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LUIZ FELIPE MAGNAGO BLULM

**ENSAIOS EM ECONOMIA DA EDUCAÇÃO: AVALIAÇÃO DE POLÍTICAS
PÚBLICAS EDUCACIONAIS**

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Tese apresentada ao Programa de Pós-Graduação em Economia do Centro de Ciências Jurídicas e Econômicas da Universidade Federal do Espírito Santo, como requisito parcial para obtenção do título de Doutor em Economia

Orientador: Profa. Dra. Ana Carolina Giuberti
Coorientador: Prof. Dr. Renato Nunes de Lima Seixas

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COMISSÃO EXAMINADORA

Documento assinado digitalmente
 ANA CAROLINA GIUBERTI
Data: 29/04/2025 15:21:15-0300
Verifique em <https://validar.it.gov.br>


Prof.^a Dr.^a Ana Carolina Giuberti - Orientadora
Universidade Federal do Espírito Santo

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Universidade Federal do Espírito Santo

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Universidade Federal do Espírito Santo

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Prof. Dr. Guilherme Armando de Almeida Pereira
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Prof. Dr. Luiz Guilherme Dácar da Silva Scorzafani
Universidade de São Paulo

Assinado por: João Carlos Cerejeira da Silva
Num. de Identificação: 09915162
Data: 2025.04.29 20:14:55+01'00'

Prof. Dr. João Carlos Cerejeira Silva
Universidade do Minho

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RESUMO

Esta tese é composta por três ensaios sobre políticas públicas na temática da Economia da Educação. Os dois primeiros ensaios visam compreender os impactos da educação integral na aprendizagem e como a mudança no desenho da política pode impactar diferentes resultados. O terceiro ensaio estuda as motivações das escolas de diferentes dependências administrativas no fenômeno da inflação de notas. O primeiro ensaio teve como objetivo avaliar o impacto do programa Mais Educação na aprendizagem dos alunos. Para isso, foram utilizados dados do INEP a nível de escola, com um recorte de 2007 até 2017. Como o Mais Educação teve uma adesão escalonada por parte das escolas, foi utilizado o método de diferenças em diferenças em múltiplos períodos. Os resultados mostraram um impacto positivo e significativo do programa na aprendizagem; entretanto, a magnitude do impacto foi pequena, principalmente se for considerado o tempo de existência do programa. O segundo ensaio teve como objetivo estimar o impacto do programa Novo Mais Educação na aprendizagem e discutir os possíveis efeitos gerados pela mudança no desenho da política. Os dados utilizados também foram do INEP, a nível de escola, com um recorte temporal de 2013 até 2019. O método utilizado foi uma combinação do pareamento por escore de propensão com o diferenças-em-diferenças. Os resultados apontam que, apesar da brevidade do programa, há resultados positivos e significativos na aprendizagem. Além disso, foi abordado se um desenho mais focado nas habilidades medidas nos testes pode melhorar os níveis de aprendizagem dos alunos e produzir melhores resultados nesses indicadores. Por fim, traz um olhar sobre o desenho da política de educação integral como uma possível explicação para a divergência de resultados presentes na literatura sobre o tema. O terceiro ensaio estuda a prática da inflação de notas em diferentes dependências administrativas, destacando as diferentes motivações que podem existir. A análise das motivações é feita com base na Teoria da Escolha Racional. Para isso, são utilizados dados do Exame Nacional do Ensino Secundário, de Portugal. As escolas foram divididas em públicas, privadas, religiosas, privadas financiadas e religiosas financiadas. O governo de Portugal tem uma política na qual escolas privadas recebem um valor fixo para atuarem como públicas. Contudo, em 2018, algumas escolas foram retiradas da política por uma decisão unilateral do governo, alegando que as escolas foram excluídas com base na demanda local, que poderia ser atendida integralmente pelas

escolas públicas. Foram estimados modelos de Mínimos Quadrados Ordinários e, para avaliar a troca de dependência administrativa, foi utilizada uma combinação do pareamento por escore de propensão com o diferenças-em-diferenças. Os resultados mostram que as escolas privadas possuem a maior prática de inflação de notas, seguidas pelas públicas. Além disso, as escolas que deixaram de atuar como públicas e voltaram para a lógica de mercado (atuar como privadas) mostraram um aumento da prática de inflação de notas, em especial na disciplina de matemática, criando uma evidência de que a motivação da escola muda diante da sua realidade de mercado. As implicações desse fenômeno são discutidas.

Palavras-chave: Economia da Educação; Avaliação de Impacto; Política Pública; Educação em Tempo Integral; Inflação de Notas

ABSTRACT

This thesis is composed of three essays on the theme of the Economics of Education. The first two essays aim to understand the impacts of full-time education on student learning and how changes in the policy design can affect different outcomes. The third essay investigates the motivations of schools under different administrative dependencies in the phenomenon of grade inflation. The first essay aims to evaluate the impact of the "Mais Educação" (More Education) program on student learning. For this purpose, school-level data from INEP were used, covering the period from 2007 to 2017. As the program was gradually adopted by schools, the methodology employed was a difference-in-differences approach with multiple periods. The results showed a positive and significant impact of the program on learning; however, the magnitude of the impact was small, especially considering the program's duration. The second essay aims to estimate the impact of the "Novo Mais Educação" (New More Education) program on learning and to discuss the possible effects brought about by the change in policy design. The data used were also from INEP, at the school level, covering the period from 2013 to 2019. The method applied was a combination of Propensity Score Matching with difference-in-differences. The results indicate that, despite the short duration of the program, there are positive and significant effects on student learning. Furthermore, it discusses whether a design more focused on the skills measured in standardized tests can enhance learning levels and yield better results in such indicators. Lastly, the essay provides insight into how the design of full-time education policies may explain the divergent results found in the literature on the subject. The third essay explores the practice of grade inflation across different administrative dependencies, highlighting the various motivations that may exist. The analysis is based on Rational Choice Theory. Data from the National Secondary Education Exam of Portugal were used. Schools were categorized as public, private, religious, privately funded, and religiously funded. The Portuguese government has a policy in which private schools receive a fixed amount to operate as public schools. However, in 2018, some schools were removed from the policy by a unilateral government decision, claiming that the schools were excluded based on local demand, which could be fully met by public schools. Ordinary Least Squares (OLS) models were estimated, and to analyze the change in administrative dependency, a combination of Propensity Score Matching with difference-in-differences was used. The results show that private

schools exhibit the highest level of grade inflation, followed by public schools. Moreover, schools that ceased operating as public and returned to the market logic (operating as private) showed an increase in grade inflation practices, particularly in mathematics. This provides evidence that a school's motivation changes according to its market context. The implications of this phenomenon are discussed.

Keywords: Economics of Education; Impact Evaluation; Public Policy; Full-Time Education; Grade Inflation

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INTRODUÇÃO

Esta tese é composta de três ensaios sobre políticas públicas dentro da temática da economia da educação. Os dois primeiros ensaios avaliam o impacto na aprendizagem dos alunos nas duas maiores políticas de educação integral do Brasil nas últimas duas décadas, o programa Mais Educação e Novo Mais Educação. O terceiro ensaio foi desenvolvido durante o período sanduíche na Universidade do Minho e aborda a temática da inflação de notas no ensino secundário, mais especificamente, utilizada a teoria da escolha racional para explicar as diferentes motivações instrucionais que podem levar à prática da inflação de notas. Além disso, o último artigo estudou se a mudança de dependência administrativa, a partir de uma política do governo Português teve impacto no comportamento da escola em relação à inflação de notas.

O primeiro ensaio teve como objetivo estimar o impacto na aprendizagem dos alunos do programa Mais Educação, que vigorou de 2008 até 2017. Embora outros estudos já tenham feito isso (GANDRA, 2017; VIDIGAL; VIDIGAL, 2022; XERXENEVSKY, 2012), este ensaio adota a metodologia de Callaway e Sant'Anna (2021) para lidar com a adoção escalonada da política, algo que outros estudos não fizeram. Além disso, foi o primeiro a estudar o impacto da política do início até o seu fim, dando um panorama geral do impacto gerado. Para isso, foram utilizados dados do INEP, em um recorte temporal de 2007 até 2017. Os resultados apontaram para um impacto positivo e significativo da política nas disciplinas de matemática, no ensino fundamental I e II, e em língua portuguesa no ensino fundamental II, já no fundamental I o impacto encontrado foi negativo. Os achados divergem dos encontrados na literatura até o momento que mostram ganhos nulos ou prejuízos na aprendizagem por parte do programa. Contudo, o tamanho do impacto é levando em consideração, por se tratar de um ganho pouco expressivo em 10 anos de programa. Para uma maior robustez, o modelo foi estimado de duas formas distintas, com o grupo de controle nunca tratado, para alcançar toda a duração da política, e com o grupo de controle ainda não tratado, que confere maior similaridade entre os grupos de controle e tratamento.

O segundo ensaio avalia o impacto do programa Novo Mais Educação, que vigorou nos anos de 2018 e 2019, na aprendizagem dos alunos e aborda a diferença nos desenhos do Mais Educação e Novo Mais Educação como uma possível

explicação para a diferença de desempenho em cada um dos programas. Também foram utilizados os dados do INEP, a prova do SAEB, em um recorte temporal de 2013 até 2019. O método utilizado foi uma combinação do pareamento por escore de propensão com o diferenças-em-diferenças. O grupo de controle foi formado por escolas que participaram do Mais Educação, mas não entraram no Novo Mais Educação e o grupo de tratamento foi formado por escolas que participaram de ambos os programas. Para os anos iniciais do ensino fundamental, os resultados mostraram um ganho de aprendizagem tanto em português como em matemática. Já para o ensino fundamental II os resultados foram ambíguos, mostrando um efeito nulo em português e um efeito negativo em matemática. A brevidade do programa foi abordada como uma possível explicação para os resultados ambíguos no ensino fundamental II, de forma que se o programa tivesse durado mais, é possível que os resultados tivessem sido diferentes. O programa Novo Mais Educação passou a ter o aumento de carga horária escolar focado nas disciplinas de português e matemática, de modo que o aumento de aprendizagem nessas disciplinas pode ser oriundo do maior foco nelas dado pelo programa. Também foi realizado um teste placebo, colocando como falso tratamento as escolas públicas que nunca participaram de nenhum dos programas. Como resultado, não foram encontradas diferenças do grupo placebo com o grupo de controle, reforçando as evidências de que o aumento de aprendizagem observado foi, de fato, fruto do programa. O único resultado significativo no placebo foi negativo e na disciplina de matemática do quinto ano, podendo indicar que na verdade o impacto positivo do programa foi maior do que o observado.

Por fim, o terceiro ensaio, que foi desenvolvido durante o período sanduíche na Universidade do Minho, em Braga, aborda a temática da inflação de notas. Mais especificamente, o artigo, utilizando a Teoria da Escolha Racional, tem como objetivo identificar como as diferentes motivações presentes nas diferentes dependências administrativas pode impactar na inflação de notas. Além disso, o artigo também investiga a influência dos períodos eleitorais na prática e, por fim, investiga como a mudança de dependência administrativa pode impactar na inflação de notas através da mudança nas motivações. Para isso, foram adotados os dados a nível dos alunos do ensino secundário de Portugal e a escolha da amostra se deu em função de uma política de financiamento público para escolas privadas adotadas pelo Governo Português. De modo geral, algumas escolas privadas, selecionadas pelo Governo,

recebem um valor fixo para atuarem como pública, ou seja, não precisam atuar na lógica de mercado de captação e retenção de alunos. Contudo, no ano de 2018, o Governo de Portugal retirou, unilateralmente, vinte escolas do programa de financiamento, ou seja, a partir desse momento essas escolas voltaram a atuar como privadas, buscando captar e reter alunos, o que permitiu avaliar se a mudança na dependência administrativa pode impactar na prática da inflação de notas. Além disso, em Portugal, existem escolas públicas, privadas, religiosas e privadas que são financiadas pelo Estado para atuarem como públicas, o que permite a análise de diferentes tipos de dependência administrativa. Para isso, foram estimados cinco modelos, sendo quatro deles OLS, dois para a disciplina de matemática e dois para a disciplina de português, um contando com controles municipais e o outro somente com controles a nível do aluno. Essa escolha se deu em virtude dos anos em que os dados de controles municipais estavam disponíveis, enquanto o modelo sem esses controles municipais o recorte vai de 2008 até 2019, o modelo com os controles municipais possui um recorte de 2012 até 2018. O último modelo foi uma combinação do score de propensão com o método clássico de diferenças-em-diferenças, como teste de robustez ao resultado encontrado em relação às escolas que foram retiradas da política. Os resultados mostraram que as escolas privadas são as que mais praticam a inflação de notas, seguidas das escolas públicas. Já as religiosas e privadas que recebem financiamento foram as escolas em que se observou o menor nível da prática de inflação de notas. Também foram encontradas evidências de que, em anos eleitorais, a inflação de notas se comporta de maneira diferente, a depender se as eleições ocorrem antes ou depois das provas, apontando para uma possível interferência política. Por fim, os achados mostram que as escolas que foram retiradas da política de financiamento do Governo de Portugal, passaram a ter maiores níveis de inflação de notas, evidenciando uma possível mudança de comportamento logo após a escola ser retirada da política. Contudo, como as escolas foram retiradas em 2018 e os dados vão somente até 2019, é possível que, com um recorte temporal maior, sejam observados níveis de inflação de notas maiores. O ano de 2020 não foi incluído em virtude da pandemia da COVID-19, que poderia enviesar os dados.

1. EVALUATING THE IMPACT OF THE MAIS EDUCAÇÃO PROGRAM ON LEARNING

Abstract

The Mais Educação Program (PME) ran from 2008 to 2017 and sought to improve basic education in Brazil. The studies that sought to assess the program's impact on learning did not cover its entire duration. The aim of this article is therefore to estimate the impact of the Mais Educação Program on the learning of elementary school students. Data from the Basic Education Assessment System test and from the Brazilian Ministry of Education's Education Census were used. Because the program has been implemented gradually over the years, the difference-in-differences method was adopted for multiple periods, as this method is able to deal with this particularity. The results show a positive impact on student learning, except in the Portuguese Language subject in the 5th year of elementary school. However, the greatest impact observed was for the mathematics subject in the 9th year, with 1.7476 points, representing an improvement of only 0.34% in student performance in the tests over the 10 years of the program's existence. The impact of the program's design on the results is discussed. It is possible that the PME's lack of focus on the subjects assessed in the *prova Brasil* means that possible learning gains are not captured in the national assessments.

Keywords: Mais Educação Program; Full-time education; public policy; difference in differences in multiple periods.

1.1 INTRODUCTION

With a school workload and PISA results below those of the OECD countries, Brazil sought to adopt full-time education in order to raise students' learning levels¹ (PISA, 2018; ALMEIDA *et al.*, 2016). In this scenario, the Law of Guidelines and Bases (Law No. 9.394 of 1996) began to give greater prominence to projects aimed at increasing school hours. Thus, the Mais Educação Program (*Programa Mais Educação* - PME) emerged, aimed at increasing school hours in public schools.

Created in 2007, the PME ran from 2008 until 2017² and was the subject of several impact assessment studies (XERXENEVSKY, 2012; GANDRA, 2017; DE

¹ In this article, an increase or decrease in the SAEB Test score will be considered a learning gain or loss.

² Although the ordinance establishing the New Mais Educação Program was published in 2016 (MEC Ordinance No. 1,144/2016) and the resolution governing the program was published in 2017 (Resolution

OLIVEIRA; DE MENEZES, 2016; ALMEIDA *et al.*, 2016; VIDIGAL; VIDIGAL, 2022). However, there was no consensus among the results found. In addition, none of the studies carried out so far have covered the entire duration of the PME, so the total impact of the program during its lifetime has never been estimated.

In view of the above, previous evaluations of the PME are incomplete and restricted to a period when the PME was in force. We therefore seek to answer the following question: Has the Mais Educação Program been successful in its attempt to raise the learning levels of elementary school students³ in Brazil? The aim of this article is to estimate the impact of the Mais Educação Program on the learning of elementary school students. To do so, we explored the gradual implementation of the program in schools to adopt a difference-in-differences strategy over multiple periods proposed by Callaway and Sant'anna (2021). We used data from the Basic Education Assessment System (SAEB) test and from the Education Census of the Brazilian Ministry of Education (MINISTÉRIO DA EDUCAÇÃO).

This article contributes to the literature by bringing new evidence about the impact of the PME using more recent data, considering the entire period of the program's existence (2008 – 2017), and a more reliable methodology, capable of dealing with gradual implementation. In this way, we also contribute to the debate on the efficiency of full-time education on learning, since there is no consensus on the subject (HOLLAND; ALFARO; EVANS, 2015). Our results show that although the PME has had a positive impact on practically all subjects, except Portuguese in the 5th year of elementary school, the result in practice is almost imperceptible, with no more than a 0.5% increase in grades over the entire duration of the program.

In addition to this introduction, the article is divided into six more sections. The second section provides a theoretical framework and a review of the literature on full-time education, focusing on previous studies that sought to assess the impact of the

17/2017), the Mais Educação Program's open data site lists schools still participating in the PME in 2017. Therefore, the schools in this database will be considered part of the Mais Educação Program in 2017. Source: <https://dadosabertos.mec.gov.br/pme/item/104-escolas-com-planos-aprovados-2017>. Access on Oct. 14, 2023.

³ The LDB structures the Brazilian education system into two levels: basic education and higher education. Basic education, in turn, is made up of early childhood education (up to 5 years old); primary education (6 to 14 years old); and secondary education (15 to 17 years old). Primary education is organized into initial years (1st to 5th grade), also known as elementary education I, and final years (6th to 9th grade), also known as elementary education II. Basic education is compulsory for children from the age of four.

PME on learning and other dimensions of education. The third section presents the PME, outlining its objectives, program design and criteria for schools to join. The fourth section discusses the database and the methodological procedures used. The fifth section presents the results obtained and compares them with previous studies. The sixth section presents the event study that aims to support the hypothesis of parallel trends or not. Finally, there is the conclusion of the article, which presents the contributions, implications for future studies and limitations of this study, and addresses the objective and research question once again.

