The use of data in education policies in Portugal: teacher grades in the presence of external assessment

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Abstract

Education policy in Portugal has seen a transformative shift propelled by a collaborative effort between academia and the Directorate-General for Education and Science Statistics (DGEEC). Our study evaluates grading standards in Portuguese high schools, specifically focusing on the disparity in teacher-assigned grades within the context of external assessment presence.

Our investigation revealed a striking discrepancy in grading practices between subjects with national examinations and those without, particularly prevalent in annual 12th-grade courses lacking a national exam requirement. Teachers in these non-examined courses tend to assign markedly higher grades compared to subjects with standardized national assessments. Concentration of grades on the top of the distribution grades is potentially problematic for students, institutions and society and also impacts assess to higher education.

This work was crucial to inform Portuguese policymakers. Recognizing the implications of this disparity on educational equity and accuracy, the government was prompted to undertake a policy intervention[1]. Namely, the formula of high school GPA calculation was changed the weights given to the annual 12th-grade courses in high school was reduced (those where concentration of high grades is prevalent).

This collaborative endeavour between academia and statistical office underscored the indispensable role of robust data analytics in shaping evidence-based policy decisions. For this work we used different administrative data sets for the population of students in Portugal from secondary education to higher education for the period 2017 to 2023.

Keywords: teacher grades, high school, high-stake assessments (max 5 key words)

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[1] Ordinance no.278/2023, September 8.

1. Introduction

In recent years, the phenomenon of increment of high grade in high schools has gained increasing attention from educators, policymakers, and researchers. Grade escalation, characterized by a steady rise in students' grades over time, challenges the integrity and validity of academic assessment systems. While the issue has been extensively studied in the context of higher education, its implications within the realm of secondary education, particularly in high schools, have been less explored.

This paper aims to address this gap by examining teacher grades in the context of high schools, with a specific focus on Portugal. The topic is particularly relevant for the country given that during Covid-19 high stake assessments in high school became optional, and thus the discussion of grade escalation on teacher grades was on the public debate. Understanding the prevalence, causes, and consequences of grade escalation in this setting is crucial for several reasons. High school grades play a pivotal role in shaping students' educational trajectories, influencing their access to higher education institutions and future career opportunities. Therefore, inflated grades may distort students' academic achievements and abilities, potentially leading to mismatches between their actual skills and perceived competencies.

In this paper we analyse the evolution of teacher grades in the presence of high-stake assessments. We try to address the following research questions: (i) analyse how teacher grades differ in the present of high-stake assessment; (ii) Is there heterogeneity of grade assessment according to different factor levels? We rely on microdata of the population of high school leavers in Portugal from 2017 to 2023, by focusing on the general upward secondary education. We conclude the teachers award very high grades in subjects in which there is not high-stake assessments.

2. Literature Review

A review of the literature on grade escalation in high school reveals a complex and multifaceted issue. Much of the research on grade escalation focuses on secondary schools and colleges in the United States (ACT, 2005; Camara et al., 2003; Carr, 2004; Godfrey, 2011; Pattison et al., 2013; Woodruff & Ziomek, 2004; Ziomek & Svec, 1997), with a few studies from other countries including the United Kingdom (Bachan, 2017), Canada (Laurie, 2009), France (Bamat, 2014), the Netherlands (DeWitte et al., 2014), Israel (Maagan & Shapira, 2013), Indonesia (Arrafii, 2020), and Sweden (Wikström & Wikström, 2005). Knowledge about grade

inflation in high schools in Portugal is limited. Nata et al. (2014) and Neves et al. (2017) conducted a descriptive analysis of grade inflation in high schools in the country and they found that independent private schools charging fees inflate grades more than other school types, and grades in the most competitive subjects in tertiary education are inflated more than in other subjects. Additionally, Dias (2009) stresses the significance of school assessment for enhancing quality, while Flores (2010) addresses the hurdles of implementing new policies on teacher performance appraisal in Portugal. Sánchez (2020) examines the repercussions of European and international policies on faculty performance assessment in higher education. These studies collectively suggest that high-stakes exams wield considerable influence over teacher grade assessment, impacting school quality, teacher performance, and the broader educational framework.

