipal Control Variables are the same as the ones presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

V.5. Electoral Impact

We now test whether the inflation on 12th grade national exam scores is, in fact, beneficial to the seating government.

Results in Table 10 reveal that a unit increase in the average municipality score of Mathematics and Portuguese 12th grade exams leads to a statistically significant 1.46 percentage points rise in the vote share of the national incumbent's party, when legislative elections occur *after* the exams. Even though this effect may seem small, if we take into consideration the average value of the dependent variable, this represents an increase of about 4.5 percent in the incumbent's vote share, which may be the difference between winning or losing elections.

Table 10. Impact of exam inflation on legislative elections

Sample: Legislative Election years

Dep.Var.:	Incumbent's Vote Share
	(1)
Exam Score * Legislatives *after* Exams	**1.462***
	(0.560)
Exam Score	-0.254
	(0.486)
Students' Internal Grade	-0.150
	(0.964)
Unemployment Rate	-0.796**
	(0.340)
Crime Rate	-0.101
	(0.070)
Electricity consumption	17.566***
	(5.733)
Population Density	-0.003
	(0.003)
Percentage of people aged 15-24	1.512
	(0.923)
Percentage of people aged +65	-0.551
	(0.355)
Municipal Dummies	Yes
Year Dummies	Yes
N	964
Adjusted R-squared	0.328

Notes: Dependent Variable is the National Incumbent's party vote share (0 to 100), at municipality m, and year t (for t=2005, 2009, 2011, 2015); Exam grade and Students' Internal Grade are municipality averages; Legislatives after Exams is a binary indicator which takes value one in 2009 and 2015; All socio-economic control variables are estimated at the municipality level; Clustered Standard errors, at the municipality level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

It is quite reassuring to notice that the average exam score itself is statistically indistinguishable from zero. This indicates that in years where legislative elections are held *before* the exams, exam scores have no impact on the incumbent's vote share, as expected.

Further, the fact that the unemployment rate has a statistically significant negative impact, and that the value of the electricity consumption, an indicator of municipality's wealth, has a statistically significant positive effect on the dependent variable is also encouraging.

VI. Conclusion

Our study considers, for the first time, the possible use of grade inflation in national standardized exams as an electoral tool, by examining the association between political cycles and national exam scores. We analyse data from Portugal, a country where standardized national exams have political and media prominence, as a major ability filter for access to universities.

The attention national exams assemble in the country, and their likely centrality to voters, suggest the incumbent government might gain political support if exam scores increase just before an election is due, creating a perception of an improvement in the quality of education or, perhaps more importantly, in individual student ability. Given the proximity between the central government and teachers designing the exams, there is certainly a possible path for political pressure to result in a decrease in exam difficulty before elections take place.

Our findings show unequivocal support for such hypothesis, estimating a statistically significant and quantitatively important increase of about 1.17 and 0.63, on the Mathematics and Portuguese 12th grade national exam scores, respectively, in years when legislative elections occurred less than three months after the national exams. These results are not explained by the quality of examinees nor by leniency of grading, implying that the difficulty of national exams itself is sensitive to political cycles.

We also show that inflating exam scores is a powerful electoral tool. Our estimates reveal that a unit rise in the average score in Mathematics and Portuguese exams, about the same as we found, leads to a 1.46 percentage point increase in the incumbent's vote share. For a rational seating government, this seemingly costless strategy might be appealing, especially

in a country where high levels of debt diminish governments' ability to generate fiscal electoral cycles, as is the Portuguese case.

In light of our findings, it would be strongly advisable to implement measures that assure a greater independence from designers of national exams, this way preventing politicians to use exams as a tool to cast votes. Whether or not such tool has also been used in other countries, apart from Portugal, might be an interesting topic for future research.

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Appendix

Figure A1. Who designs the National Exams?