1.2 FULL-TIME EDUCATION

The Human Capital Theory (HCT) points out that a higher level of education leads to higher salaries and, consequently, social advancement (SCHULTZ, 1961; BECKER, 1962; MINCER, 1974). The HCT replaces the traditional view of education as an expense and starts to see it as an investment, in that the individual gives up time and resources in the present in order to have higher incomes in the future, using education as a key to higher levels of productivity and income. Thus, education comes to be seen as a driver of social well-being and fundamental for the advancement of individuals and the country. Both in the seminal studies by Schultz (1961), Becker (1962) and Mincer (1974) and in recent studies (e.g. PSACHAROPOULOS; PATRINOS, 2018; JORGENSON; FRAUMENI, 2020), the link between higher levels of education and higher incomes remains clear.

Faced with this and a scenario of various educational problems, such as high dropout rates and low performance, several countries in Latin America, including Brazil, began to adopt measures to increase the school day (ALMEIDA *et al.*, 2016). In Brazil, the 1996 Guidelines and Bases Law (LDB) gave greater prominence to comprehensive education, but the country still has a shorter school day than the OECD average (ROSA *et al.*, 2022).

Although the relationship seems intuitive – a higher school load generates a higher level of education and, consequently, according to the HCT, promotes social ascension with higher incomes – the literature has shown that the link between longer working hours and greater learning is neither clear nor consensual (HOLLAND; ALFARO; EVANS, 2015). For example, studies carried out in Uruguay (LLAMBI, 2013) and Chile (ARZOLA, 2011) show that increasing school hours has no or a negative impact on learning. However, there are also studies that show an increase in learning

in these countries, such as Bellei (2009) in Chile and Cerdan-Infantes and Vermeersch (2007) in Uruguay. Studies also point to an improvement in education rates in countries such as Mexico (PADILLA-ROMO, 2022) and Colombia (HINCAPIE, 2016), motivated by the policy of increasing the school day.

Brazil also began to see an increase in school hours as a good measure to solve its educational problems (ALMEIDA *et al.*, 2016). In this direction, the Mais Educação Program was created in 2007, representing an attempt to solve the high dropout rate and low level of learning. However, studies evaluating the impact of the PME on learning and other educational indicators have not reached a consensus. Contrary to expectations, most studies show a worsening in various educational indicators after the implementation of the PME. Table 1.1 summarizes the results of studies on the PME

Table 1.1 - Results from previous assessments

Authors	Methodology	Results
Xerxenevsky (2012)	Difference-in-difference with Propensity Score Matching	Positive effect on test scores in Portuguese and negative in mathematics for the 5th year of elementary school. Zero effect in the 9th year of elementary school
Gandra (2017)	Difference-in-differences with the propensity score matching	Zero effect in Portuguese for 9th grade students in schools with a five-year program and in mathematics for schools with a one-year program. Negative effect on other classes.
De Oliveira & De Menezes (2016)	Discontinuous regression	The effects were not statistically significant in 12 educational indicators, both in the final and initial years of elementary school.
Almeida <i>et al.</i> , (2016)	Propensity Score Matching	The program had no impact on dropout rates. Negative impact on math scores. The program is associated with worse performance in Mathematics and Portuguese Language
digal & Vidigal (2022)	Panel Data (1999 - 2014)	The program reduced dropout rates for students at all grade levels. In enrollment rates there was an increase in students from the 6th to the 9th year and

		a reduction in students from the 10th to the 12th year. Year promotion is positive for students in grades 6 to 9, but negative for students in lower years. Repetition rates have increased at all levels of education.
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Note. Authors' own elaboration

The study by Xerxenevsky (2012) evaluated the impact of the PME only for schools in the state of Rio Grande do Sul between 2007 and 2009. The authors used the Difference-in-Differences method combined with propensity score matching and the results indicate an increase in learning only in the subject of Portuguese language in the 5th year of elementary school. The result was negative for mathematics in the 5th year and there was no impact for the subjects in the 9th year.

Gandra (2017) also evaluated the impact of the PME using the Difference-in-Differences method combined with propensity score matching. However, he divided the sample into three groups so that the period of adherence of the schools was the same. In addition, the study was nationwide. The results indicate a null effect in the subject of Portuguese language for the schools in the group that have been in the program for 5 years and in mathematics for the group of schools that have been in the program for 1 year. In the other subjects and groups, the results point to a negative impact on learning.

Other authors have evaluated the PME's impact on other dimensions of education. For example, Oliveira and Menezes (2016) used the discontinuous regression method and a time frame from 2008 to 2014 to assess the program's impact on various educational indicators, twelve of which had a null effect⁴. Almeida *et al.* (2016), on the other hand, used propensity score matching and found evidence that PME did not reduce dropout and had a negative impact on math grades. In addition, the authors argue that PME is associated with a worsening of grades. Finally, Vidigal and Vidigal (2022), in a panel of schools with a time frame from 1999 to 2014, found evidence that the PME reduced student dropout rates in all grades and provided an increase in students from the 6th to the 9th year. However, they also found a reduction in the enrollment rate of students from the 10th to 12th year and an increase in the

⁴ The indicators evaluated by Oliveira and Menezes (2016) are: Dropout, failure, approval, math, Portuguese and IDEB. All the variables were assessed in elementary school I and II.

repetition rate at all levels of education. The authors analyzed primary and secondary education.

Although there is a downward trend in scores, there is no consensus in all the studies, since positive and null results have also been found.

1.3 MAIS EDUCAÇÃO PROGRAM

The PME was created in 2007 and implemented in 2008. Developed on the basis of Law 9.394 of 1996, it was instituted by Interministerial Ordinance 17/2007 and its main objective was to increase school hours as a remedy to solve such educational problems as low levels of learning, school dropouts and child labor. The following objectives were established for the PME (BRASIL, 2007):

- I - to support the expansion of educational time and space and the extension of the school environment in the public basic education networks of states, the Federal District and municipalities, by carrying out activities in the after-school hours, articulating actions developed by the Ministries that are part of the Program;
- II - contribute to reducing dropout rates, failure rates and age/grade distortion by implementing pedagogical actions to improve conditions for school performance and achievement;
- III - offer specialized educational assistance to children, adolescents and young people with special educational needs, integrating into the curricular proposal of regular schools the interaction with the diversity of expressions and body languages, including through accessibility actions aimed at those with disabilities or reduced mobility;
- IV - to prevent and combat child labor, sexual exploitation and other forms of violence against children, adolescents and young people, through greater community integration, increasing their participation in school and social life and promoting access to the social assistance services of the Unified Social Assistance System (SUAS);
- V - to promote the formation of sensitivity, perception and expression of children, adolescents and young people in artistic, literary and aesthetic languages, bringing the educational environment closer to Brazilian cultural diversity, stimulating sensoriality, reading and creativity around school activities;
- VI - to encourage children, adolescents and young people to maintain an effective interaction around educational and leisure sports practices, aimed at the process of human development, citizenship and solidarity;
- VII - promote closer ties between the school, families and communities, through activities aimed at making them responsible for and interacting with the educational process, integrating social and community facilities with each other and with school life; and
- VIII - to provide technical and conceptual assistance to the federated entities in order to stimulate new technologies and capacities for the development of projects with a view to what is referred to in Article 1 of this Ordinance.”

The PME aimed to bring school hours to a minimum of 7 hours a day. The standard elementary school workload in Brazil was 4.5 hours. To complement the extra hours that would be added, schools could choose six activities from those offered in predetermined thematic macro fields. Until 2012, the macro fields offered were as

follows: a) environmental education; b) sport and leisure; c) human rights in education; d) culture and the arts; e) digital culture; f) health promotion; g) communication and the use of media; h) research in the field of natural sciences; i) education and the economy and; j) pedagogical support. Since 2013, the macro fields have been as follows: a) Communication, use of media and digital and technological culture; b) culture, arts and heritage education; c) environmental education, sustainable development and solidarity and creative economy/economic education; d) sport and leisure and; e) pedagogical support, the latter being compulsory in all years (GANDRA, 2013; MINISTÉRIO DA EDUCAÇÃO, 2013). As of 2014, according to the Ministry of Education's Operational Manual for Integral Education (2014), the macro fields remain the same, but there is a change in the pedagogical support macro field, which remains compulsory, but is now only carried out with readings on the various areas of knowledge.

Joining the program was voluntary and exclusive to public schools. In order to participate, the school had to fill in the Service Plan, through the interactive Money Directly at School Plan (PDDE), which is a tool created by the Ministry of Education and available to all schools that are registered with the School Census and which aims to facilitate the identification and diagnosis of problems in public schools (MINISTÉRIO DA EDUCAÇÃO, 2022). The Service Plan had to include the activities that would be carried out to fill the extra school hours. In addition, certain criteria were established for schools to be able to take part in the PME, which were altered over the years. Table 1.2 shows the criteria for joining⁵ the PME over the years. It can be seen that from 2010 onwards the PME underwent a clear expansion based on more comprehensive selection criteria. The loosening of the criteria and the consequent expansion of the PME can be seen in Table 1.3, a leap from 4,638 schools in 2009 to 30,275 in 2012, reaching a peak of 58,705 schools in 2014

Table 1.2: Criteria for joining the PME

Ano	Criteria for joining the PME	Fonte
2008	Schools located in metropolitan areas with more than 200,000 inhabitants. Schools with a low IDEB ⁶ score in these regions (no cut-off was set for this score)	Gandra (2013)

⁵ As of 2015, no manuals establishing new criteria were found.

⁶ The IDEB is a synthetic indicator of education quality, created in 2007, and calculated from two indicators: school approval, whose data is obtained from the School Census, and average performance in Portuguese and Mathematics, obtained from the Basic Education Assessment System (Saeb). The index ranges from 0 to 10 and is currently one of the main indicators of public education policy. More information at:

2009	<p>Schools that participated in the PME in 2008</p> <p>Schools located in metropolitan areas with more than 100,000 inhabitants</p> <p>Schools located in these municipalities with an IDEB below the local average</p> <p>Schools located in municipalities with more than 50,000 inhabitants in sparsely populated states (These schools acted as hubs for the PME)</p>	Manual de Educação Integral (2009)
2010	<p>Schools that participated in the PME in 2008 and 2009</p> <p>Schools with low IDEB in areas of social vulnerability</p> <p>Schools in capital cities and the cities of the nine metropolitan regions (Porto Alegre/RS, Belo Horizonte/MG, Rio de Janeiro/RJ, São Paulo/SP, Salvador/BA, Recife/PE, Fortaleza/CE, Belém/PA and Curitiba/PR)</p> <p>Schools in cities with more than 163,000 inhabitants belonging to the Large Cities Working Group</p> <p>Schools in cities with more than 90,000 inhabitants</p>	Manual de Educação Integral (2010)
2011	<p>Schools that participated in the PME in 2008, 2009 and 2010</p> <p>Schools with an IDEB equal to or lower than 4.2 in the initial years and/or 3.8 in the final years</p> <p>Schools in towns with a population greater than or equal to 18844 inhabitants</p>	Santos (2014)
2012	<p>Urban Schools</p> <p>Schools that participated in the PME in previous years</p> <p>Schools with an IDEB equal to or lower than 4.2 in the initial years and/or 3.8 in the final years</p> <p>Schools located in priority territories of the Brazil Without Poverty Plan⁷</p> <p>Schools with 50% or more of their students participating in the Bolsa Família program⁸</p> <p>Rural schools</p> <p>Schools in municipalities with 15% or more of the population aged 15 or over not literate</p> <p>Schools in municipalities with 20% or more of the teaching staff without a university degree</p> <p>Schools in municipalities with 30% “rural” population</p> <p><i>Quilombola</i>⁹ schools with 74 or more enrolments</p> <p>Schools in municipalities with settlements of 100 or more families</p> <p>Schools in municipalities with 25% or more rural poverty</p> <p>Schools located in the countryside with 74 or more enrolments</p>	Manual Operacional de Educação Integral (2012)

https://download.inep.gov.br/educacao_basica/portal_ideb/o_que_e_o_ideb/Nota_Tecnica_n1_concepcaoIDEB.pdf. Access: Oct. 06, 2023.

⁷ The Brazil Without Poverty Plan (BSM) was launched in June 2011, aimed at families living on a family income of less than R\$70 per person per month. In 2014, the line that characterizes extreme poverty went from R\$70 *per capita* per month to R\$77, and the average monthly benefit passed on to families reached R\$170, an approximate 88% increase for the period. More information at: <https://www.gov.br/sri/pt-br/backup-secretaria-de-governo/iniciativas/internacional/fsm/eixos/inclusao-social/brasil-sem-miseria#:~:text=O%20plano%20%C3%A9%20baseado%20em,de%20trabalho%20e%20gera%C3%A7%C3%A3o%20de>. Access on Jun. 30, 2024.

⁸ Bolsa Família is Brazil's largest social cash transfer program and was created on January 9, 2004 by Law 10.836. More information at: <https://www.gov.br/mds/pt-br/acoes-e-programas/bolsa-familia>. Access on Oct. 14, 2023.

⁹ *Quilombolas* are descendants of black slaves and Afro-descendants who escaped and created small communities and villages. According to Decree No. 4.887/2003, Quilombola Communities are “ethnic-racial groups, according to criteria of self-attribution, with their own historical trajectory, endowed with specific territorial relations, with a presumption of black ancestry related to resistance to the historical oppression suffered”. More information at: <https://site.mppr.mp.br/direito/Pagina/Quilombolas>. Access on May 7, 2024.

2013	<p>Urban Schools Schools that participated in the PME in previous years Schools with an IDEB equal to or lower than 4.6 in the initial years and/or 3.9 in the final years Schools in all municipalities in the country Schools with 50% or more of their students participating in the Bolsa Família program</p> <p>Rural schools Schools in municipalities with 15% or more of the population illiterate Schools in municipalities with 25% or more rural poverty Schools in municipalities with 30% “rural” population <i>Quilombola</i> and indigenous schools Schools in municipalities with settlements of 100 or more families</p>	Manual operacional de Educação Integral (2013)
2014	<p>Urban Schools Schools that participated in the PME in previous years Schools with an IDEB equal to or lower than 4.2 in the initial years and/or 3.8 in the final years The other criteria remain the same</p> <p>Rural schools All criteria are kept the same as the previous year</p>	Manual operacional de Educação Integral (2014)

Source: Prepared by the authors

As soon as activities began, 1,380 schools in 55 municipalities in 26 states and the Federal District joined the PME. The program has continued to grow over the years, reaching 58,705 schools and 16,615,344 students in 2014. Table 1.3 shows participation in the PME year by year and was drawn up based on the spreadsheets provided by the Ministry of Education (2023). The “Participants” column shows the number of schools that took part in the program in the respective year. It should be noted that any school could participate in one period and not in the next. There is no data available for 2015 on participating schools, so there is no result for that year. To estimate the model, the schools participating up to 2014 were considered, since the estimator assumes that the treated school will never stop being treated.

Table 1.3 - Schools participating in the PME by year

Year	Participants	Year	Participants
2008	1380	2013	50426
2009	4638	2014	58705
2010	9660	2015	-
2011	13032	2016	46537
2012	30275	2017	33532

Source: Prepared by the authors based on MEC (2023)

Starting in 2015, the program began to suffer from budget cuts and, in 2016, through MEC Ordinance No. 1,144/2016, the Novo Mais Educação Program was launched, which would be regulated by Resolution 17/2017 and would come into effect in 2018. Thus, in 2017, the PME was officially closed.

1.4 METHODOLOGICAL PROCEDURES

1.4.1 Database

The scores used to measure student learning are the scores obtained in the SAEB test, in both mathematics and Portuguese. The SAEB was created in 1995 and consists of a set of assessments carried out by the National Institute for Educational Studies and Research (INEP). The purpose of these assessments is to create a diagnosis of Brazilian education and contribute to the development, monitoring and improvement of public education policies based on evidence (INEP, 2021). An important feature of the SAEB tests is that they are based on the Item Response Theory (IRT), allowing the results to be compared from one cycle to the next (KLEIN, 2009).

The SAEB tests take place every two years and the data is from 2005 to 2017, covering two pre-treatment periods until the last year of the policy. Finally, it is worth noting that there are no records of schools that took part in the PME in 2015, so the period was not considered.

To estimate the model with the control group made up of schools that had never been treated, the sample was divided into two groups. The two groups were made up of two bases each, the first containing elementary school I and the second elementary school II. This division occurred because not all schools with elementary I have elementary II. The first group was used to estimate the main model, with the control group consisting of schools that had never been treated. As a result, the elementary school sample consisted of 14,592 schools, of which 2,894 formed the control group. Elementary school II had a sample of 7,830 schools, of which 1,514 made up the control group. For the second group, with a control group made up of schools that have not yet been treated, schools that have never received treatment are excluded and the base is now made up only of schools that at some point took part in the PME. In this way, the size of the control and treatment groups varies over the years, so that the control group shrinks until 2015, when it is no longer possible to estimate the ATT because there are no longer enough schools in the base to make up the control group.

Table 1.4 shows the evolution of school participation in each of the groups. The percentage column shows the part of the sample that joined the program in the respective year and the “Cumulative” column represents the part of the sample that received the treatment up to that year.

Table 1.4 - Annual participation in the PME in relation to the sample

Year	Schools - Elementary I	%	Cumulative	Schools - Elementary II	%	Cumulative
2008	437	99%	2.99%	269	3.43%	3.43%
2009	1315	9.01%	12%	609	7.78%	11.21%
2010	1518	10.40%	22.40%	878	11.22%	22.43%
2011	1341	9.19%	31.59%	785	10.02%	32.45%
2012	2569	17.60%	49.19%	1393	17.79%	50.24%
2013	1472	10.08%	59.27%	711	9.08%	59.32%
2014	2207	15.12%	74.39%	1197	15.28%	74.60%
2016	693	4.75%	79.14%	419	5.35%	79.95%
2017	146	1.00%	80.14%	55	0.70%	80.65%
Treatment	11698			6316		
Total	14592			7830		

Source: Prepared by the authors

1.4.2 Model

In order to estimate the impact of the Mais Educação Program on the learning of basic education students, the multiple-period Difference-in-Differences method proposed by Callaway and Sant'Anna (2021) will be used. This choice was made due to the program's implementation characteristics, which occurred gradually over the years. In this method, schools that are in the control group during the period can move to the treatment group in the period. However, as an assumption of the model, once a unit has been treated, it can never return to the control group, even if it abandons the policy. In other words, a school that has stopped receiving treatment will not be able to return to the control group, because once treated, the school will acquire differences from the schools in the control group, so that the effect of the treatment is long-lasting.