3. Institutional Setting

On starting secondary school in Portugal, the choice of education and training offer is made. The most of students are enrolled in scientific-humanistic courses (60,4%[2]), the rest are enrolled in vocational courses, the most enrolled of which are professional courses (32,8%[3]). In this study we analysed secondary school students enrolled on scientific-humanistic courses. To contextualise the analysis presented in the study, it is important to look at the current structure of the scientific-humanistic courses, there are four courses: Science and Technology, Socioeconomic Sciences, Languages and Humanities and Visual Arts.

In both public and private schools, Science and Technology courses have the largest number of students, followed by Socio-Economic Sciences in private schools and Languages and Humanities in public schools, and lastly Visual Arts courses.

As far as the curriculum is concerned, the subjects offered to students attending the four scientific-humanistic courses are quite extensive, including multiple possible combinations of compulsory subjects, optional subjects (related or not to the area of the course) and subjects or not, to national examination and with a duration of one year, two years and three years. Students must choose only four of the optional subjects, two of which must be two-year subjects (10th and 11th year) and the other two one-year subjects (12th year).

[2] DGEEC, 2021/22.

[3] Idem.

4. Data and Descriptive Statistics

The source of information used was, for public school students, the data reported by the schools through the Ministry of Education, Science and Innovation's information systems, for private school students - in the absence of this information in the same information systems - the extended version of the database from the National Secondary School Exams (ENES), compiled by the National Exams Jury (JNE), which contains information on all students who took at least one secondary school exam in the academic years 2017/18 to 2022/23.

The study covered more than 450 public hight schools and a total of 100 private high schools in mainland Portugal with students enrolled in scientific-humanistic courses, with a final internal classification for the 11th and 12th grades in at least one subject on the curriculum of these courses in the last six years. In 2022/23 there were 480 schools analysed, representing 99.4% of public schools, and in the private sector the sample analysed (100 schools) represented more than 90% of the public schools in mainland Portugal[4].

It was not possible to analyse the universe of schools/students, and we only considered the subjects with a final internal classification on a scale of 1 to 20 for the six school years analysed. All students who had cancelled their enrolment or were excluded due to absences for the school years under analysis were also excluded from this analysis. Despite this treatment of information, it was always possible to ensure a representation of more than 92% for public schools and 90% for private schools of the universe of students on the scientific-humanistic courses, as shown in Tables 1 and 2.

Table 1 - Number of students on scientific-humanistic courses at public high schools included in the analysis

School year	Public High Schools								
	2 year courses			3 and 1 year curses			TOTAL		
	Universe	Sample	%	Universe	Sample	%	Universe	Sample	%
2017/18	55 078	51 994	94,4	52 569	49 248	93,7	107 647	101 242	94,0
2018/19	55 522	51 221	92,3	54 366	50 069	92,1	109 888	101 290	92,2
2019/20	57 342	55 122	96,1	54 021	51 853	96,0	111 363	106 975	96,1
2020/21	56 438	54 123	95,9	55 486	53 177	95,8	111 924	107 300	95,9
2021/22	56 620	54 938	97,0	54 850	53 392	97,3	111 470	108 330	97,2
2022/23	56 613	55 173	97,5	55 671	54 204	97,4	112 284	109 377	97,4

Note: The figures for the 2022/23 Universe are preliminary data collected in March 2024.
Source: DGEEC, 2017- 2023.

[4] For more detailed information see table in annex.

Table 2 - Number of students on scientific-humanistic courses at private high schools included in the analysis.