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            ┌─────────────────────┐
            │   Prime-Minister     │
            └─────────────────────┘
                       │
        ┌──────────────┴──────────────┐
        ▼                             ▼
┌──────────────────┐        ┌──────────────────────┐
│ Minister for     │───────▶│ General Council of   │
│ Education        │        │ IAVE                 │
└──────────────────┘        └──────────────────────┘
        │                             │
        │                             ▼
        │                   ┌──────────────────────┐
        │                   │ Short-list with 6    │
        │                   │ candidates for       │
        │                   │ President of IAVE    │
        │                   └──────────────────────┘
        │                             │
        ▼                             ▼
┌───────────────────────────────────────────────────┐
│ Proposes the President of IAVE to the Council of  │
│ Ministers out of this short-list                  │
└───────────────────────────────────────────────────┘
                       │
                       ▼
┌───────────────────────────────────────────────────┐
│ Defines the group of teachers who design the      │
│ National Exams (2 to 5, per subject)              │
└───────────────────────────────────────────────────┘
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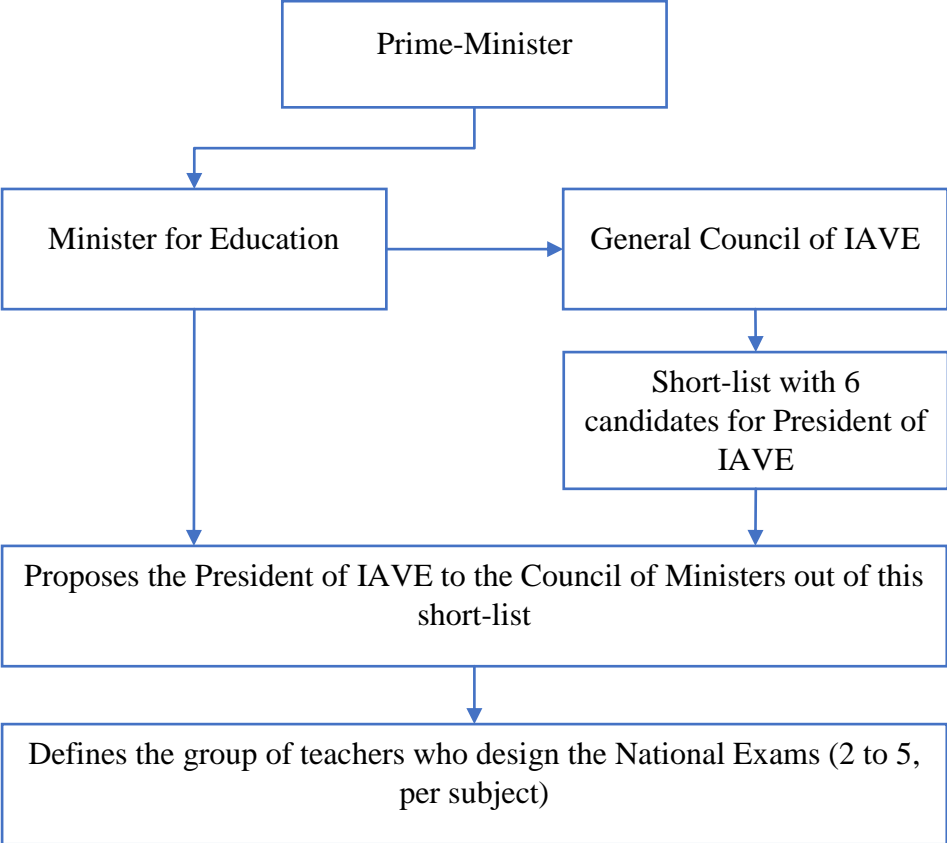
Figure A2. Evolution of the number of 12th grade National Exams