The method chosen allows the control group to be formed in two different ways. In the first way, the schools that make up the control group are schools that will never receive the treatment. In the second way, the control group is made up of schools that have not yet received the treatment, so that the school changes group only from the moment it receives the policy. In this study, the model will be estimated in both ways. The first way will be estimated for the main results. This choice is based on the size of the sample, as only the first way can be used to estimate the total outcome of the PME. In the second way, as the control group is made up of schools that have not yet been treated, as of 2014 there are no longer enough schools in the group. One explanation for this is the large number of schools that join the program until 2014, meaning that there are not many schools eligible for treatment from then on. Although the unobservable characteristics point to differences between schools, the Difference-in-

Differences method in multiple periods is robust to dealing with these situations (CALLAWAY; SANT'ANNA, 2021). The second way will be estimated to check the robustness of the results, since estimating the model with schools that have not yet been treated can reduce selection bias, as the schools have chosen to participate in the program and have similar observable and unobservable characteristics.

Considering the first way, the hypothesis of parallel trends can be represented by equation (1.1):

$$E[Y_t(0) - Y_{t-1}(0)|G_g = t] = E[Y_t(0) - Y_{t-1}(0)|C = 1] \quad (1.1)$$

The first expression represents the potential outcome of the group that would be treated for the first time in in the period in which $G_g = t$. In this expression we have $Y_t(0)$, which is the counterfactual, in other words, what would have happened to the treated school if the treatment had not taken place, an outcome that is observable in practice. The term $Y_{t-1}(0)$ in the first expression represents what happened to the treated school before the treatment, which is an observable outcome in practice. The second expression is the potential outcome of the group that will never be treated, before $Y_{t-1}(0)$ and after $Y_t(0)$ intervention. In other words, in the absence of the treatment, the treated group and the never-treated group would have followed parallel trends. In turn, the term C denotes the group of units that will never be treated.

The assumption of parallel trends is fundamental for the method to correctly identify the mean effect of the treatment on the treated *ATT*. However, in Multi-period *Diff-in-Diff*, the *ATT* needs to be redefined for multiple periods. If the parallel trends hypothesis adopted is based on units never treated, we have the following *ATT* for $t \geq g$:

$$ATT(g, t) = E[Y_t - Y_{g-1}|G = g] - E[Y_t - Y_{g-1}|C = 1] \quad (1.2)$$

The first expression represents the difference between the result of the treated school after treatment and the treated school before treatment. Since the treatment takes place (G) in period g , the term Y_{g-1} represents the result of the treated school before treatment. In turn, the expression $E[[Y_t - Y_{g-1}|C = 1]$ represents the difference between the results of the schools that will never be treated (C) before (Y_{g-1}) and after (Y_t) the treatment.

To estimate the *ATT*, the method that Callaway and Sant'Anna (2021) consider to be the main one was chosen. The *ATT* in each group must be considered individually, so that:

$$\theta_s(g) = \frac{1}{T - g + 1} \sum_{t=2}^T 1\{g \leq t\} ATT(g, t) \quad (1.3)$$

Equation (1.3) highlights the heterogeneity of the treatment effect in relation to the period in which the treatment was adopted (CALLAWAY; SANT'ANNA, 2021). To obtain the overall effect, simply add (1.3), such that:

$$\theta_s^0 := \sum_{g=2}^T \theta_s(g) P(G = g) \quad (1.4)$$

Finally, the SUTVA¹⁰ (*Stable unit treatment value assumption*) hypothesis, which assumes that there are no leaks in the policy, was satisfied to the extent that implementing the program in one school does not cause a school in the control group to also receive any of these effects, since they are different schools and the implementation of the program did not take place gradually in the classes.

1.5 RESULTS AND DISCUSSION

Tables 1.5 and 1.6 show the results of the mathematics and Portuguese language grades for the 5th year of elementary school, respectively.

The results diverge from previous studies, as they show a positive impact on mathematics learning, with a total Program score of 0.8193 points, as shown in Table 1.5. The results also point to an improvement in math performance in all years, with the exception of 2009, when there was a drop in the level of learning. The results of the robustness test show an *ATT* of 2.1104 points, which confirms the upward trend in learning levels.

Table 1.5 - *ATT* - Mathematics 5th year

Group	<i>ATT</i> (<i>g</i> , <i>t</i>)	Standard Deviation	95% Simultaneous Confidence Interval	
2009	-2,8680	0,4419	-4,009	-1,727 *

¹⁰ Although aggregated data do not guarantee that there was no spillover, they help to verify whether it occurred. In the data presented, there is no evidence of spillover, but this hypothesis cannot be completely ruled out, as the data are aggregated at the school level, which does not allow verification at the student level

2011	1,4825	0,3804	0,5003	2,4646	*
2013	1,4133	0,354	0,4994	2,3271	*
2015	1,3897	0,3854	0,3948	2,3846	*
2017	1,898	0,5795	0,4018	3,3943	
<i>Aggregate ATT (Never treated)</i>	0,8193	0,1775	0,4719	1,1673	*
<i>Aggregate ATT (Not yet treated)</i>	2,1104	0,2922	1,5377	2,6831	*

Note. Level of Significance: '*' 5%

Source: Prepared by the authors

In the subject of Portuguese language in the 5th year of elementary school, the overall outcome of the policy was negative, i.e. the results indicate that the PME worsened the level of student learning. An improvement in learning was only observed in 2017. On the other hand, it was possible to observe losses in learning in 2009 and a zero impact in the other years, so that the gain obtained in 2017 was not enough to cover the previous losses. However, in the outcome considering only the schools not yet treated, the *ATT* indicates a positive impact of the PME of 1.0686 points.

The results for Portuguese language in the 5th year of elementary school converge with those of the studies by Gandra (2017) and Almeida *et al.*, (2016), which found a negative impact on learning. Xerxenevsky (2012), on the other hand, found a positive impact on Portuguese language learning, in line with the result obtained in the estimated model with the control group made up of schools not yet treated. The impact of the program on Portuguese language learning in the 5th year of elementary school was -0.4346 points. The results are shown in Table 1.6.

Table 1.6 - *ATT* – Portuguese language 5th Year

Group	<i>ATT (g, t)</i>	Standard Deviation	95% Simultaneous Confidence Interval		
2009	-1,6385	0,3847	-2,6637	-6132	*
2011	-0,701	0,3101	-1,5273	0,1253	
2013	-0,7727	0,2985	-1,568	0,0227	
2015	0,648	0,3196	-0,2037	1,4998	
2017	1,7667	0,4892	0,4632	3,0703	*
<i>Aggregate ATT (Never treated)</i>	-0,4346	0,1749	-0,7774	-0,0919	*
<i>Aggregate ATT (Not yet treated)</i>	1,0686	0,278	0,5237	1,6135	*

Note. Level of Significance: '*' 5%

Source: Prepared by the authors

For mathematics in the 9th year of elementary school, the results are shown in Table 1.7 and indicate that the program had a positive impact on learning, a total of 1.7476 points. The gains in learning are observed from 2011 to 2013, while in 2015 there is a drop in student learning levels. In the final year of the program, 2017, there is no significant effect, and the effect of the PME is null, as it was in 2009. The result of the model with schools in the never-treated control group confirms the positive impact of PME and shows an *ATT* of 2.2307 points, confirming a trend of learning gains for this subject.

Table 1.7 - *ATT* – Mathematics 9th year

Group	<i>ATT</i> (<i>g</i> , <i>t</i>)	Standard Deviation	95% Simultaneous Confidence Interval		
2009	1,046	0,6021	-0,546	2,6387	
2011	2,4791	0,5215	1,0996	3,8585	*
2013	4,7067	0,5114	3,3539	6,0594	*
2015	-2,8364	0,6201	-4,4760	-1,196	*
2017	2,1936	0,9088	-4,5970	0,2104	
<i>Aggregate ATT (Never treated)</i>	1,7476	0,2558	1,1894	2,1915	*
<i>Aggregate ATT (Not yet treated)</i>	2,2307	0,4594	1,3303	3,1311	*

Note. Level of Significance: ** 5%

Source: Prepared by the authors

For the subject of Portuguese language in the 9th year of elementary school, the Mais Educação program had a positive impact, with an *ATT* of 0.745, as shown in Table 1.8. This result differs from those found by Gandra (2017) and Xerxenevsky (2012), who reported a null effect of the PME for the subject of Portuguese language in the 9th year of elementary school. However, it is worth noting that Xerxenevsky (2012) used a time frame up to 2009, a period in which the results obtained in this study also show a null effect of the Mais Educação program. On the other hand, in the model estimated with never-treated schools in the control group, the positive *ATT* remains and is 1.2542.

Table 1.8 - *ATT* - Portuguese language 9th Year

Group	<i>ATT</i> (<i>g</i> , <i>t</i>)	Standard Deviation	95% Simultaneous Confidence Interval		
2009	0,6921	0,6415	-0,916	2,3006	
2011	0,983	0,6065	-0,592	2,4491	*
2013	2,7147	0,534	1,3751	4,0531	*
2015	-2,265	0,6408	-3,8720	-0,658	*

2017	-1,7603	0,9503	4,1430	0,6226	
<i>Aggregate ATT (Never treated)</i>	0,745	0,3032	0,1506	1,3393	*
<i>Aggregate ATT (Not yet treated)</i>	1,2542	0,4519	0,3684	2,14	*

Note. Level of Significance: '*' 5%

Source: Prepared by the authors

It is worth noting that all the positive effects of the PME are observed from 2011 onwards (Mathematics 9th year, Portuguese Language 9th year of elementary school II and Mathematics 5th year of elementary school I), which may point to initial difficulties in implementing the program in schools (GANDRA, 2017), such as adapting teachers, students and the structure. These results may also indicate that the program has matured and that the initial problems have been solved, so that the implementation in schools that joined later was done more efficiently (ALMEIDA *et al.*, 2016). In this sense, another possible explanation may be linked to an accumulation of knowledge acquired by the students, so that a positive result in the first few years was not expected, since education is a cumulative and lifelong process (OREOPOULOS; SALVANES, 2011; BLOSSFELD, 2019). In addition, the design of the PME increases the workload in activities such as arts, culture and economic education, which are not focused on developing skills that are directly measured in the SAEB tests. This may explain the low *ATT's* observed in 10 years of the program's activity. After all, besides the length of education, the nature of what is taught can have an impact on learning (OREOPOULOS; SALVANES, 2011). Although there was a requirement for an activity in the pedagogical support macro field, there was no requirement for it to be in math or Portuguese, and it could be in other subjects, so this learning gain is not captured by the SAEB math and Portuguese tests (GANDRA, 2017).

The only grade that had a negative impact was Portuguese in the 5th year of elementary school, a result that converges with the findings of Gandra (2017) and Almeida *et al.*, (2016). Over the entire duration of the program, only one year had a positive impact on learning this subject. This negative result and the lower positive impact on Portuguese language in 9th year compared to math grades may indicate that the schools placed greater emphasis on mathematics when choosing the activity of the pedagogical support macro field, as compared to Portuguese language.

The results found differ from the studies that sought to assess the impact of the PME. Some hypotheses have been raised to explain the difference in results. The first

is the evaluation approach adopted by the other studies: none of them evaluated the program from start to finish, which may have led to a bias in the analysis, since problems in the program's implementation stages are possible. In addition, Xerxenevsky (2012) only looked at the state of Rio Grande do Sul, while this study looked at the whole of Brazil. Finally, another possible explanation may lie in the methods used in the previous studies. As the program was implemented gradually, a pre- and post-treatment period had not been clearly established, so the classic matching and Difference-in-Differences methods with Two-Way Fixed Effects (*TWFE*) are not capable of estimating the true impact of the program, so that the results may be biased (CALLAWAY; SANT'ANNA, 2021; GOODMAN-BACON, 2021; SUN; ABRAHAM, 2021; DE CHAISEMARTIN; D'HAULTFOEUILLE, 2023). In addition, according to Cunningham (2021), the bias created by the TWFE tends to zero or can reverse signs, showing a small impact. Finally, Sun and Abraham (2021) show that the bias can also affect the treatment group, so as to increase the existing bias. These differences in the time frame and methodologies employed may explain the differences in the results found in this study from its predecessors.

The results of the main model converged in almost all years with the results of the robustness model, except for the Portuguese language grade in the 5th year of elementary school, although the results of the robustness model showed a higher *ATT* in all grades. A possible explanation for this could be directly linked to the schools that were the control group in each model. In the model with never-treated schools, there are schools that have never opted and/or have never been classified as low-performing schools to receive the PME. Even so, in 3 of the 4 grades, the results show a gain in student learning, except in the 5th year of elementary school in the subject of Portuguese. In the model with schools that have not yet been treated, the control group is made up of schools that will meet the criteria for joining and/or voluntarily joining the PME at some point, i.e. the worst-performing schools. Thus, it can be seen that the PME improves the performance of these schools to a greater extent than other similar schools that chose not to participate in the PME that year. However, the results of the robustness model only cover up to 2014, disregarding the final years of the program.

Finally, attention should be drawn to the size of *ATT* observed in the results. Although all of them were significant, both in terms of score increases and decreases, it can be seen that the impact is small in relation to the SAEB scores, which range from

0 to 500. Thus, the greatest impact observed, which was in 9th grade mathematics, of 1.7476 points, represents an improvement of only 0.34% in student performance in the tests over the 10 years of the program's existence. These results may explain why several studies have found a null impact, because although it is a positive *ATT*, in practice it represents an imperceptible improvement. Although the improvement in the robustness model was greater, in practice it also shows a low impact. In the highest *ATT* obtained, the increase in learning represents a 0.44% improvement in student performance over a 7-year period.

1.6 EVENT STUDY

To test the hypothesis of parallel trends in the pre-treatment period, Callaway and Sant'Anna (2021) adopted the event study method. The periods are analyzed separately in relation to the control group, never-treated schools. The graphs with the results are shown in appendix I. In elementary school there is a deviation in the 2009 group in both subjects and, for mathematics, the deviation is repeated in the second group. This can be explained by changes in the implementation characteristics of the PME (ALMEIDA *et al.*, 2016). In the others, there is evidence to support the hypothesis of parallel trends. One possible explanation for this could be the rapid expansion and changes to the selection criteria that the program underwent at the beginning. However, for elementary school II there is evidence of parallel trends, except in the 2009 period for the Portuguese language subject. It is worth noting that when estimating the event study with aggregate periods for the Portuguese language subject in elementary school II, the parallel trends are sustained in the period prior to the start of the treatment. The event study was carried out with a 95% confidence interval.

As for the results, it is noteworthy that we can observe a slight improvement in performance after the implementation of the policy. In addition, the improvement increases as the periods go by in almost all the groups analyzed, in line with the literature that points to education as a cumulative process (OREOPOULOS; SALVANES, 2011; BLOSSFELD, 2019). However, the overall outcome observed is low, showing that the activities provided in the macro fields do not reflect a substantial improvement in the skills required of students when taking the SAEB test.

1.7 CONCLUSION

This study sought to answer the following question: has the PME been successful in raising the learning levels of Brazilian elementary school students? To achieve this goal, the impact of the program on the learning of elementary school students was estimated. The results point to an improvement in the subjects analyzed, except for Portuguese in the 5th year, which was negatively impacted. It should also be noted that although the results are statistically significant, the perceived change in learning levels is imperceptible in practice, given that the greatest impact represents only a 0.34% improvement in learning levels, which may help to explain the null and negative results found in previous studies. Furthermore, it could be argued that statistically the objective of the PME was achieved, but in real terms, given the low effects found, there is room to argue that there was no perceptible improvement.

This article contributes to the literature by being the first study to estimate the total impact of the Mais Educação Program and by bringing a methodology that is better suited to the characteristics of PME implementation (CALLAWAY; SANT'ANNA, 2021; GOODMAN-BACON, 2021; SUN; ABRAHAM, 2021; DE CHAISEMARTIN; D'HAULTFOEUILLE, 2023). It also contributes to the debate on the impact of full-time education on student learning, a topic that is not yet consensual in the scientific literature (HOLLAND; ALFARO; EVANS, 2015).

One limitation of this study is that it only considers the increase in SAEB test scores as a gain. However, it is worth noting that there is no other indicator available to measure other possible learning gains. In addition, the data used are at school level and do not allow to follow students throughout their academic careers by participating in the PME. In the same vein, it is not possible to verify whether the composition of the students has remained constant over the years, and it is possible that a student who has benefited from the program may have changed schools and taken the SAEB test at another school that did not participate in the program.

Future studies could evaluate the program using other methodologies suitable for policies with treatment over multiple periods, such as Goodman-Bacon (2021). Another suggestion is to analyze the impact across different regions of Brazil, taking into account their characteristics, which could provide new evidence to help better explain why the policy has had such a low impact. It is also possible that different realities have different impacts. A final suggestion would be to estimate and analyze

the impact of the PME on other dimensions of education, such as the impact on female employment and mothers' salaries.