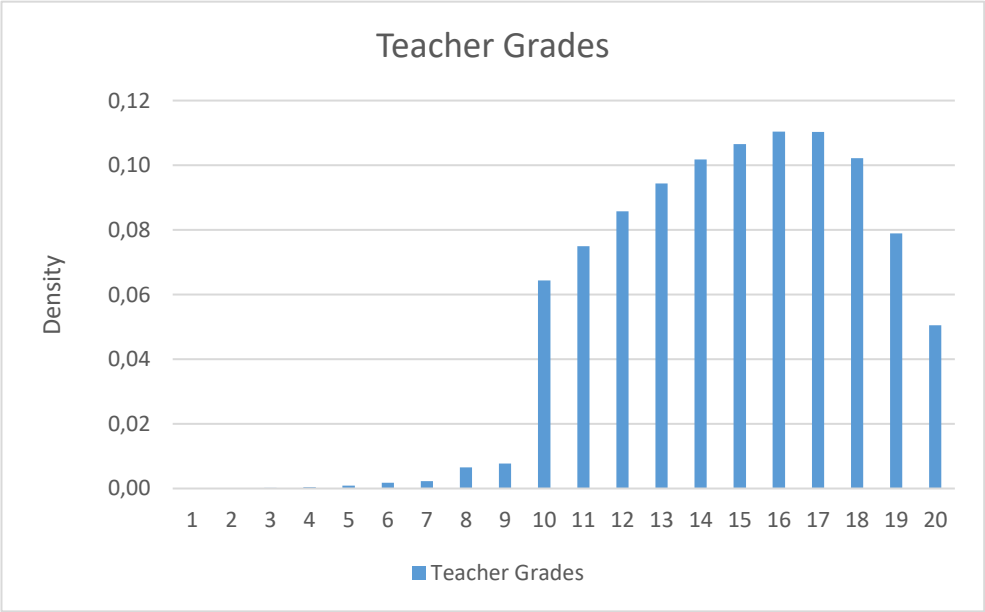
School year	Private High Schools								
	2 year courses			3 and 1 year curses			TOTAL		
	Universe	Sample	%	Universe	Sample	%	Universe	Sample	%
2017/18	7 026	6 879	97,9	7 259	7 028	96,8	14 285	13 907	97,4
2018/19	6 359	5 930	93,3	6 235	6 063	97,2	12 594	11 993	95,2
2019/20	6 611	5 983	90,5	6 231	6 097	97,8	12 842	12 080	94,1
2020/21	6 379	6 209	97,3	6 552	6 269	95,7	12 931	12 478	96,5
2021/22	6 229	5 880	94,4	6 093	6 003	98,5	12 322	11 883	96,4
2022/23	6 401	6 009	93,9	6 244	6 084	97,4	12 645	12 093	95,6

Source: ENES, JNE 2017-2023.

5. Methodology and Results

In this section we analyse the distribution of teacher grades over the last six years. Namely, if there was variation over time, according to the type of subject of type of school considered. From Figure 1 we can first infer that teacher grades have a distribution slight biased to the right. Nevertheless, the distribution of grades varies according to type of subject consider. First let's consider the division of subjects with a high-stake exam associated to the course (three- and two-year subjects), versus subjects without a national exam associated to the course (one-year subjects and 3-year sport's subject), the patterns are different. According to Table 3 and Figure 2 we observe a high concentration of grades on the top of the distribution.

Figure 1 – Distribution of teacher grades in high school over the period 2017/18 – 2022/23



Source: DGEEC, 2017- 2023.

Figure 2 – Distribution of teacher grades in 2022/23 according to the type of subject

Source: ENES, JNE.