Number of 12th Grade National Exams per year
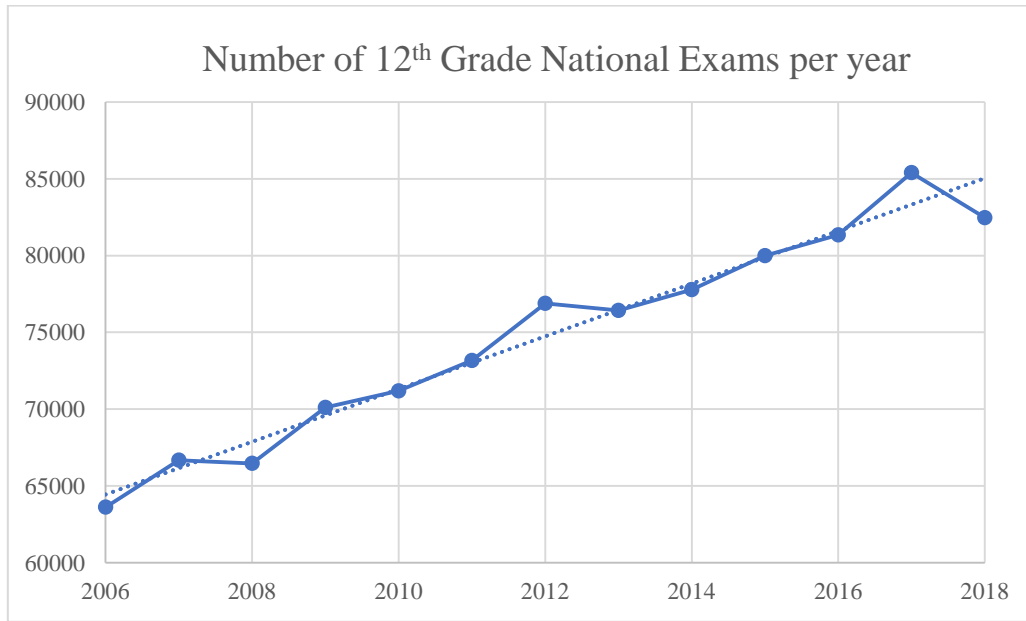
Figure A3. Leniency of grading

Sample: 12th Grade, 2006 to 2018

.5/.4
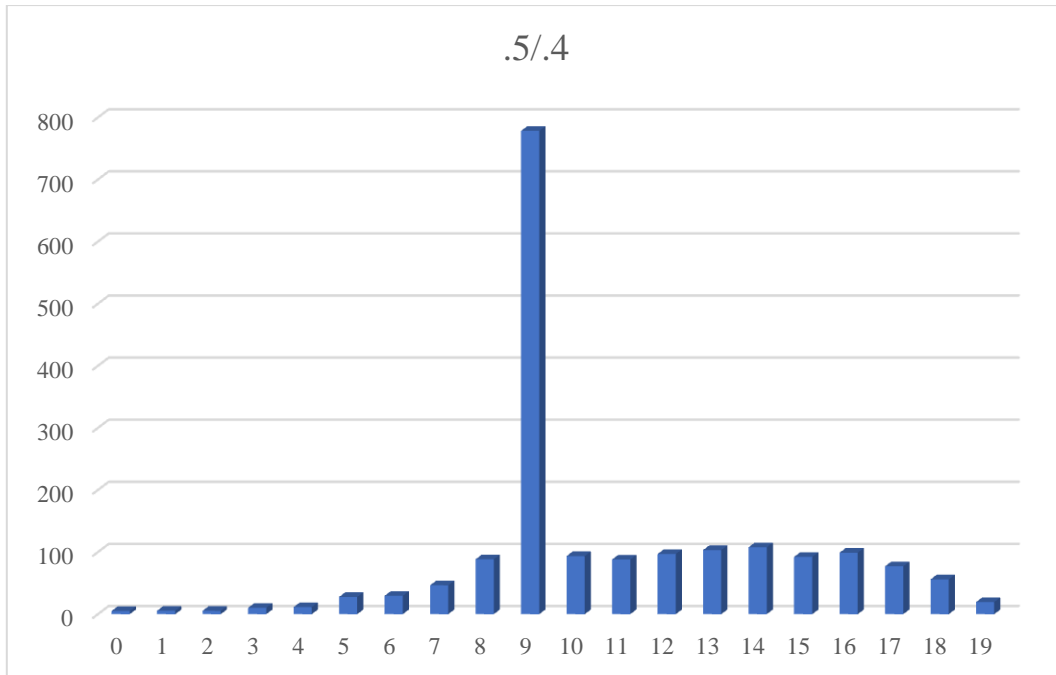
Table A1. Impact of Legislative Elections on National Exams