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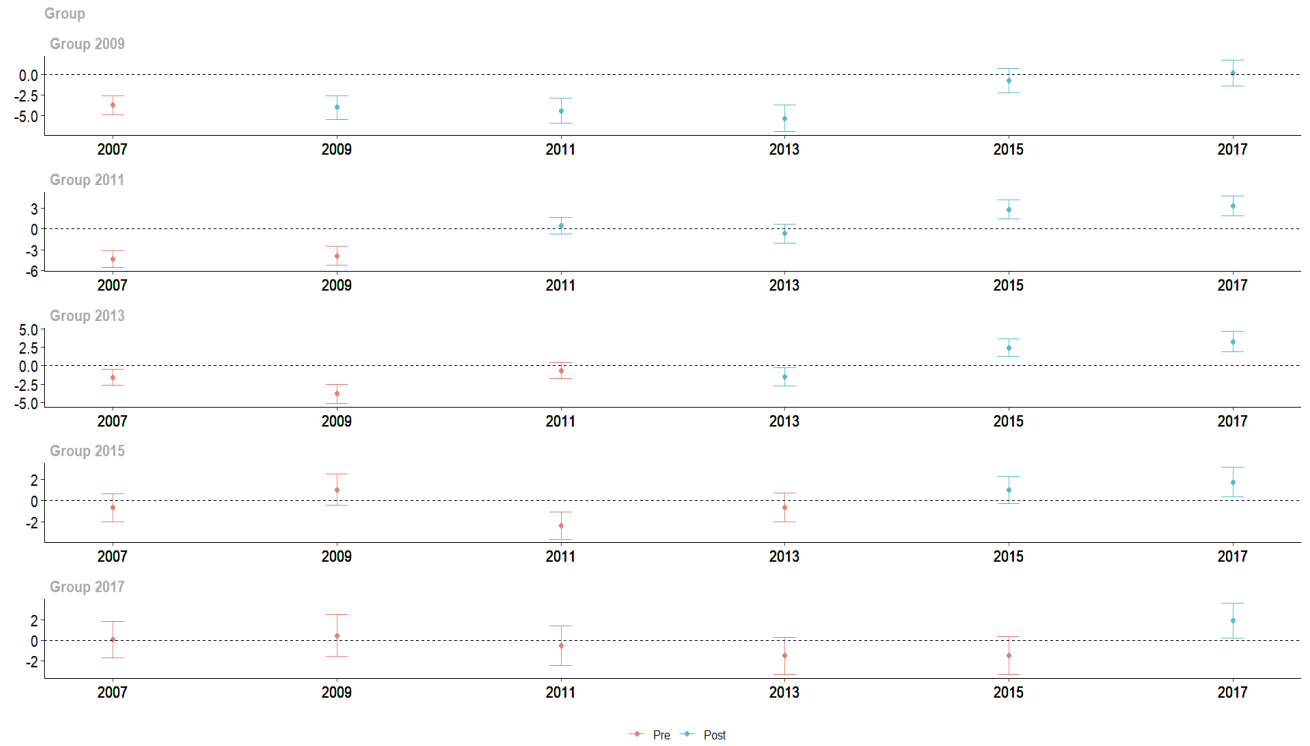
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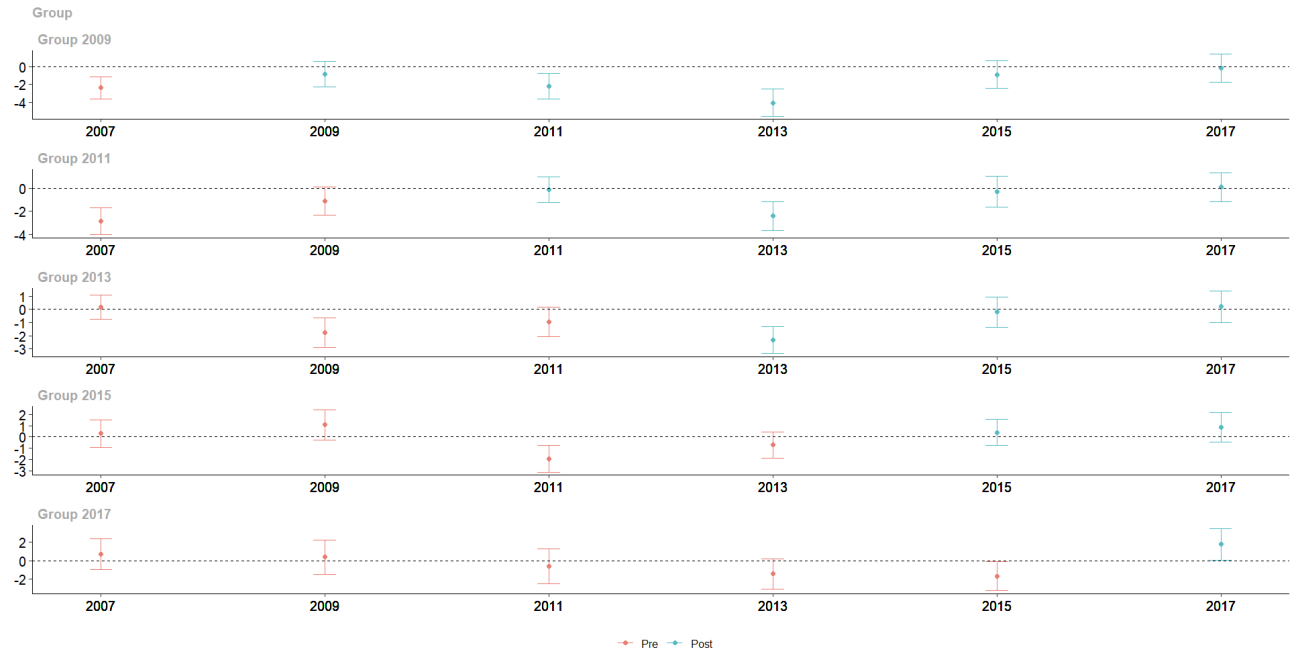
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APPENDIX I

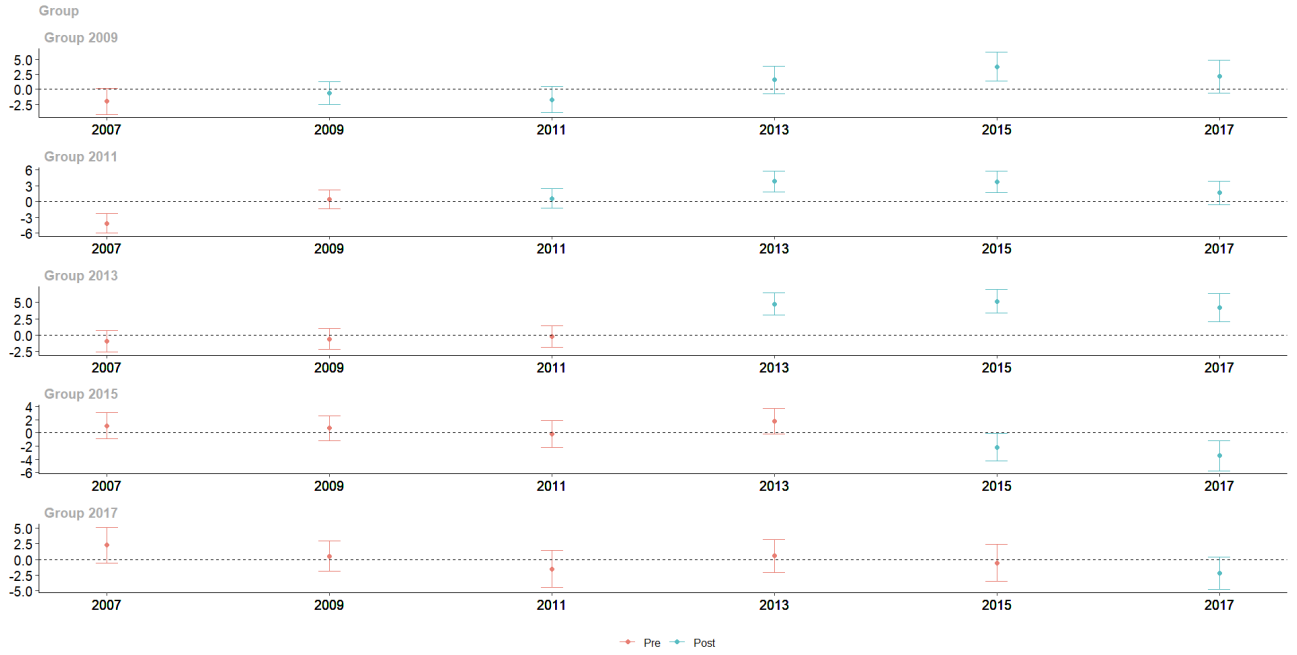
Mathematics - Elementary School - 5th year



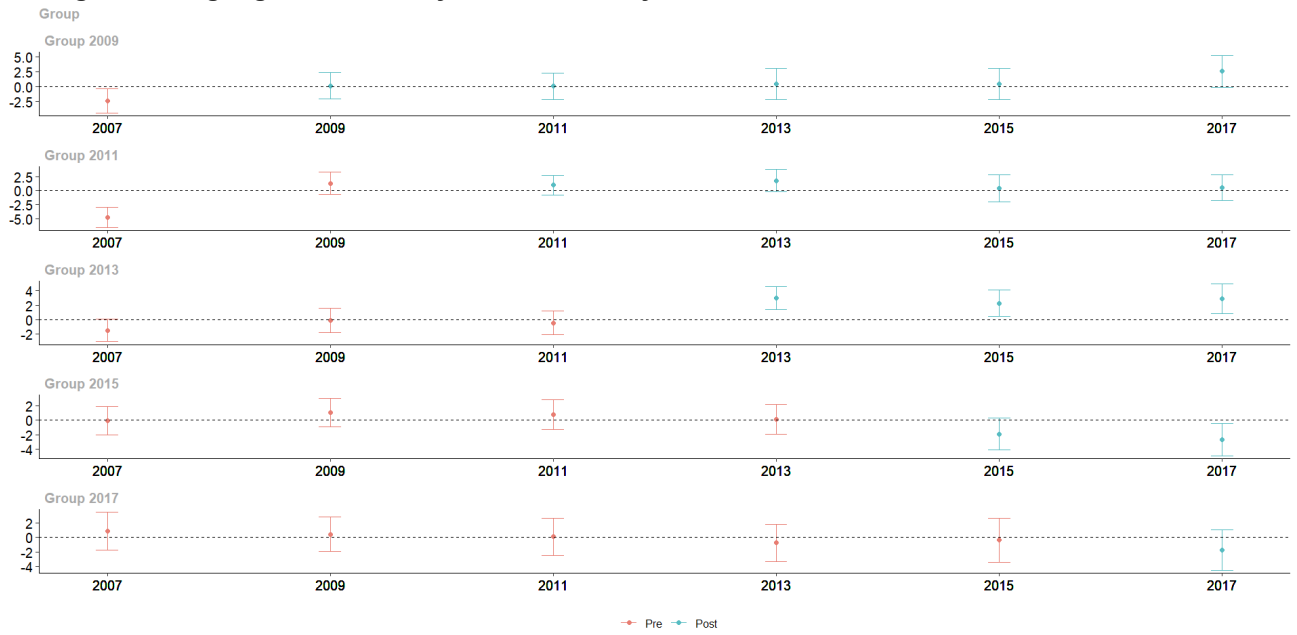
Portuguese Language - Elementary School - 5th year



Mathematics - Elementary School II - 9th year



Portuguese Language - Elementary School II - 9th year



2. FULL-TIME EDUCATION: Assessment of the impact on learning of the Brazilian program *Novo Mais Educação*

Abstract

Although there is no consensus on the effectiveness of full-time education in learning, several countries in Latin America have developed programs to extend school hours aiming at a higher level of student performance. In Brazil, the federal government implemented two policies for increasing school hours: *Mais Educação* Program (PME), from 2008 to 2017, and *Novo Mais Educação* Program (PNME), in 2018 and 2019. Therefore, this paper assesses the impact of PNME on students' learning and discusses the effectiveness of the PNME's design compared to the previous policy PME. Official data from the Brazilian government were used and the methodology combined Difference-in-Differences with propensity score matching for evaluating math and language students test scores. For the initial years of Elementary School, the results show a positive impact on learning, but for the final years the results were ambiguous: a null effect on language students test scores and a negative impact on math tests scores. Yet these results proved to be more promising than those of its predecessor, the PME, which can be assigned to PNME's design more focused on expanding language and math learning hours.

Keywords: Full-time education; Impact Assessment; Novo Mais Educação; Learning; Policy Design

2.1 INTRODUCTION

In an attempt to solve low levels of learning, several countries in Latin America and the Caribbean, including Brazil, began to adopt measures to extend school hours to enrich its curriculum (ALMEIDA *et al.*, 2016). However, existing literature points to ambiguous results for policies to increase school hours in countries in the region (HOLLAND; ALFARO; EVANS, 2015). Some studies point to an improvement in learning levels in the countries that have adopted full-time education programs, such as Chile (BELLEI, 2009), Uruguay (CERDAN-INFANTES; VERMEERSCH, 2007), Mexico (PADILLA- ROMO, 2022) and Colombia (HINCAPIE, 2016). However, there are also studies that found a non-significant or negative impact on learning, such as Uruguay (LLAMBI, 2013) and Chile (ARZOLA, 2011).

In Brazil, public full-time education policies also do not have clear effectiveness

(HOLLAND; ALFARO; EVANS, 2015; VIDIGAL; VIDIGAL, 2022) and there are few studies that perform a careful evaluation of these programs (ALMEIDA *et al.*, 2016). With the Law of Guidelines and bases¹¹ (LDB) of 1996, Brazil began to give greater emphasis to full-time education projects and two public policies stood out at the national level. The first one is the *Mais Educação* Program (PME), which lasted from 2008 to 2017. The second, was the *Novo Mais Educação* Program (PNME) which lasted in 2018 and 2019. Both policies dealt with Elementary School¹².

Several studies sought to evaluate the impact of PME (XERXENEVSKY, 2012; GANDRA, 2017; DE OLIVEIRA; DE MENEZES, 2016; ALMEIDA *et al.*, 2016; VIDIGAL; VIDIGAL, 2022), however, the PNME still lacks more robust studies. Until this article was written, the only study that sought to estimate the impact the program had on student's learning was developed by Coitinho (2021). There are also no studies on the effectiveness of the designs of each one of these policies.

Therefore, this study aims to estimate the impact of the PNME on math and language students test scores for Brazilian public Elementary School and discuss the PNME design's effectiveness compared to PME policy. In this article, two questions about PNME are addressed. First question, did the PNME manage to improve the learning levels of Brazilian Elementary School students? In answering this question, we argue that the PNME had a positive impact on math and language students test scores for the initial years of Elementary School, indicating that the effects of a full-time education program are first observed in the early years and that the program did not have time to impact elementary education as a whole. Second question, did the PNME design more focused on expand language and math learning hours, improve learning levels in relation to its predecessor? To answer this question, previous impact assessment studies already carried out on PME are used in comparison with the results found in this article. We argue that with a design aimed at instrumental learning more focused on mathematics and Portuguese, the PNME presented better results in

¹¹ Law N°. 9,394 of 1996

¹² The LDB structures the Brazilian education system into two levels: basic education and higher education. Basic education is composed of child education (up to 5 years), of Ensino Fundamental (6 to 14 years old), and High School (from 15 to 17 years old). Ensino Fundamental is organized into initial years (1st and 5th grades), also called Ensino Fundamental I, and the final years (6th and 9th grades), also called Ensino Fundamental II. Basic education is mandatory for children beginning at the age of four. For lack of a better translation, we will, throughout this paper, refer to Ensino Fundamental I as Elementary School I, and to Ensino Fundamental II as Elementary School II.

student learning.

In section 2, recent literature on the impact of programs to increase school working hours on learning and previous studies carried out on the PME and the PNME are presented. Furthermore, the design of the PME and PNME programs is also presented, based on official information made available by the Brazilian Ministry of Education. In this way, it is possible to understand how these policies were implemented, point out possible biases in this process and develop an empirical strategy that allows them to be overcome.

A threat to identifying the program's effects is the selection of participating schools. Although the PNME established some criteria, membership was voluntary, so that the schools that joined were different from those that did not. To overcome this problem, it was established that the control group would be formed only by schools that participated in the PME, the federal program that preceded the PNME. Thus, both the control and treatment groups are formed by schools that have already chosen to participate in a program to increase school hours promoted by the Brazilian government.

In section 3, the databases used are presented, which were those from the test of the Basic Education Assessment System (SAEB), the Basic Education Census and the Brazilian Institute of Geography and Statistics (IBGE). It is argued that the assessments carried out by the Basic Education Assessment System (SAEB) are prepared based on the Item Response Theory, which allows checking whether there is in fact an evolution in learning, since the tests will always require the same level of knowledge. Still in this section, the methodology is presented. To estimate the impact of PNME on student learning and based on identification problems, propensity score matching (PSM) combined with Difference-in-Differences was performed. As it is a policy with a homogeneous application and in a single period, that is, a simple 2x2 Difference-in-Differences, *TWFE can be used* in a way that does not cause bias in the results (CUNNINGHAM, 2021; GOODMAN-BACON, 2021). To create the control and treatment groups, we took into account that all schools in the sample would have to have participated in the PME, so that discussion could be held about the change in the policy design and reduce the difference between the control and treatment groups. The models were estimated for scores in Mathematics and Portuguese Language subjects

in the 5th and 9th years of Elementary School¹³

In section 4, the results and discussion are presented. The findings point to a positive impact of the PNME on the learning of students in Elementary School I. In Elementary School III, there was no improvement in grades in any of the subjects. It is argued that education is a cumulative process, so that the effects of a program to increase the school day on learning are felt first in the initial years. However, as the PNME was discontinued after only two years of existence, it is possible that the increase in learning would only be felt in Elementary School II as the students affected by the program progressed through the grades at school.

Section 4 also provides a brief discussion about the effectiveness of the PME and PNME policy designs. It is pointed out that by not having a design more focused on learning gains in subjects that are evaluated by SAEB and by having many objectives, the PME design was comprehensive, little focused on learning and, based on previous studies, did not show gains in this aspect. The design of the PNME, as well as its objective, were more focused on learning mathematics and Portuguese, so that, even with just two years of the program, it was possible to identify an increase in student learning¹⁴. Finally, the results of the placebo test corroborate the findings in this article and point to the possibility that learning in mathematics in Elementary School I may be a little greater than that found.

Finally, in section 5, a placebo test was carried out with a false treatment group made up of public schools that had never participated in any of the programs. The false treatment group was subjected to the same procedure as the previous one and the results indicate the robustness of the model and reinforce the positive impact of the PNME on learning.

This study contributes to the literature in three aspects. First, it provides new evidence about the effects of increasing school hours on student learning, since there is no clear consensus on the causal effect in this relationship (HOLLAND; ALFARO; EVANS, 2015; ROSA *et al.*, 2022). Second, it brings a discussion about the effectiveness of the design of the full-time education policy on student learning. It is argued that by combining more resources with a greater focus on academic activities,

¹³ The grades achieved in 5th and 9th represent the learning obtained by students in Elementary School I and Elementary School II, respectively.

¹⁴ We are considering an increase in national exam scores as an increase in student learning levels.

as the PNME did, the full-time education policy can have a positive impact on learning. In this way, our results are in line with those by Lavy (2020) and Rosa *et al.*, (2022). Third, this article evaluates the PNME with more robust methods than previous studies, giving greater solidity to the findings.

2.2 IMPACT OF FULL-TIME EDUCATION ON STUDENT LEARNING

Although the effectiveness of full-time education is still a topic that generates divergences (XERXENEVSKY, 2012; HOLLAND; ALFARO; EVANS, 2015; FIGLIO; HOLDEN; OZEK, 2018), several studies point to the benefits of full-time education, especially in developing countries. In recent studies, Cabrera-Hernández, Padilla-Romo and Peluffo (2023), when analyzing the extension of the school day in Mexico City, found evidence that full-time primary schools have positive and lasting effects on students' academic performance. Still in Mexico, the results also point to an improvement in student performance in language and mathematics (PADILLA-ROMO, 2022). On the other hand, Cabrera-Hernández (2020), when analyzing the program also in Mexico, concluded that increasing school hours is not enough to improve the performance of schools with the worst learning performance. Figlio, Holden and Ozek (2018), in a study carried out in Florida, found a positive effect of increasing school hours on students' reading performance, but it was not possible to confirm that these effects will be maintained in the long term.