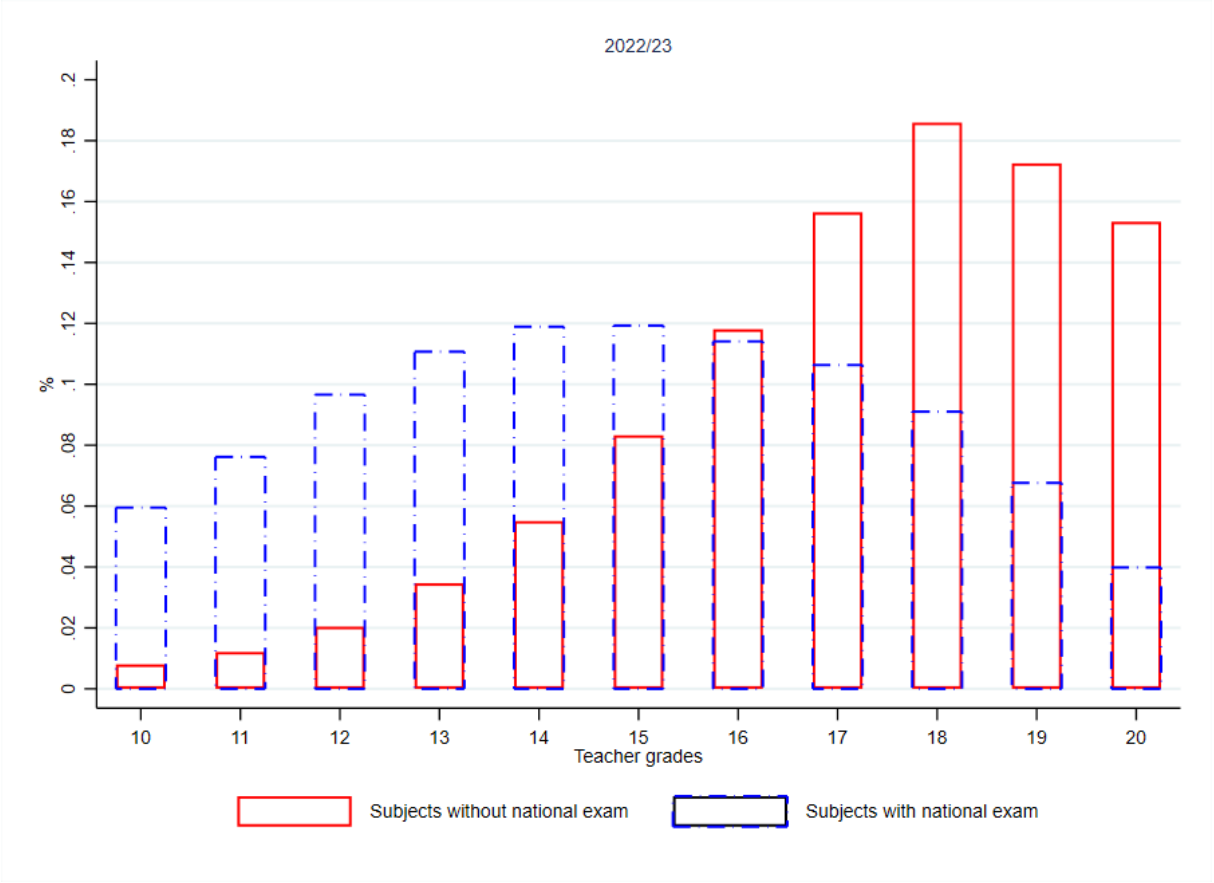


Table 3 - Distribution of teacher grades according to the type of subject

	No. Students	No. Students-Subject	Mean score	Mode Score	% Scores 15-17	% Scores 18+	% Scores 15-20
Year	Subjects with national exam associated (2y and 3y courses)						
2017/18	78615	316466	14,3	13	30,0	14,8	44,8
2018/19	77647	313316	14,3	13	29,8	15,4	45,2
2019/20	80349	329764	14,4	13	31,1	16,4	47,6
2020/21	79212	328535	14,7	14	32,9	18,4	51,2
2021/22	76351	320289	14,8	15	34,0	19,8	53,8
2022/23	21691	106968	14,4	14	32,8	15,4	48,2
	Subjects without national exam associated (1y courses and 3y Sport subject)						
2017/18	35609	165050	16,6	17	39,8	40,5	80,2
2018/19	35031	165186	16,6	17	39,9	40,8	80,7
2019/20	33691	162882	16,9	18	39,1	44,4	83,5
2020/21	34652	168410	17,2	18	35,9	51,9	87,8
2021/22	34826	169843	17,2	18	35,8	51,2	87,0
2022/23	34038	166093	17,2	18	35,3	52,3	87,6