Sample: 12th Grade, 2004 to 2018

Subject:	Mathematics		Portuguese	
	(1)	(2)	(3)	(4)
Legislatives after Exams (2009/2015)	**1.331***	**1.269***	**0.460***	**0.597***
	(0.034)	**(0.037)**	**(0.026)**	**(0.026)**
Student's Internal Grade	1.210***	1.207***	0.866***	0.879***
	(0.004)	(0.004)	(0.003)	(0.003)
Municipal Control Variables	No	Yes	No	Yes
Field of Study Dummies	Yes	Yes	Yes	Yes
School Dummies	Yes	Yes	Yes	Yes
N	455,191	431,918	721,030	684,151
Adjusted R-squared	0.610	0.624	0.429	0.443

Notes: Dependent Variable is the Exam Score, obtained at a 12th Grade National Exam, on a scale from 0 to 20; Regressor of interest is a binary indicator which takes the value of one if the exam was performed previously to Legislative Elections, that is, in year 2009 or 2015; Period of analysis: 2004 to 2018; Municipal Control Variables are only included in columns (2) and (4), and are the same as the ones included in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

Table A2. Clustered standard errors at the year level

Sample: 12th Grade, 2006 to 2018

Subject	Mathematics	Portuguese
	(1)	(2)
Legislatives after Exams (2009/2015)	**1.1744****	**0.6288****
	(0.4713)	**(0.2582)**
Student's Internal Grade	1.2028***	0.8661***
	(0.0213)	(0.0157)
Male	0.2764**	-0.1494***
	(0.1005)	(0.0447)
Over 18	-0.2575*	-0.6621***
	(0.1309)	(0.0411)
Unemployment Rate	-0.2467*	-0.1245*
	(0.1291)	(0.0615)
Financial Equilibrium Fund (€/capita)	0.1149	0.0305
	(0.0784)	(0.0289)
Municipal Control Variables	Yes	Yes
Field of Study Dummies	Yes	Yes
School Dummies	Yes	Yes
N	372,583	598,915
R-squared	0.6328	0.4608

Notes: Dependent Variable is the Exam Score, obtained at a 12th Grade National Exam, on a scale from 0 to 20; Regressor of interest is a binary indicator which takes the value of one if the exam was performed previously to Legislative Elections, that is, in year 2009 or 2015; Municipal Control Variables are included in both columns; Clustered Standard errors, at the year level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

Table A3. Exam Grade vs. Exam Inflation

Sample: 12th Grade, 2006 to 2018

Subject:	Mathematics		Portuguese	
Dep.Var.:	Exam Grade	Exam Inflation	Exam Grade	Exam Inflation
	(1)	(2)	(3)	(4)
Legislatives after Exams (2009/2015)	**1.174*****	**1.166*****	**0.629*****	**0.638*****
	(0.036)	**(0.036)**	**(0.026)**	**(0.027)**
Student's Internal Grade	1.203***		0.866***	
	(0.005)		(0.004)	
Male	0.276***	0.211***	-0.149***	-0.015
	(0.012)	(0.013)	(0.010)	(0.010)
Over 18	-0.258***	-0.720***	-0.662***	-0.443***
	(0.033)	(0.030)	(0.017)	(0.017)
Municipal Control Variables	Yes	Yes	Yes	Yes
Field of Study Dummies	Yes	Yes	Yes	Yes
School Dummies	Yes	Yes	Yes	Yes
N	372,583	372,583	598,915	598,915
Adjusted R-squared	0.632	0.180	0.460	0.098