In addition to improving school performance, evidence suggests that full-time education reduces the likelihood of a child working and child labor levels (KOZHAYA; FLORES, 2022). As for Brazil, Rosa *et al.*, (2022) analyzed the increase in school hours in the State of Pernambuco and obtained results that point to an improvement in performance in Portuguese and mathematics.

However, despite evidence favorable to the efficiency of full-time school, some studies also found evidence that policies to increase school hours can even bring negative results in learning. Holland, Alfaro and Evans (2015) conclude, for Latin American and the Caribbean countries, that the effectiveness of increasing school hours is confusing, since there is divergence between the studies already carried out.

In Brazil, the PME also presents ambiguous results regarding its effectiveness in student learning (XERXENEVSKY, 2012; De OLIVEIRA; De MENEZES, 2016; ALMEIDA *et al.*, 2016; GANDRA, 2017; VIDIGAL; VIDIGAL, 2022), as will be presented

below. In turn, PNME still needs further studies. At the time this article was written, only Coitinho (2020) had evaluated PNME and used the matching method.

2.3 MAIS EDUCATION PROGRAM (PME)

Created in 2007 and based on the Law nº 9.394 of 1996, the Mais Educação Program (PME), instituted by the Interministerial Ordinance 17/2007, aimed at enlarging school workload, and reorganizing the curriculum of the public education network. The program sought to foment social projects of socio-educational actions, provide a specialized educational service, as well as a full-time education in several areas such as citizenship, art, culture, and economic education. The following purposes were established for PME:

- I. support the expansion of educational time and space and the extension of the school environment in public basic education networks in States, the Federal District and municipalities, by carrying out activities after school hours, coordinating actions developed by the Ministries that are part of the Program;
- II. contribute to reducing dropout rates, failure rates, age/grade distortion, through the implementation of pedagogical actions to improve conditions for academic performance and achievement;
- III. offer specialized educational assistance to children, adolescents and young people with special educational needs, integrating into the curricular proposal of regular education schools the interaction with the diversity of expressions and body languages, including through accessibility actions aimed at those with disabilities or reduced mobility;
- IV. prevent and combat child labor, sexual exploitation and other forms of violence against children, adolescents and young people, through their greater community integration, expanding their participation in school and social life and promoting access to social assistance services of the Unified Health System Social Assistance - SUS;
- V. promote the formation of sensitivity, perception and expression of children, adolescents and young people in artistic, literary and aesthetic languages, bringing the educational environment closer to Brazilian cultural diversity, stimulating the development of the five senses, reading and creativity around school activities;
- VI. encourage children, adolescents and young people to maintain effective interaction around educational and leisure sports practices, aimed at the process of human development, citizenship and solidarity;
- VII. promote rapprochement between the school, families and communities, through activities aimed at accountability and interaction with the educational process, integrating social and community facilities with each other and with school life; and
- VIII. provide technical and conceptual assistance to federated entities in order to stimulate new technologies and capabilities for the development of projects with a view to what is addressed in article 1 of this Ordinance (BRAZIL, 2007).

Adhering to the program was voluntary and occurred by filling the Plano de Atendimento (Service Plan), through interactive Plano Dinheiro Direto na Escola (PDDE) (Money at School Plan), in which the activities that were to be carried should appear. The PDDE is a tool created by the Ministry of Education. It is available for all

schools that are registered in the School Census. It aims to facilitate the management and diagnosis of possible problems at Brazil's public schools (Home - PDDE Interativo, 2023). To be able to participate in the program, some criteria were established. In urban areas, schools should have a score below 4.6 in Elementary School I and 3.9 in Elementary School II in the Índice de Desenvolvimento da Educação Básica (Basic Education Development Index) (Ideb)¹⁵. In urban areas, the participation of schools that had 50 % or more students inserted in Bolsa Família¹⁶ were also authorized. For rural areas, schools would need to be located in municipalities with at least 15 % of the population illiterate, 25% of the population in poverty or 30% living in the countryside. Additionally, schools located in settlements with 100 families or more in quilombola¹⁷ or indigenous areas could also participate in the PME. In the year after its creation, the PME already had 1380 schools joining, reaching a total of 386,000 students. In the following years, the program continued to expand, reaching 2.3 million students in the public-school system. From 2015 onwards, the program began to suffer successive budget cuts, until it was definitively closed in 2017.

In the literature, some studies were carried out to estimate the impact of the PME, but there is no consensus on its effectiveness. Xerxenevsky (2012) analyzed the program by combining propensity score matching and Difference-in-Differences methodologies. The results indicate that the program had a positive effect only on performance in Portuguese for students in the 5th year of Elementary School. In mathematics for this same year, the result was negative and, for students in the ninth year of Elementary School, there was no impact of the program on performance. Similarly, using propensity score matching combined with Difference-in-Differences,

¹⁵ Ideb is a synthetic indicator of education quality, created in 2007, and calculated based on two indicators: school performance, whose data are obtained from the School Census, and average performance in Portuguese Language and Mathematics, obtained from the Education Assessment System. Basic Education (Saeb). The index varies from 0 to 10 and is currently one of the main indicators of public educational policy. More information at: https://download.inep.gov.br/educacao_basica/portaal_ideb/o_que_e_o_ideb/Nota_Tecnica_n1_con_cepcaolDEB.pdf. Accessed: 10/06/2023.

¹⁶ Bolsa Família is Brazil's largest cash transfer program. It was created in 2004, and currently families with a maximum per capita income of BRL 218.00 per month are eligible for the program. More information at: <https://www.gov.br/mds/pt-br/acoes-e-programas/bolsa-familia>. Accessed: 07/05/2024.

¹⁷ Quilombolas are descendants of black slaves and Afro-descendants who escaped and created small communities and villages. According to Decree No. 4.887/2003, Quilombola Communities are "ethnic-racial groups, according to criteria of self-attribution, with their own historical trajectory, endowed with specific territorial relations, with a presumption of black ancestry related to resistance to the historical oppression suffered". More information at: <https://site.mppr.mp.br/direito/Pagina/Quilombolas>. Accessed: 07/05/2024.

Gandra (2017) also found no effect of the program on the performance of ninth-year Elementary School students in both mathematics and Portuguese. However, for the 5th year, the impact was negative in both mathematics and Portuguese. de Oliveira and de Menezes (2016) analyzed the program using discontinuous regression and their results indicate that the program had no impact on educational indicators in any of the years of Elementary School. Finally, Almeida *et al.* (2016) used propensity score matching and concluded that the program is associated with worse results in Portuguese and mathematics.

2.4 NOVO MAIS EDUCAÇÃO PROGRAM (PNME)

In 2017, the PME gave way to the PNME, which was created by MEC Ordinance No. 1144/2016 and governed by FNDE Resolution No. 17/ 2017. The PNME also stipulates an increase in school hours but starts to focus more on learning mathematics and Portuguese than its predecessor. The PNME divided the increase school hours into two possible groups, the first group had an increase of 15 hours per week and the second group of 5 hours per week. As few schools adhered to the 5-hour increase, this article only considered schools with a 15-hour program; those with 5 hours were excluded from the sample. In the PNME there is a clear change in the design of the policy. While the PME sought to increase number of hours spent on artistic, cultural, economic, educational and citizenship activities, the PNME required at least four extra hours of classes in each subject and the remaining hours (seven) could be filled with activities chosen by the school a (PROGRAMA NOVO MAIS EDUCAÇÃO, n.d.).

The PNME has the following purposes:

- I. literacy, expanding literacy and improving performance in Portuguese and mathematics among children and adolescents, through specific pedagogical support;
- II. reduction of abandonment, failure, age/year distortion, through the implementation of pedagogical actions to improve performance and school performance;
- III. improvement of learning results in Elementary Education, in the initial and final years; and;
- IV. extension of the period students stay at school (BRAZIL, 2016):

To join the PNME, some criteria were established. First, the school must have at least 20 students enrolled in Elementary Education. Once the first criterion was met, three groups of schools were established that could join the program. The first group was made up of schools that received full PDDE resources to increase their workload between 2014 and 2016. The second group was made up of schools that have a

performance below that established by INEP and/or performed on the IDEB below the national average. Finally, the third group includes other schools that want to join the program. Once this is done, schools should send the School Service Plan to the Ministry of Education. The plan was sent through the PDDE system, from where the resources came to the participating schools. All schools received the funds via PDDE, regardless of the group through which the school joined the program.

Although they have similar objectives, the design of the policies differs in relation to the way they intend to achieve this objective. The PNME, in addition to having fewer objectives, is completely focused on increasing the workload in mathematics and Portuguese language subjects. However, at the time this article was developed, only one impact analysis study has been carried out for the PNME. Coitinho (2021) used three matching methods and analyzed the period from 2015 to 2019. The author found significant learning gains in mathematics and Portuguese for students in the final years of Elementary School, while for students in the initial years the results were inconclusive.

2.5 MATERIALS AND METHODS

2.5.1 Data base

To obtain the scores in Math and Portuguese of the 5th and 9th grades, we used the test scores from the exams from the Basic Education Assessment System (Sistema de Avaliação do Ensino Básico - SAEB). The grades achieved in 5th and 9th represent the learning obtained by students in Elementary School I and Elementary School II, respectively. Created in 1995, SAEB consists of a set of evaluations of the National Institute for Educational Studies and Research (Instituto Nacional de Estudos e Pesquisas Educacionais - INEP), which makes it possible to develop a diagnosis of Brazil's education (Saeb, n.d.). The evaluation is made through cognitive exams in Math, Portuguese, Natural Sciences, and Human Sciences. Combined with this, a socioeconomic questionnaire is applied to students, teachers, and directors of every school.

A relevant characteristic of the SAEB tests is that they are prepared based on Item Response Theory (IRT), enabling the comparison of results from different years, so that an improvement or worsening in results will not be attributed to the level of complexity of the exam. IRT focuses on each specific item of the test, in which the probability of correct answer for each question is a function of the student's proficiency

and parameters that express the properties of the item (Klein, 2009). Thus, the higher the student's proficiency, the greater the probability of getting it right, making it possible to compare tests from different years. Therefore, it is possible to assess whether the improvement represents an advance in education, since the degree of difficulty of the test does not directly influence the results, as the proficiency parameters are the same over the years.

To carry out the matching, the physical characteristics of the schools and the characteristics of the municipalities in which they are located were used. The physical characteristics of the schools were taken from the Basic Education Census, which is the main Brazilian educational statistics and is carried out by the National Institute of Educational Studies and Research Anísio Teixeira (INEP). The physical characteristics used to perform propensity score matching were as follows: Number of rooms, library, court, water¹⁸, science laboratory, computer laboratory, number of rooms, high school and number of computers. The length of time each school remained in the PME was also taken into account in the matching. Finally, municipal data on population and GDP per capita were collected from the Brazilian Institute of Geography and Statistics (IBGE). The SAEB test is carried out every two years, while the school census, population and GDP estimates for each municipality are carried out annually by INEP and IBGE, respectively.

2.5.2 Empirical strategy

The PNME selection criteria, as discussed previously, was divided into three groups, the first aimed at schools that have already received PDDE resources for full-time education between 2014 and 2016, the second aimed at schools with performance below the average in IDEB and the third for other schools that wanted it. Therefore, the selection criterion is no longer random and, depending on the third group, it loses clarity regarding the characteristics necessary for membership. Therefore, it is also assumed that unobservable characteristics influenced whether or not the program was adhered to, creating a selection bias.

¹⁸ It should be noted that for Elementary School I, three schools in the treatment group claimed not to have water on their premises and were considered outliers. We opted to match by propensity score and estimate the model for Elementary School I by removing these schools from the sample. However, we also estimated the regression model with these schools and found that the results remained the same. We therefore opted to exclude these schools from the sample, as this did not change the result.

To deal with the bias, it was decided to use a combination of propensity score matching with Difference-in-Differences (Diff-in-diff), so that it could be controlled by observable and unobservable variables that are fixed in time, mitigating the bias (Gandra, 2017; Cunningham, 2021). The sample was made up of schools that participated in both the Mais Educação and Novo Mais Educação Programs. Furthermore, schools that did not have data for all years of the cutoff (2013, 2015, 2017 and 2019) were discarded. We removed some schools from the database for the following reasons, such as: a) it is no longer a regular school; b) not having reached the minimum number of enrollments that year to compose the INEP data. Therefore, so that there were no schools with missing data and contamination in the treatment, since the school no longer offering regular education or not having enough students could influence the results, we decided to discard the units in question. Furthermore, schools that joined the PNME with an increase in working hours of just 5 hours were discarded because they were a small group. Thus, only schools that had an increase of 15 hours in weekly workload were maintained. After this procedure, the final sample consisted of three groups of schools, all of which were public schools: a) schools that participated only in the PME; b) schools that participated in the PME and the PNME and; c) schools that did not participate in either program. For our control group, we chose the group of schools that participated only in the PME and for the treatment group we chose the schools that participated in both the PME and the PNME¹⁹. In this way, it will be possible to observe the gains that the PNME has brought in relation to the PME and reduce unobservable biases, such as the school's motivation to participate in a full-time education program, since all the schools have, at some point, chosen to participate in a program for this purpose. The third group was used as a "false treatment" for the placebo test. The limitations and implications of this last choice will be discussed in Section 5.

Two sets of regressions were estimated. The first set was made up of Elementary schools I, whose scores are given by 5th grade scores, and the second by Elementary Schools II, whose scores are given by 9th grade schools respectively. Learning was measured based on the Portuguese Language and Mathematics scores from the SAEB test.

¹⁹ There are no schools that participated only in the PNME. All those that took part in the PNME also took part in the PME.

To match the sample, propensity score matching (PSM) with replacement was adopted, so that a control unit could be chosen again. In this way, there was better balance between the control and treatment groups. The central idea of matching is to find units in the control group that are similar to those in the treatment group, aiming to establish a counterfactual based on the schools' observable characteristics. In this sense, the PSM summarizes the observable characteristics in a single variable, which serves as the basis for the units to be paired.

Rosenbaum and Rubin (1983) point out that the propensity score is a conditional probability of receiving treatment, given a vector of observable variables X . In this way, we have:

$$P [D = 1|X] = P[X] \quad (2.1)$$

Being D a binary variable that takes the value 1, if the school participates in Novo Mais Educação, and 0 otherwise. According to Rosenbaum and Rubin (1983), PSM is capable of generating estimators close to those obtained in random experiments when the following hypotheses are satisfied: a) Conditional independence, which establishes that the set of observable covariates X are not affected by the treatment, so that the potential outcome is independent of treatment assignment. Formally, we have to:

$$Y(1), Y(0) \perp D | P(X), \quad \forall X \quad (2.2)$$

Which \perp points to independence; and b) Common Support, which requires that the propensity score distribution has a region where the estimated probabilities of participation in the PME are similar between schools in the control and treatment groups. In this way, we have:

$$0 < P(D = 1|X) < 1 \quad (2.3)$$

Furthermore, Khandker, Koolwal and Samad (2010) will argue that for there to be a good matching there must be a large and approximately equal number of observations between the control and treatment groups. To meet these hypotheses, the variables selected for matching were infrastructural variables of the schools and socioeconomic variables of the municipality, so that they are not affected by the treatment. The common support hypothesis was also met. Figure 2.1 shows the overlaps obtained in the paired variables.

The choice of variables for matching was made based on Gandra (2017), Coitinho (2021) and Xerxenevsky (2012). Furthermore, the literature points out that the infrastructure of the school can influence student learning, since a school with a greater infrastructure tends to have more investments and be in regions with a higher educational level (Gandra, 2017).

Before matching, the Elementary School I initial sample consisted of 19,605 schools, of which 3,066 were in the treatment group. After matching, the Elementary School I sample consisted of 6132 schools, 3066 of which were in the control group and 3066 in the treatment group. In turn, the Elementary II initial sample consisted of 4184 schools, of which 611 were in the treatment group. After matching, the sample consisted of 1073 schools, 462 from the control group and 611 from the treatment group. After the propensity score matching, the Difference-in-Differences model was estimated. In the context of two periods, the Differences-in-Differences model aims to estimate the Average Treatment Effect on the Treated (*ATT*), given by:

$$ATT = E[Y_i(1)|D_i = 1, t = 1] - E[Y_i(0)|D_i = 1, t = 1] \quad (2.4)$$

In other words, the difference in the average potential outcome for those treated after the treatment. The term $D_i = 1$ refers to the school that received the PNME and $D_i = 0$ to the school that did not receive. The term $t = 1$ denotes the post-treatment periods and $t = 0$ the pre-treatment periods. In this sense, the first expression $E[Y_i(1)|D_i = 1, t = 1]$ represents the potential result of the schools that received the Novo Mais Educação program in the post-treatment period given that the treatment took place, i.e. it is an observable result. The second expression $E[Y_i(0)|D_i = 1, t = 1]$ represents the potential outcome of the counterfactual, i.e. what would have happened to the average of the schools that received the treatment if it had not taken place, thus being an unobservable outcome in practice. The challenge is to find a way of estimating the term that is not observable in practice. Thus, the impact of the program on the learning of Elementary School students is given by:

$$\beta = \{E[Y_i|D_i = 1, t = 1] - E[Y_i|D_i = 1, t = 0]\} - \{E[Y_i|D_i = 0, t = 1] - E[Y_i|D_i = 0, t = 0]\} \quad (2.5)$$

Where β represents the impact of the PNME on student learning. The expressions $E[Y_i|D_i = 1, t = 1]$ e $E[Y_i|D_i = 1, t = 0]$ denote the average of the schools that received the PNME after and before treatment, respectively. Similarly,

$E[Y_i|D_i = 0, t = 1]$ and $E[Y_i|D_i = 0, t = 0]$ represent the average of the schools in the control group after and before treatment, respectively. For the Difference-in-Differences estimator to correctly identify the *ATT*, given that one of the terms is not observable in practice, the parallel trends hypothesis must be satisfied. In other words, we must consider the hypothesis that the temporal variation in the average of the variable of interest for the group of treated schools in the no-treatment situation is equal to the corresponding variation for the group of un-treated schools. Therefore:

$$\begin{aligned} & \{E[Y_i(0)|D_i = 1, t = 1] - E[Y_i(0)|D_i = 1, t = 0]\} \\ & - \{E[Y_i(0)|D_i = 0, t = 1] - E[Y_i(0)|D_i = 0, t = 0]\} \end{aligned} \quad (2.6)$$

In this way, it is possible to state that the trajectory of the scores of the treated schools in the no-treatment hypothesis would be similar to the trajectory of the schools in the control group. Thus, we can rearrange Eq. (2.6) and substitute it into (2.5). So that the term $E[Y_i(0)|D_i = 1, t = 1]$ which cannot be observed in practice, can be replaced by results that can be observed. Thus, we have:

$$\begin{aligned} ATT &= E[Y_i(1)|D_i = 1, t = 1] - E[Y_i(0)|D_i = 0, t = 1] - E[Y_i(0)|D_i = 0, t = 0] \\ &+ E[Y_i(0)|D_i = 1, t = 0] = \beta \end{aligned} \quad (2.7)$$

If the parallel trends hypothesis is valid, we can say that the *ATT* will correctly estimate the impact of the PNME on student learning in Portuguese and Mathematics. The Difference-in-Differences model, for both Elementary School I and Elementary School II was estimated as follows:

$$Y_{it} = \alpha + \beta_1 2018 + \beta_2 PNME + \beta_3 PNME \times 2018 + \gamma D_t + \lambda_i + \varepsilon_{it} \quad (2.8)$$

Model (8) is a classic Diff-in-diff with year and school fixed effects²⁰. The dependent variable Y_{it} the grade in mathematics or Portuguese at the school i the time t . We have 2018 and *PNME* are dummies, the first takes value 1 when the year is greater than or equal to 2018 and zero otherwise, and the second takes value 1 when the school participated in the PNME and zero otherwise. The term *PNME* × 2018 is the interaction between the variables that gives the result of the treatment on those treated. The terms γD_t and λ_i are fixed effects of time and school, respectively. The error term is given by ε_{it} .