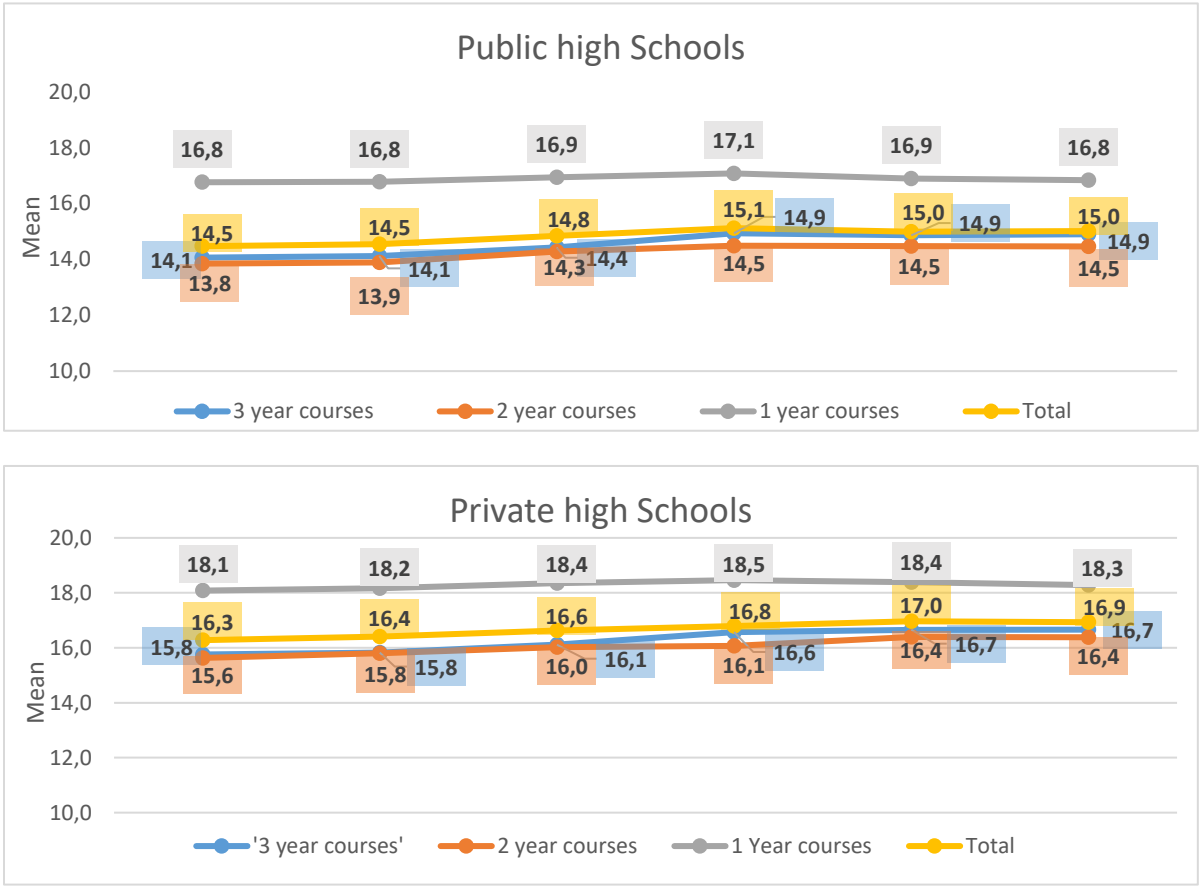
Source: ENES, JNE.

When we look at the type of subject (Figure3) we observe that the one-year subjects in the 12th grade are the ones that present a higher concentration of grades in the top of the

distribution. The modal score on these subjects is often 20 in both public and private high schools.

The justification for these high grades in optional subjects in the 12th grade may lie, partly, in the optional nature of the subjects, considering that, initially, a student who chooses to attend subject A will be a student who feels particularly motivated to learn the curriculum of that subject. However, that might not be the only explanatory factor. First, because the teacher grades in optional subjects in the 10th and 11th grades (where there is a national exam) are generally much lower than the grades obtained in the same type of subjects in the 12th grade. Based on Table 5, if we compare subjects within the same curriculum area, for example, Economics A in the 10th and 11th versus Economics C in the 12th grade, we find that teacher grades tend to be significantly higher in Economics C compared to the internal results obtained in Economics A, making it harder to argue that students will have much greater motivation and aptitude for the curriculum content of Economics C than for Economics A. The same reasoning applies to other subjects, i.e. Physics and Chemistry, summarized in Table 4.