Notes: Dependent Variable is the Exam Score, obtained at a 12th Grade National Exam, on a scale from 0 to 20, in columns (1) and (3); in columns(2) and (4), the dependent variable is the Exam Inflation (Exam Grade – Students' Internal Grade); Regressor of interest is a binary indicator which takes the value of one if the exam was performed previously to Legislative Elections, that is, in year 2009 or 2015; Municipal Control Variables are the same as the one presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

Table A4. Exam Inflation by subject and students' internal grade

Sample: 12th Grade, 2006 to 2018

	Mathematics				Portuguese		
	Exam Inflation				Exam Inflation		
Internal Grade	Election Years	Remaining Years	Diff	Internal Grade	Election Years	Remaining Years	Diff
10	-2,705	-3,467	0,762	10	-1,391	-1,988	0,597
11	-2,112	-3,162	1,050	11	-1,692	-2,298	0,606
12	-1,747	-3,014	1,267	12	-1,861	-2,483	0,623
13	-1,431	-2,802	1,371	13	-2,033	-2,637	0,604
14	-1,126	-2,495	1,369	14	-2,139	-2,722	0,582
15	-0,956	-2,272	1,315	15	-2,240	-2,826	0,586
16	-0,757	-2,089	1,332	16	-2,353	-2,910	0,557
17	-0,598	-1,933	1,335	17	-2,552	-3,034	0,482
18	-0,691	-1,771	1,080	18	-2,686	-3,096	0,410
19	-0,778	-1,641	0,864	19	-2,777	-3,247	0,470
20	-1,013	-1,728	0,715	20	-3,149	-3,346	0,197
Total	-1,549	-2,690	1,140	Total	-2,031	-2,614	0,583

Table A5. Can the quality of the student body explain exam inflation in election years?

Sample: 9th Grade, 2006 to 2018

	Mathematics	Portuguese
	(1)	(2)
Three years before Legislative Elections (2006/2012/2016)	**0.023*****	**-0.133*****
	(0.004)	**(0.004)**
Student's Internal Grade	0.841***	0.590***
	(0.002)	(0.002)
Male	0.058***	-0.068***
	(0.002)	(0.001)
Over 15	-0.272***	-0.271***
	(0.004)	(0.003)
Municipal Control Variables	Yes	Yes
School FE	Yes	Yes
N	1,106,071	1,101,120
Adjusted R-squared	0.622	0.407

Notes: Dependent Variable is the Exam Score, obtained at a 9th Grade National Exam, on a scale from 0 to 5; The regressor of interest is a binary indicator, which takes value one three years before regular Legislative Elections occur, that is, 2006, 2012, and 2016; Municipal Control Variables are the same as the ones presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

Table A6. Quality of examinees in election years: Students' Internal Grade

Sample: 12th Grade, 2006 to 2018

Subject:	Mathematics	Portuguese
	(1)	(2)
Legislatives after Exams (2009/2015)	**-0.043*****	**-0.067*****
	(0.016)	**(0.015)**
Male	-0.321***	-1.004***
	(0.015)	(0.010)
Over 18	-2.278***	-1.637***
	(0.024)	(0.017)
Municipal Control Variables	Yes	Yes
Field of Study Dummies	Yes	Yes
School Dummies	Yes	Yes
N	372,583	598,916
Adjusted R-squared	0.133	0.215

Notes: Dependent Variable is the Students' Internal Grade, on a scale from 0 to 20; Regressor of interest is a binary indicator which takes the value one if the exam was performed previously to Legislative Elections, that is, in year 2009 or 2015; Period of analysis: 2006 to 2018; Municipal Control Variables are the same as the ones presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