²⁰ We also estimated the model with a fixed state effect. The coefficients were the same and significance was maintained.

In addition to the parallel trends hypothesis, the other hypotheses of the Diff-in-diff model were also satisfied. Figure 2.2 shows the parallel trends across all years and disciplines analyzed in this article. In addition to the graphical analysis, we carry out a statistical analysis of the parallel trends for greater robustness. The results showed that in the pre-treatment periods the control and treatment groups had a similar trajectory, with no statistically significant differences. The results of the parallel trends test are shown in Table 2.1.

Table 2.1 - Parallel trend test

Variável	Coefficiente	Desvio - Padrão	P-valor
Mathematics 5th grade	0.71276	0.37192	0.06
Portuguese Language 5th grade	0.26776	0.33951	0.4303
Mathematics 9th grade	-0,65059	0.82616	0.4311
Portuguese Language 9th grade	0.19054	0.8600	0.8247

*Note. Level of significance: *** 5%; **** 1%*

Note. Authors' own elaboration

The SUTVA²¹ hypothesis (Stable unit treatment value assumption), which assumes that there are no leaks in the policy, was satisfied as implementing the program in a school does not cause a school in the control group to also receive any of these effects. Data from the 2018 Education Census show that the number of students enrolled in full-time education represented 9.4% of Elementary School students, and that this proportion remained the same in 2019, corroborating the hypothesis. Furthermore, there was no partial implementation of the program, that is, it was not possible to implement it only for a part of Elementary School I or II, so that once treated, the entire school started to receive the program. Finally, the positivity hypothesis, which assumes that the control group was also eligible for treatment, was met. One of the criteria for receiving the PNME was to be a public school and to have received the PME. All schools in the control group were in the PME and were public schools, therefore, the control group was also eligible for treatment.

²¹ Although aggregated data do not guarantee that there was no spillover, they help to verify whether it occurred. In the data presented, there is no evidence of spillover, but this hypothesis cannot be completely ruled out, as the data are aggregated at the school level, which does not allow verification at the student level

Finally, we estimated an additional model for Primary School II, controlling for 5th grade scores in schools that had both grades in previous years. For example, for Elementary School II in 2019, we used the 5th grade scores of that same school in 2015 as an explanatory variable. Although the class is not necessarily the same (students may leave, change schools, etc.), it is possible to get an idea of how the learning of these classes within the same school has evolved over the years. The Difference-in-Differences model was estimated as follows:

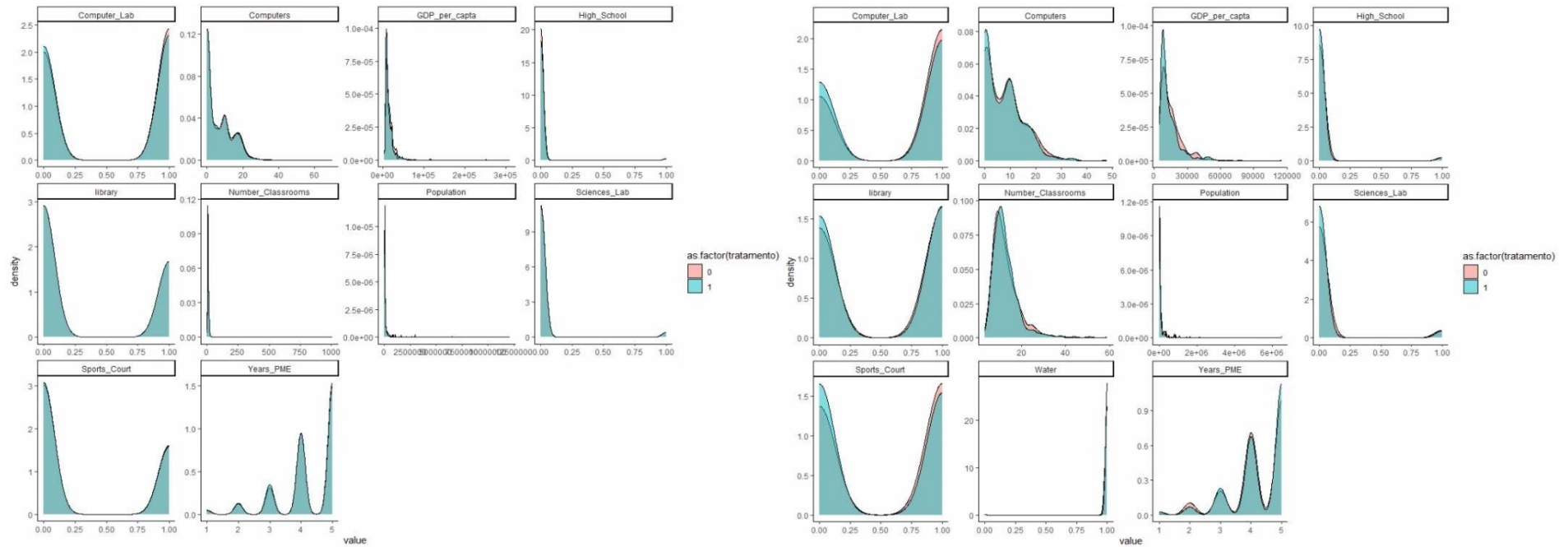
$$Y_{it} = \alpha + \beta_1 2018 + \beta_2 PNME + \beta_3 PNME_{x2018} + \beta_4 T - 4 + \gamma D_t + \lambda_i + \varepsilon_{it} \quad (2.9)$$

The only difference between Equations (2.9) and (2.8) is the inclusion of the $T - 4$ term, which represents the school's score for the 5th grade in Elementary School I. This model was not estimated for Elementary School I, as there are no previous scores in the databases. In other words, the 5th grade Elementary School I score is the first to be used as a reference in the SAEB databases. However, model (2.9) was estimated with a smaller sample, because not all schools had data for the 5th grade classes before 2013. Therefore, schools with missing data were discarded and the sample consisted of 595 schools, 314 in the control group and 281 in the treatment group. Despite this, model (2.9) also did not violate the hypotheses of the PSM and differences-in-differences methods and the tests of each hypothesis are presented in Appendix II.

Figure 2.1 - Overlay Graphics

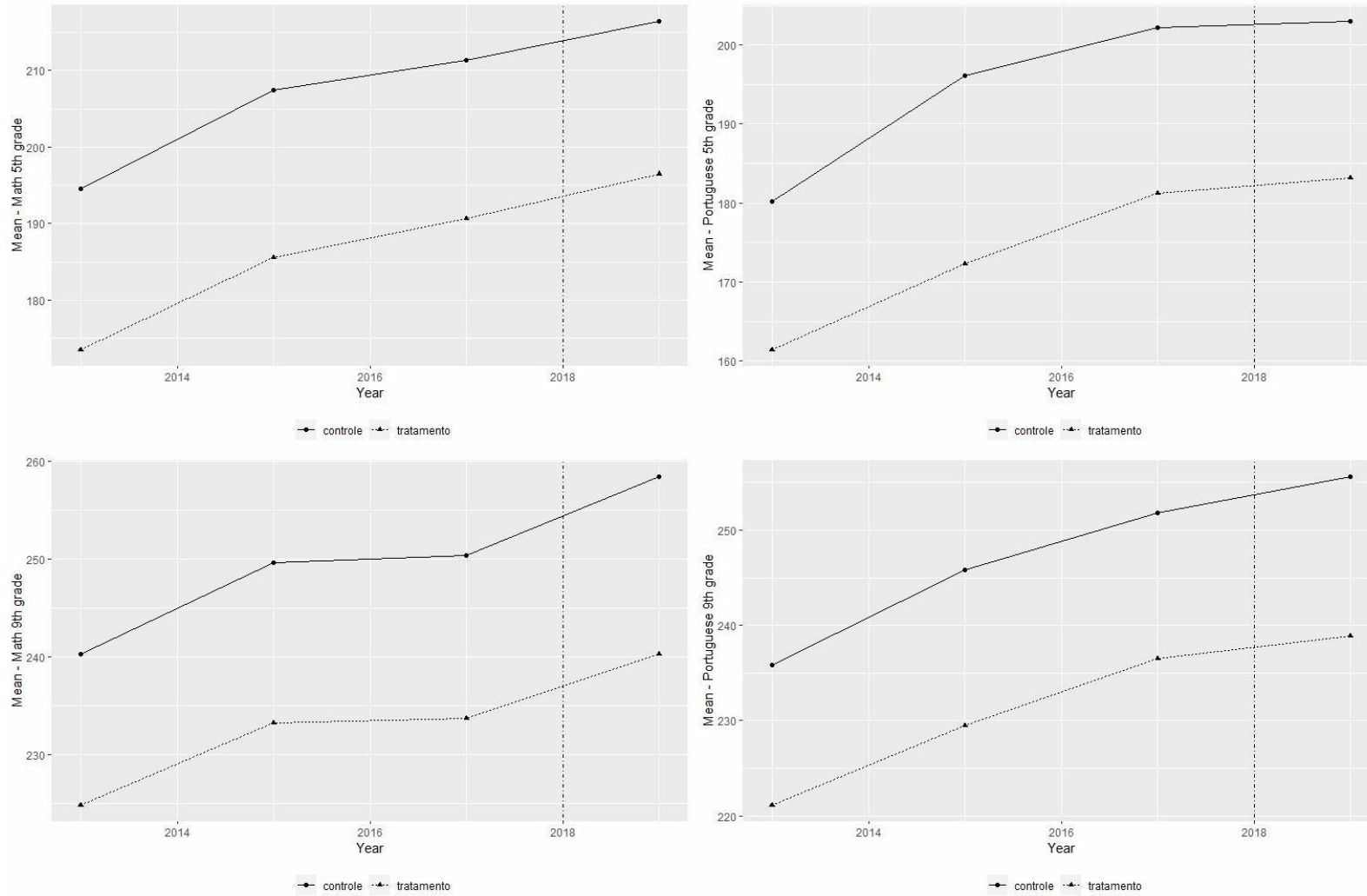
Elementary School I

Elementary School II



Note. Captions : Computer_lab, Computers – Number of computers, GDP per Capita, High School, Library, Number of Classrooms, pass rate, Population, Sciences Lab, SportsCourt, Water, Years_PME – Time that the school remained in the PME, 1 – Treated ; 0 – Control Note. Prepared by the authors

Figure 2.2 - Parallel Trends



Note. Authors' own elaboration

2.6 RESULTS

Tables 2.2 and 2.3 show the differences in the unit means before and after matching, whether or not they are balanced and the results of the t test to compare the means. Table 2.2 shows the results for Elementary School I and Table 2.3 for Elementary School II. It is noted that the PSM was efficient in equalizing and balancing the group means. In all selected variables, the PSM was able to approximate the means between the groups.

Table 2.2 - Propensity Score Matching - Elementary School I - 5th grade

Variable	Sample	Mean		Balanced	T test p-value
		Control	Treated		
Years in the PME	Without matching	3,233	4,2493	Yes	0.000***
	With matching	4,2847			0.134
Library	Without matching	0.5595	0.3656	Yes	0.000***
	With matching	0.3653			0.978
School with high school	Without matching	0.0758	0.0144	Yes	0.000***
	With matching	0.0117			0.368
Science Lab	Without matching	0.0897	0.0378	Yes	0.000***
	With matching	0.0372			0.893
Computer Lab	Without matching	0.7240	0.5232	Yes	0.000***
	With matching	0.5489			0.043**
Number of Computers	Without matching	11,3818	6,5466	Yes	0.000***
	With matching	6,6791			0.476
Number of rooms	Without matching	11,6888	9,8793	Yes	0.000***
	With matching	9,5522			0.860
Sport court	Without matching	0.6165	0.3402	Yes	0.000***
	With matching	0.3402			0.536
Population	Without matching	665426,88	172.919,19	Yes	0.000***
	With matching	199639,97			0.531
GDP Per capita	Without matching	27987,58	15672,6	Yes	0.000***
	With matching	15651,67			0.955

Note: Significance level: *** 5%; **** 1%

Source: developed by the authors

In Elementary School I, the variable “Computer lab” (which represents the number of computers in the school) were not paired. However, the balancing showed that the groups were equal after matching and it is possible to see that the averages were also closer. In Elementary School II, the variables are all balanced, although the t-test shows a difference in two variables (Computer lab and Sports Court). In addition, the balance showed that there was no difference between the control and treatment groups, either for Elementary Schools I (table 2.2) or for Elementary Schools II (table

2.3). Thus, it can be concluded that the matching was efficient in eliminating bias based on observable variables.

Table 2.3 - Propensity Score Matching - Elementary School I - 9th grade

Variable	Sample	Mean		Balanced	T test p-value
		Control	Treated		
Water	Without matching	0.9989			0.365
	With matching	0.9967	0.9967	Yes	0.783
Years in the PME	Without matching	3,3386			0.000***
	With matching	4,3322	4,3175	Yes	0.329
Library	Without matching	0.7042			0.000***
	With matching	0.5106	0.5188	Yes	0.427
School with high school	Without matching	0.1665			0.000***
	With matching	0.0245	0.0262	Yes	0.688
Science Lab	Without matching	0.1786			0.000***
	With matching	0.0622	0.0524	Yes	0.389
Computer Lab	Without matching	0.8074			0.000***
	With matching	0.6596	0.6056	Yes	0.027**
Number of Computers	Without matching	13,5872			0.000***
	With matching	7,2209	7,3322	Yes	0.349
Number of rooms	Without matching	13,8455			0.000***
	With matching	13,0065	12,3748	Yes	0.349
Sport court	Without matching	0.7587			0.000***
	With matching	0.5139	0.4828	Yes	0.035**
Population	Without matching	448787,08			0.000***
	With matching	134856,39	160.270,13	Yes	0.673
GDP <i>Per capita</i>	Without matching	27564,83			0.000***
	With matching	14519,88	14488,79	Yes	0.216

Note: Significance level: *** 5%; **** 1%

Source: developed by the authors

The first question this study sought to answer was the following: a) did the PNME manage to improve the learning levels of Brazilian Elementary School students? The results point to an improvement in the performance of students in Elementary School I, both in mathematics and Portuguese. However, for Elementary School II, the results show that there were no learning gains. The Diff-in-Diff results are presented in Table 2.4 and the results are discussed below.

Table 2.4 - Results – Diff- in-diff with PSM

Variable	Coefficient	Minimum	Average	Maximum	Standard deviation	P-value
Mathematics 5th Grade (2.8)	1,27414	107.2	195.8	338.8	0.36182	0.000***
Portuguese 5th Grade (2.8)	1,39571	109.7	183.7	305.8	0.33214	0.000***
Mathematics 9th Grade (2.8)	-1,99637	177.9	240.2	372.1	0.82924	0.016**
Portuguese 9th Grade (2.8)	-1,33997	168.9	238.3	326.8	0.83804	0.1099
Mathematics 9th Grade (2.9)	-0,15272	190,6	243,9	317,0	0.997034	0.8783
T-4	0,172365				0.020051	0.000***
Portuguese 9th Grade (2.9)	1,459069	190,4	247.3	308.4	1,087672	0.1799
T-4	0.210765				0.024266	0.000***

Note: Significance Level: *** 5%; **** 1%

Source: Authors' own elaboration

Given the findings, it can be argued that there is a positive impact on the learning of Elementary School I students in the Novo Mais Educação program compared to its predecessor. In studies carried out for PME, the results are ambiguous. Xerxenevsky (2012) found positive effects only for Portuguese in the 5th year and no effect in the 9th year. Gandra (2017) found a negative effect in all subjects, except in Portuguese in the 9th year, where the effect was null. Almeida *et al.* (2016) pointed out that PME is related to a worsening in student performance. Given the above, the results indicate that the PNME brings an improvement in learning indicators in relation to the PME.

However, in Elementary School II the impact on learning was null in Portuguese, for both models. Similar result was found for mathematics in equation 2.9, although for equation 2.8 the impact on learning was negative in Mathematics. A possible explanation lies in the literature on full-time education itself. Cabrera-Hernández, Padilla-Romo and Peluffo (2023) pointed out that full-time primary schools generate lasting effects on school performance. Therefore, it is possible to assume that the positive results in Elementary School II would only be perceived with more time in the program, since education is a cumulative process (OREOPOULOS; SALVANES, 2011). For Elementary I students, who are at the beginning of the educational process, the impact would be noticed first.