Figure 3 – Distribution of teacher grades by subject and high school type



Source: DGEEC, ENES, JNE.

Table 4 - Distribution of teacher grades by subject

		Public High Schools						Private High Schools					
Subjects	**Type of subjects**	**2017 / 2018**	**2018 / 2019**	**2019 / 2020**	**2020 / 2021**	**2021 / 2022**	**2022 / 2023**	**2017 / 2018**	**2018 / 2019**	**2019 / 2020**	**2020 / 2021**	**2021 / 2022**	**2022 / 2023**
Geography A	2 year 10th/11th	12,9	12,8	13,4	13,7	13,7	13,6	14,6	14,5	14,8	14,8	15,5	15,4
Geography C	1 year 12th	16,0	16,0	16,3	16,3	16,1	16,2	17,5	17,6	17,7	18,0	18,0	17,8
Economics A	2 year 10th/11th	13,6	13,7	14,2	14,5	14,6	14,5	15,5	15,5	15,5	15,7	16,2	16,1
Economics C	1 year 12th	16,7	16,8	16,9	17,2	16,9	17,0	18,2	18,1	18,1	18,3	18,3	18,1
Physics and Chemistry A	2 year 10th/11th	13,3	13,2	13,8	13,9	13,9	13,8	15,0	15,2	15,4	15,3	15,6	15,5
Physics	1 year 12th	16,7	16,7	16,9	16,8	16,7	16,6	18,0	18,0	18,2	18,1	17,9	18,0
Chemistry	1 year 12th	17,5	17,4	17,6	17,6	17,5	17,4	18,1	18,3	18,6	18,7	18,4	18,2
Biology and Geology	2 year 10th/11th	13,3	13,3	14,4	14,4	14,4	14,4	15,2	15,4	15,6	15,7	16,1	16,0
Geology	Anual 12.º	17,9	17,9	17,9	18,0	17,9	17,2	-	-	-	-	-	-
Biology	Anual 12.º	16,8	16,8	16,9	17,1	16,9	16,7	18,1	18,2	18,5	18,5	18,4	18,2

Source: ENES, JNE.

Additionally, others explanatory factors can be considered when analysing the grades of one-year subjects:

1. Dynamics induced by the importance of internal grades in these subjects in the national entrance examination for higher education. It should be noted that, in the calculation of the final secondary school grade, the student's grade in each annual subject of the 12th grade carries the same weight as their grade in a biennial or triennial subject.
2. Absence in these subjects of the evaluation framework provided by the national exam, allowing for the comparison of internal grades with external grades and detecting deviations higher than expected.
3. Possibility of the existence of different evaluation methods between triennial/biennial and annual subjects, with the evaluation of annual subjects often placing greater emphasis on the completion of assignments and projects.

6. Conclusion

This paper studies, from a descriptive perspective, if teacher grades in high school vary according to the subject, year, and school type. We conclude that grades have been increasing over time, particularly in subjects where there was no high-stake assessment associated. This study led to policy change in the way that high school GPA is computed in Portugal[5]. Before it was an unweighted average, and now it will be a weighted average by the duration on the subject. Thus, the weight of the one-year courses, where we observe a high concentration of high grades, will be reduced.

[5] Ordinance no.278/2023, September 8.

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Appendix

Table A1 - Public and private schools covered in the study (No.) (%)

School year	Public High Schools			Private High Schools		
	Universe	Sample	%	Universe	Sample	%
2022/23	483	480	99,4%	110	100	90,9%
2021/22	483	478	99,0%	104	101	97,1%
2020/21	481	475	98,8%	110	105	95,5%
2019/20	475	471	99,2%	111	105	94,6%
2018/19	474	460	97,0%	117	106	90,6%
2017/18	470	467	99,4%	121	112	92,6%

Source: DGEEC, 2017-2023; ENES, JNE 2017-2023.