Table A7. Heterogeneity: Male and Female sub-samples

Sample: 12th Grade, 2006 to 2018

	Mathematics		Portuguese	
	Male	Female	Male	Female
	(1)	(2)	(3)	(4)
Legislatives after Exams (2009/2015)	**0.949*****	**1.363*****	**0.562*****	**0.677*****
	(0.040)	(0.038)	(0.029)	(0.027)
Students' Internal Grade	1.200***	1.206***	0.853***	0.874***
	(0.005)	(0.005)	(0.004)	(0.004)
Over 18	-0.292***	-0.220***	-0.586***	-0.746***
	(0.039)	(0.040)	(0.023)	(0.022)
Municipality Control Variables	Yes	Yes	Yes	Yes
Field of Study FE	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
N	171,976	200,607	251,716	347,199
Adjusted R-squared	0.632	0.634	0.435	0.464

Notes: Dependent Variable is the exam score on a 12th grade national exam, on a scale from 0 to 20, only in the male sub-sample in columns (1) and (3), and on the female sub-sample on columns (2) and (4); Regressor of interest is a binary indicator which takes the value one if the exam was performed previously to Legislative Elections, that is, in year 2009 or 2015; Period of analysis: 2006 to 2018; Municipal Control Variables are the same as the ones presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

Table A8. Heterogeneity: Public and Private sub-samples

Sample: 12th Grade, 2006 to 2018

	Mathematics		Portuguese	
	Public	Private	Public	Private
	(1)	(2)	(3)	(4)
Legislatives after Exams (2009/2015)	**1.148***	**1.306***	**0.628***	**0.665***
	(0.040)	**(0.081)**	**(0.028)**	**(0.082)**
Students' Internal Grade	1.209***	1.173***	0.868***	0.851***
	(0.004)	(0.019)	(0.004)	(0.010)
Male	0.276***	0.273***	-0.150***	-0.141***
	(0.013)	(0.031)	(0.010)	(0.028)
Over 18	-0.246***	-0.288***	-0.656***	-0.714***
	(0.034)	(0.093)	(0.017)	(0.065)
Municipal Control Variables	Yes	Yes	Yes	Yes
Field of Study FE	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
N	316,109	56,474	523,059	75,856
Adjusted R-squared	0.616	0.690	0.448	0.504

Notes: Dependent Variable is the exam score on a 12th grade national exam, on a scale from 0 to 20, only in the public schools sub-sample in columns (1) and (3), and on the private schools sub-sample on columns (2) and (4); Regressor of interest is a binary indicator which takes the value one if the exam was performed previously to Legislative Elections, that is, in year 2009 or 2015; Period of analysis: 2006 to 2018; Municipal Control Variables are the same as the ones presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.

Table A9. Heterogeneity: Metropolitan and Remaining areas sub-samples

Sample: 12th Grade, 2006 to 2018

	Mathematics		Portuguese	
	Metropolitan	Rest	Metropolitan	Rest
	(1)	(2)	(3)	(4)
Legislatives after Exams (2009/2015)	**1.262*****	**1.111*****	**0.591*****	**0.638*****
	(0.060)	**(0.046)**	**(0.039)**	**(0.035)**
Students' Internal Grade	1.181***	1.217***	0.844***	0.882***
	(0.009)	(0.005)	(0.006)	(0.004)
Male	0.320***	0.247***	-0.129***	-0.160***
	(0.020)	(0.015)	(0.015)	(0.013)
Over 18	-0.329***	-0.208***	-0.719***	-0.617***
	(0.049)	(0.043)	(0.027)	(0.021)
Municipal Control Variables	Yes	Yes	Yes	Yes
Field of Study FE	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
N	143,454	229,129	242,859	356,056
Adjusted R-squared	0.644	0.624	0.460	0.463

Notes: Dependent Variable is the exam score on a 12th grade national exam, on a scale from 0 to 20, only in the metropolitan areas of Lisbon and Porto in columns (1) and (3), and on the remaining areas on columns (2) and (4); Regressor of interest is a binary indicator which takes the value one if the exam was performed previously to Legislative Elections, that is, in year 2009 or 2015; Period of analysis: 2006 to 2018; Municipal Control Variables are the same as the ones presented in Table 1; Clustered Standard errors, at the School level, are presented in parenthesis; Significance level at which the null hypothesis is rejected: *** 1%, ** 5%, * 10%.