Several studies presented in Table 1.1 also found a negative impact on mathematics learning when analyzing the PME. However, the literature does not point to any specific reason for a drop in learning levels in a subject specifically in full-time education (XERXENEVSKY, 2012). The main reasons cited are related to the implementation time. The difficulties faced by school, teachers and students in adapting at the beginning of the PNME can generate a worsening of results in the initial years of the program, but this could be reversed in years later, if the PNME had continued (GANDRA, 2017; ALMEIDA *et al.*, 2016). As there is a significant change in the design of the PME to the PNME, it is possible that larger schools (which are schools that have Elementary School I and II) would take longer to adapt to the changes, causing learning to be negatively impacted. Furthermore, the first schools that joined the PNME have a lower IDEB average than the schools that did not join (5.6535 and 4.0959, respectively), which indicates a better structure of the schools in the control group. In addition to the structure, the IDEB²² grade may reflect a more qualified teaching staff, which directly impacts mathematics grades (FIKE; FIKE, 2007; PRAST *et al.*, 2018; BAIER *et al.*, 2019).

It is worth noting that once we control for the 5th year grade (equation 2.9), The PNME impact on Mathematics learning cease to be negative and becomes null. Such results can be explained by the difference in grades between the two groups, reinforcing that schools that joined the PNME had lower learning levels. This difference in grades can also be observed in the parallel trends chart, which shows schools in the control group with higher grades than schools in the treatment group, before and after the PNME. Therefore, the negative coefficient obtained by the policy in equation (2.8) may be the result of the pre-existing difference in schools and not the result of the PNME itself. According to the results obtained in equation (2.9), the PNME did not impact mathematics grades in Elementary School II, which can be explained by the brevity of the program. Due to the short duration of the PNME, schools were not exposed long enough for 5th year classes to reach the 9th year of Elementary School II. Finally, the significant coefficient for $T - 4$ in equation (2.9) suggest that part of the 9th year Elementary School II grade can be explained by the 5th year Elementary School I grade at the same school. In other words, the term represents the added

²² IDEB was not included in the PSM so as not to violate the hypothesis of Conditional Independence

learning value of students between 5th and 9th year. It can be argued that this occurs because education is a cumulative process (OREOPOULOS; SALVANES, 2011).

The results of equation (2.9) suggest that part of the grade obtained in the 9th grade of Elementary School II is explained by the grade of that same school in the 5th grade of Elementary School I. In other words, the term represents the added value of student learning in the period from the 5th to the 9th grade. This occurs because education is a cumulative process (OREOPOULOS; SALVANES, 2011). The results show that when we control the grade obtained in the 9th grade of Elementary School II by the grade of that same school in the 5th grade of Elementary School I, the impacts of the PNME in mathematics cease to be negative and become null. These results can be explained by the difference in grades between the groups, reinforcing that the schools that joined the PNME had lower levels of learning. This difference in grades between the groups can be observed in the parallel trends graph, which shows the schools in the control group with higher grades than the schools in the treatment group, before and after the PNME. Thus, the negative result obtained by the policy in equation (2.8) may be the result of the pre-existing difference in schools and not the result of the PNME itself. However, according to the results obtained in equation (2.9), the PNME did not impact grades in Elementary School II, which can be explained by the brevity of the program. Due to the duration of the PNME, it is not possible to observe the performance of schools that were exposed to the program long enough for the 5th grade classes of Elementary School I to reach the 9th grade of Elementary School II.

The second question this study sought to answer was: has the PNME project, which is more focused on expanding the hours of learning in languages and mathematics, improved learning levels compared to its predecessor? To answer this question, we separated our sample into schools that participated in the PME (control group) and schools that participated in both the PME and the PNME (treatment). Our results show an increase in learning levels for the students who took part in the PNME, pointing to a gain in relation to the PME. Although it is not sufficient to state that this improvement came from the change in the design of the policy specifically, we use the literature to argue the change in design as a possible reason for the increase in learning levels observed in Elementary School I.

In relation to the policy design, the PNME brings significant changes in relation to the PME. The main change is in the activities carried out during the extra period of

the school day. While the PME focused on activities such as arts, sports, and culture, the PNME focused on increasing the number of hours spent on Mathematics and Portuguese Language subjects, four extra hours for each subject and seven hours for the other activities chosen by the school. Furthermore, the pedagogical activity that the PME offered could be in any area of knowledge, not necessarily in mathematics or Portuguese. In this aspect, as the focus of the policy shifted to instrumental learning, measured by SAEB test scores, an improvement in these indicators was expected given the new design.

The results of this study also indicate that the PNME brought learning gains compared to its predecessor, even though it only lasted two years. The greater focus on mathematics in Elementary School I is a strategy supported by literature. Studies indicate that teaching mathematics from an early age develops essential skills for good future academic performance (MAYER *et al.*, 2023; DUNCAN *et al.*, 2007), so that these effects are lasting throughout the individual's academic life. This also reinforces the argument that the zero impact of the PNME on learning in 9th grade students can be explained by the brevity of the program. Furthermore, the results of this article are consistent with the findings of Lavy (2020) and Rosa *et al.*, (2022), which point out that the increase in resources combined with an increase in the workload focused on study hours, are capable of increase student learning levels. In both the PME and PNME, schools received extra resources from the Government, however, only the PNME has an extra workload completely focused on classes and study hours. Therefore, it is argued that these results are evidence that the design of the full-time education policy impacts the results obtained by students and schools.

The PNME began to receive criticism for changing the focus from civic and critical education to a more instrumentalized education, which focuses more on learning measured in national tests (MONTEIRO, 2018; SCHMITZ; SOUZA; CONCEIÇÃO, 2019; MORGAN; IGLESIAS; NAJJAR, 2021). However, as one of the program's objectives was to improve mathematics and Portuguese language learning levels, it can be argued that the new design is more focused than the previous one and it is possible that this design with more hours of classes in Portuguese and mathematics has led to higher levels of learning in these subjects.

Another possible explanation for the difference between the results obtained in Elementary School I and II may be related to the school's structure. Elementary School

II schools are mostly administered by state governments, while Elementary School I schools are mostly managed by municipalities. As a result, schools offering Elementary School II tend to have more structure and resources.

Finally, the findings in this study differ from the findings of Coitinho (2021). Using propensity score matching, genetic matching and Mahalanobis distance matching, the author found a positive impact only in the final years of Elementary School II.

2.7 PLACEBO TEST

Finally, a placebo test was carried out, which aims to give greater reliability to the results (EGGERS; TUÑÓN; DAFOE, 2021). The test aims to show that the estimated impact is in fact a result of the policy and not something that would happen even without the policy. To do this, a false treatment group is selected. To be valid as a placebo, this false treatment group must also be eligible for the program, but which did not receive the policy. This way, we will have a fake treatment group that is affected by the same variables as the real treatment group, except for political participation. If the result found is a positive impact on learning, this may indicate that part of the effect found is not actually due to the program, but to confounding factors.

In order to select the false treatment group for the placebo test, we have two challenges. Firstly, our sample of public schools is divided into three groups: a) schools that participated only in PME; b) schools that took part in the PME and PNME and; c) schools that did not take part in either. The first group constitutes the control group and the second the treatment group. Thus, only the third group becomes eligible as a false treatment group for the placebo, since the control group remains the control group. However, this may generate a bias of unobservable characteristics, since the schools in the third group have never chosen to participate in any program to increase school hours, i.e. there are different motivations. Secondly, the schools' scores show that the fake treatment group has higher scores than the real treatment group, indicating differences that persisted even after matching. However, even with these differences, the group of schools that did not participate in either program is the only possible group to be used as a false treatment in the placebo test, as it is made up of public schools that could have participated in the program. Thus, within the group of schools that could participate in the PNME, the third group is the most similar to the real treatment group and the only one possible to be used.

We therefore reapplied the method used to try to reduce any existing bias as much as possible. As schools that did not participate in any of the programs tend to be more structured schools, matching comes in to reduce the observable difference between the groups, while Difference-in-Differences is robust to unobservable differences, as long as the parallel trends hypothesis was satisfied.

The choice for the new treatment group does not break the hypothesis of positivity, since the third criterion opened the PNME to all public schools that wanted it. The Diff-in-diff model estimated was the same as described in equation (2.8). Tables 2.5 and 2.6 below show the matching results for Elementary Schools I and II, respectively.

Table 2.5 – Placebo - Propensity Score Matching - Elementary School I - 5th grade

Variable	Sample	Mean		Balanced	T test p-value
		Control	Treated		
Water	Without matching	0.9989			1
	With matching	1	0.9989	Yes	0.3174
Library	Without matching	0.5593	0.5435	Yes	0.039**
	With matching	0.5435			0.7751
School with High School	Without matching	0.0758	0.1054	Yes	0.000***
	With matching	0.1138			0.4269
Science Lab	Without matching	0.0896	0.1123	Yes	0.000***
	With matching	0.1134			0.4209
Computer Lab	Without matching	0.7235	0.7636	Yes	0.000***
	With matching	0.7819			0.4979
Number of Computers	Without matching	11,7312	12,2644	Yes	0.000***
	With matching	12,4149			0.4049
Number of Rooms	Without matching	11,6844	12,2673	Yes	0.000***
	With matching	12,4149			0.5362
Sport Scourt	Without matching	0.6161	0.7423	Yes	0.000***
	With matching	0.7780			0.1074
Population	Without matching	664.698,16	967.514,24	Yes	0.000***
	With matching	1.108.596,00			0.8971
GDP Per capita	Without matching	27.971,41	40.248,54	No	0.000***
	With matching	39.222,39			0.000***

Note: Significance level: '**' 5%; '***' 1%

Source: developed by the authors

In relation to the original PSM, the variable that indicated the time that the school remained in the PME was excluded, since the schools in the placebo treatment did not participate in either program. For Elementary School I, the pre-treatment sample consisted of 22,187 schools, of which 5,608 belonged to the placebo treatment. After matching, the base was reduced to 9612 schools, 5608 in the treatment group and

4004 in the control group, the remaining schools were discarded. In Elementary School II, the pre-matching base included 13,336 schools, of which 2,830 were in the placebo treatment. After matching, the database now included 4966 schools, 2830 of which were in the placebo treatment group and 2136 in the control group.

Table 2.6 – Placebo - Propensity Score Matching - Elementary School II - 9th grade

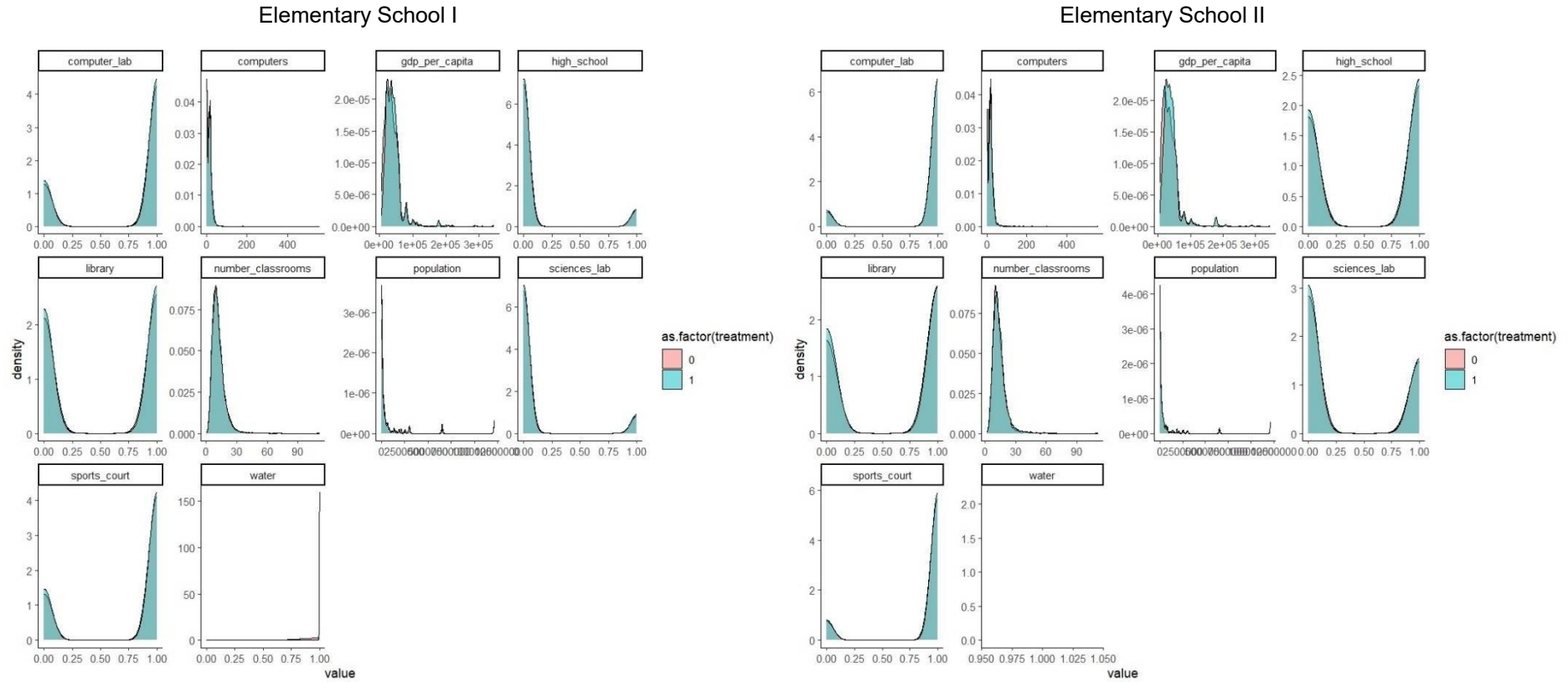
Variable	Sample	Mean		Balanced	T test p-value
		Control	Treated		
Water	Without matching	0.9989	1	Yes	0.000***
	With matching	1	1		1
Library	Without matching	0.6654	0.5834	Yes	0.000***
	With matching	0.5947	0.5834		0.000***
School with High School	Without matching	0.3919	0.5590	Yes	0.000***
	With matching	0.5883	0.5590		0.555
Science Lab	Without matching	0.2343	0.3367	Yes	0.000***
	With matching	0.3721	0.3367		0.3108
Computer Lab	Without matching	0.8144	0.9025	Yes	0.000***
	With matching	0.9240	0.9025		0.0513
Number of Computers	Without matching	13,359	17,0018	Yes	0.000***
	With matching	17,0247	17,0018		0.000***
Number of Rooms	Without matching	13,6806	12,3211	Yes	0.000***
	With matching	13,7053	12,3211		0.043**
Sport Scourt	Without matching	0.7350	0.8809	Yes	0.000***
	With matching	0.9018	0.8809		0.587
Population	Without matching	622.553,54	767.334,03	Yes	0.001***
	With matching	901.438,06	767.334,03		0.002***
GDP Per capita	Without matching	26.166,24	40.654,54	No	0.001***
	With matching	39.644,15	40.654,54		0.002***

Note: Significance level: '***' 5%, '****' 1%

Source: developed by the authors

The placebo findings reinforce the results obtained as a result of the implementation of the PNME. The schools that did not participate had a worsening in performance in 5th year mathematics and zero performance in other subjects. This evidence indicate that the results obtained in the program were not the result of confounding variables, but of the program itself. The results of the placebo test are presented in Table 2.7 and the graphs of parallel and overlapping trends are presented in Figures 2.3 and 2.4, respectively.

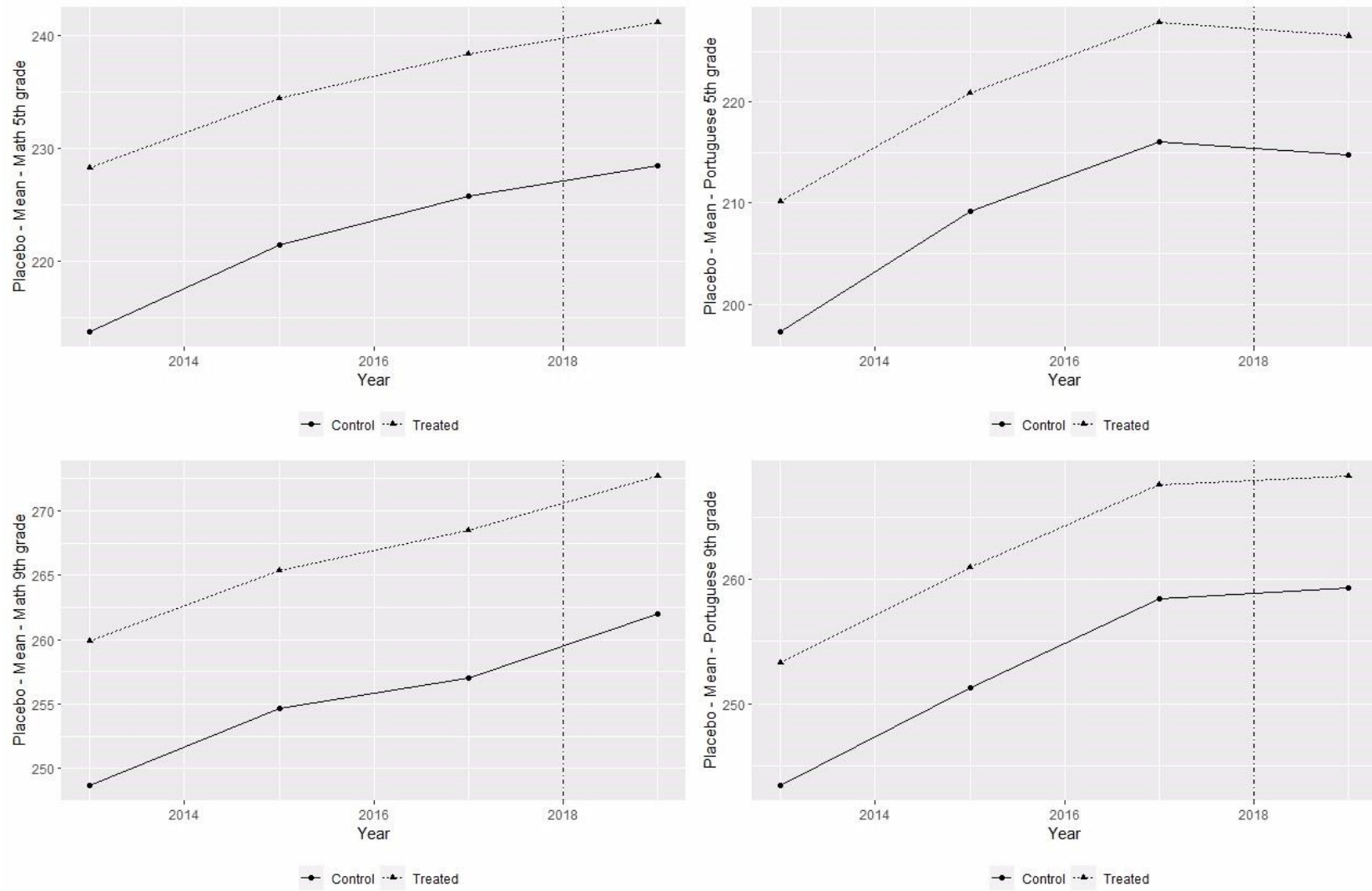
Figure 2.3 - Overlay Graphics - Placebo



Note. Captions : Computer_lab, Computers – Number of computers, GDP per Capita, High School, Library, Number of Classrooms, Population, Sciences Lab, Sports Court, Water, 1 – Treated ; 0 – Control

Note. Prepared by the authors

Figure 2.4 – Parallel trends – Placebo



Note. Authors' own elaboration

Table 2.7 - Placebo Test Results

Variável	Coeficiente	Mínimo	Média	Máximo	Desvio - Padrão	P-valor
Mathematics 5th grade	-0,64570	123,5	230,8	338,8	22,2536	0.012**
Portuguese Language 5th grade	-0,38947	123,5	217,6	311,1	20,2536	0.1036
Mathematics 9th grade	-0,40586	182,6	261,2	379,7	20,0994	0.2296
Portuguese Language 9th grade	-0,54626	174,4	258,8	343,2	19,0643	0.116

Note. Level of significance: *** 5%; **** 1%

Source: Authors' own elaboration

In the placebo test, it is noted that the effect for Elementary School II was null in both subjects, indicating that the effect seen was from the PNME and not from other confounding variables. In Elementary School I, the placebo result was negative for mathematics. This result suggests two hypotheses. First, it suggests that the impact of the PNME may be greater than that indicated for the mathematics subject of Elementary School I. Second, as the control group was formed by schools that participated only in the PME and the treatment group by the other public schools who did not participate in any program, this result may suggest a positive impact of PME on learning. However, more robust analyzes are needed to validate these hypotheses.

2.8 CONCLUSION

This article contributes to the literature by bringing new evidence to the debate on the effectiveness of full-time education on learning. It also contributes to evaluating the Novo Mais Educação program, which lacks studies that estimate its impact on student learning. It also proposes a brief debate about the design of the policy, comparing it with that of its predecessor, the Mais Educação program. In relation to the study by Coitinho (2021), this article contributes by providing an analysis of the impact of the PNME using more robust methods. The author only uses different types of matching, a method that is unable to deal with bias from unobservable variables. Our method, although not able to eliminate all these possible biases, is able to deal with those that are fixed in time (GANDRA, 2017; CUNNINGHAM, 2021). This article also compares the PNME with its predecessor, the PME. Although it is premature to attribute the results of the PNME to the new design, our findings allow us to point to an improvement in

learning in the PNME compared to the PME. In addition, we also argue that the change in design may have been a factor that resulted in better performance.

Our findings suggest that the PNME achieved a learning gain in relation to the PME, in Elementary School I, but these were not perceived in Elementary School II. We argue that a greater study load can lead to higher levels of learning. For example, good learning in mathematics in the early years leads to benefits throughout the academic career (MAYER *et al.*, 2023; DUNCAN *et al.*, 2007). We also point out that education is an accumulative process, so that more hours of study today leads to better performance in the future (OREOPOULOS; SALVANES, 2011). Thus, since the PNME has focused more on skills that are measured in national exams (Portuguese and mathematics), it is possible that the learning gains observed in the PNME are due to the new design of the policy.

It can be concluded that increasing the workload purely does not seem to be able to increase learning levels, as was the case with the PME. In view of this, we suggest that comprehensive education policies be planned and designed taking into account the gaps in students' learning and that they not be interrupted before the first class to receive the policy has graduated, as it is possible that in the first few years of the policy the results will not be noticeable in all grades. For example, if Elementary School pupils show greater difficulty in mathematics, there is no reason for the program to prioritize another subject. In addition, the policy must take into account the inputs available for its implementation. There is no point in leaving students at school without an adequate structure to receive them. In the PNME we observed schools that did not even have a library for students to study in, so the lack of structure in the participating schools may have affected the results obtained.

For future studies, we suggest a study that focuses exclusively on comparing different comprehensive education policy designs. We suggest analyzing the impact of other variables that the PNME wanted to improve, such as evasion. This work did not evaluate the program from the perspective of financial return, which could also be the target of future studies. Furthermore, we suggest analyzing the impact of the PNME on different regional realities in Brazil. Finally, the evaluation of this work was limited to learning scores, but full-time education impacts families and the community in which they are inserted in other

dimensions (COITINHO, 2021). Therefore, one suggestion would be to evaluate the program in these other dimensions, such as mothers' employability.

A limitation of this study is that it does not evaluate the program based on regional sections, considering the reality of each region. It is possible that in different regions the design of the PNME was more or less efficient. Another limitation is the quantitative approach of the study, which is unable to capture the perceptions of students and education professionals involved in the process, so that the entire analysis is based only on quantitative impacts on learning. In addition, the data used in this study is at school level, so it was not possible to track student performance over the years. Similarly, with school-level data it was not possible to verify whether the student composition has remained the same over the years. There is also the possibility that the schools that participated in the PNME were more motivated to have more focused learning in Portuguese and mathematics. Finally, as the program was very diverse and had a short duration, it is possible that some of the results were not maintained in the long term.

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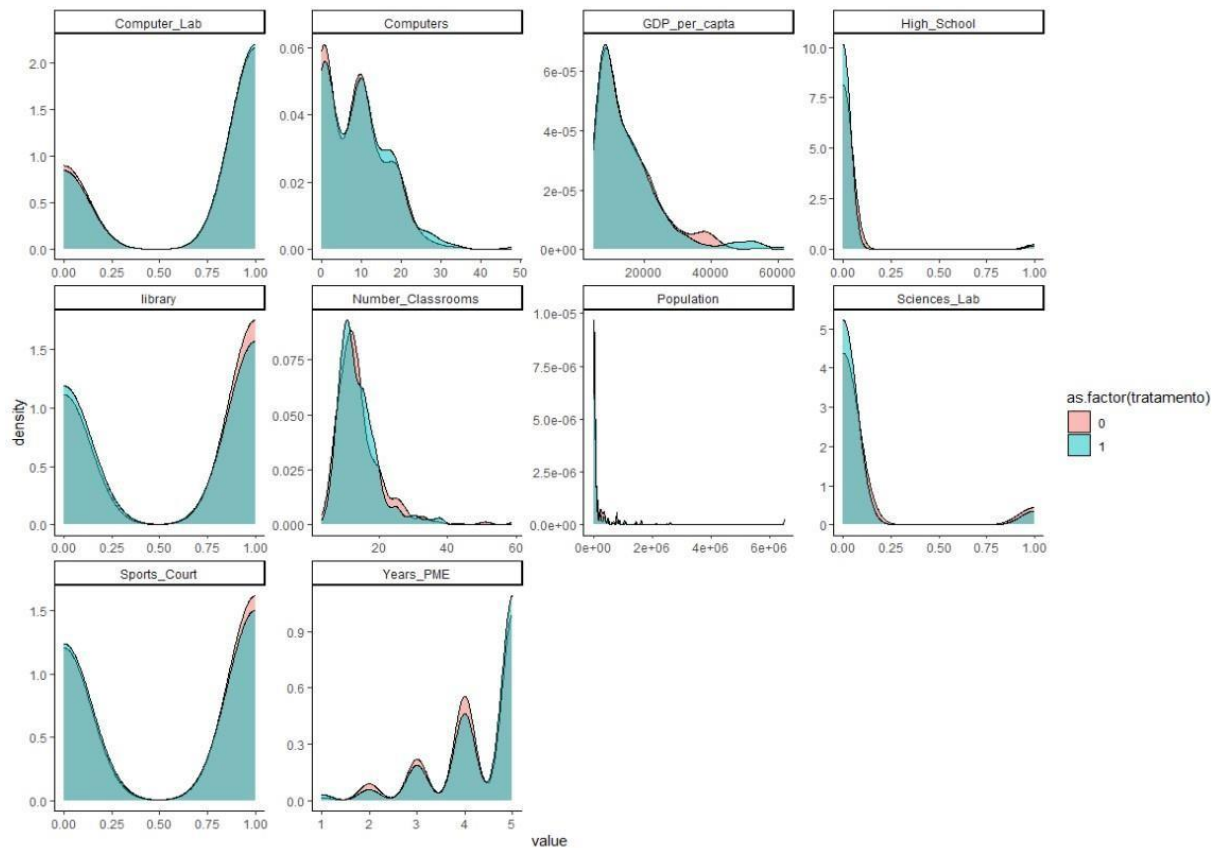
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APPENDIX II

Overlay Graphics – Equation 2.9



Note. Captions: Computer_lab, Computers – Number of computers, GDP per Capita, High School, Library, Number of Classrooms, Population, Sciences Lab, Sports Court, Years_PME – Time that the school remained in the PME, 1 – Treated; 0 – Control

Note. Prepared by the authors

Parallel Trend Test - Equation 2.9

Variable	Coefficient	Standard deviation	P-value
Mathematics 9th grade (2.9)	0.407508	1.006.558,0000	0.6857
Portuguese Language 9th grade (2.9)	1,753291	1.129.885,0000	0.1210

Note. Level of significance: *** 5%; **** 1%

Source: Authors' own elaboration

Propensity Score Matching - Elementary School II - 9th grade - Equation 2.9

Variable	Sample	Balanced	T test p-value
Years in the PME	Without matching	Yes	0.000***
	With matching		0.249
Library	Without matching	Yes	0.000***
	With matching		0.298
School with High School	Without matching	Yes	0.000***
	With matching		0.377
Science Lab	Without matching	Yes	0.000***
	With matching		0.198
Computer Lab	Without matching	Yes	0.000***
	With matching		0.678
Number of Computers	Without matching	Yes	0.000***
	With matching		0.482
Number of Rooms	Without matching	Yes	0.000***
	With matching		0.773
Sport Scourt	Without matching	Yes	0.000***
	With matching		0.537
Population	Without matching	Yes	0.000***
	With matching		0.218
<i>GDP Per capita</i>	Without matching	No	0.000***
	With matching		0.907

Note: Significance level: *** 5%; **** 1%

Source: developed by the authors

3. O IMPACTO DAS DEPENDÊNCIAS ADMINISTRATIVAS E ELEIÇÕES NA INFLAÇÃO DE NOTAS: Uma análise sob a ótica da Teoria da Escolha Racional

Resumo

A inflação de notas é um fenômeno que se alastrou por todas as instituições de ensino, causada por diversos motivos que surgem de diversas fontes distintas. O objetivo deste estudo é estudar o fenômeno em escolas secundárias sem fins lucrativos, comparando os resultados nas diferentes dependências administrativas; e estudar os incentivos eleitorais para incorrerem na prática de inflação de notas. Para isso, foram utilizados dados do Exame Nacional do Ensino Secundário (ENES) de Portugal. A escolha da amostra se deve por conta da política pública que financia escolas privadas para atuarem como públicas, entretanto, em 2018, o Governo, de maneira unilateral, retirou algumas escolas desse programa, o que permite estudar se a mudança de dependência administrativa impacta no comportamento da inflação de notas. Foram estimados quatro modelos OLS para as disciplinas de Matemática e Língua Portuguesa. Além disso, foi feito um pareamento por escore de propensão combinado com o diferenças-em-diferenças para estimar o aumento da inflação de notas após a escola ser retirada da política. A análise foi feita com base na Teoria da Escolha Racional e os resultados mostram que as escolas privadas possuem a maior prática de inflação de notas, seguidas pelas públicas, privadas financiadas pelo Estado e religiosas. Além disso, escolas privadas que perderam o financiamento passaram a praticar a inflação de notas com maior intensidade. As possíveis motivações de cada uma das dependências administrativas foram discutidas à luz da Teoria da Escolha Racional.

Palavras-chave: Inflação de notas; Teoria da Escolha Racional; Motivação; dependência administrativa; ensino secundário.

3.1 INTRODUÇÃO

A inflação de notas acontece quando há o aumento do nível das notas de um aluno e/ou escola, sem que haja uma maior aprendizagem por parte dos alunos, de modo que a nota mais alta passa a refletir outros aspectos que não a melhoria do ensino (OLEINIK, 2009). Embora seja um fenômeno que pode acontecer em qualquer país e/ou instituição de ensino, a inflação de notas tem

sido estudada majoritariamente nos EUA e existem poucas evidências em outros contextos (JEPHCOTE; MEDLAND; LYGO-BAKER, 2021).

A inflação de notas pode surgir por diversas motivações. Por exemplo, a prática surgiu com a massificação e subfinanciamento do ensino (COTE; ALLAHAR, 2011) e que instituições privadas de ensino têm maior propensão para inflacionar as notas (GERSHENSON, 2018). Ainda segundo o autor, quanto mais cara a escola, maior a propensão a inflacionar as notas. Em um estudo feitos com professores do ensino secundário, Kiziltaş (2024) descobriu que os professores adotam essa prática para evitar números elevados de reprovações. Tal prática também pode ser observada em outros níveis de ensino, como o superior (BAIRD; CARTER; ROOS, 2019). Outra razão para a prática de inflação de notas é a sinalização. Em países, como Portugal, onde a nota do ensino médio é usada como critério de admissão no ensino superior, a inflação de notas pode levar os alunos a tomar decisões erradas e sinalizar incorretamente para o mercado de trabalho e para as universidades a real capacidade do aluno, prejudicando os alunos que estudam em escolas que não adotam essa prática (SILVA *et al.*, 2023; NORDIN; HECKLEY; GERDTHAM, 2019). Embora essa prática seja mais comum em escolas privadas, as públicas também passaram a adotar a inflação de notas para que seus alunos se motivem e não fiquem prejudicados em relação aos alunos das escolas privadas (KIZILTAŞ, 2024). Motivações similares são encontradas também em outros níveis de ensino. (YANG; YIP, 2003; CHAN; HAI; SUEN, 2007; POPOV; BERNHARDT, 2013).

Para além das motivações das instituições, professores de instituições que não possuem estabilidade no emprego para os docentes tendem a ter maior inflação nas notas, uma vez que para se manterem no cargo, os professores atribuem notas mais elevadas aos seus alunos (STROEBE, 2020; GRIFFITH; SOVERO, 2021). Além disso, Correia (2024), com uma amostra de professores do ensino secundário de Portugal, mostra que os professores apontam a pressão externa, dos alunos, da escola e dos encarregados da educação como os principais motivadores da prática de inflação de notas. Até mesmo políticos podem se beneficiar com essa prática. De acordo com Pereira dos Santos, Tavares e Mesquita (2021), que analisaram os testes de ingresso nas

universidades em Portugal, em anos eleitorais há um aumento das notas dos alunos nos exames nacionais, fazendo com que a inflação de notas diminua.

A literatura mostra que a prática de inflacionar as notas contamina todo o sistema de ensino, ou seja, escolas que não inflacionam notas, passam a adotar tal prática uma vez que outras escolas também o fazem (YANG; YIP, 2003).

Até o momento, a maioria dos estudos tem se concentrado nos benefícios financeiros da inflação de notas, ou seja, em como escolas privadas adotam essa prática em busca de recompensas financeiras. No entanto, e quanto às escolas sem fins lucrativos? Elas também inflacionam as notas? Se sim, quais seriam as possíveis motivações? Isto posto, este estudo visa preencher duas lacunas sobre a prática da inflação de notas: estudar o fenômeno em escolas secundárias sem fins lucrativos, comparando os resultados nas diferentes dependências administrativas; e estudar os incentivos eleitorais para incorrerem na prática de inflação de notas. Para isso, será utilizada uma amostra de alunos portugueses do ensino secundário e a análise será feita à luz da Teoria da Escolha Racional.

As escolas secundárias de Portugal são divididas em quatro grupos: escolas públicas, privadas com fins lucrativos, privadas com contrato de financiamento com o Governo²³ e escolas confessionais. É possível que as diferentes formas de administração dessas escolas gerem diferentes incentivos para a prática de inflacionar as notas. As escolas públicas e privadas com contrato com o Governo não sofrem a pressão para atrair e reter alunos, pois recebem incentivos do Governo Português e possuem uma demanda além da sua capacidade de oferta de vagas. Vale ressaltar que as escolas privadas que possuem contrato com o Governo apenas recebem os alunos, não precisando captar e nem reter, uma vez que se algum aluno sair, não haverá impacto no contrato.

Já as escolas privadas com fins lucrativos não recebem nenhum incentivo e precisam se preocupar com a captação e retenção de alunos para que haja

²³ São escolas privadas que possuem contrato, designado como “Contrato de Associação” com o ministério da Educação para atuarem em moldes semelhantes a uma escola pública. Ou seja, as escolas recebem um valor por turma, previamente contratualizado e não podem fazer processos seletivos.

sustentabilidade financeira da instituição. Além disso, algumas escolas privadas com financiamento romperam seus contratos com o governo, o que as colocou novamente na lógica de mercado por busca e retenção de alunos, ou seja, o incentivo na sua atuação mudou.

Por fim, existem também as escolas confessionais portuguesas, de propriedade e gestão da Igreja Católica, que gozam de alguns privilégios fiscais por parte do Governo, atribuídos no âmbito da Concordata entre a República Portuguesa e a Santa Sé, celebrada em 2004 em substituição da Concordata de 1940 (MINISTÉRIO PÚBLICO PORTUGAL, 2004) que, para além, não buscam lucros.

Silva *et al.* (2023) analisaram a prática da inflação de notas, em Portugal, no período de 2010 a 2019, em escolas públicas, privadas, privadas com financiamento público e escolas em áreas vulneráveis (*Priority Intervention Educational Territories*). O estudo aqui proposto avança na literatura ao incluir a análise das escolas confessionais, um grupo ainda não explorado na literatura, discutindo com base na Teoria da Escolha Racional as diferentes motivações para essa prática em cada tipo de escola. Além disso, este estudo investiga se as escolas que mudam de dependência administrativa também alteram seu comportamento em relação à inflação de notas, a partir da decisão unilateral do Governo Português que retirou da política de financiamento 20 escolas. Como pontos adicionais, o estudo analisa o impacto dos períodos eleitorais e considera o papel dos professores e das diferenças de gênero na atribuição de notas, contribuindo para uma compreensão mais ampla do fenômeno.

Além da introdução, o artigo está dividido da seguinte maneira: a segunda seção traz o referencial teórico, que aborda a Teoria da Escolha Racional, os modelos de inflação de notas e a literatura empírica sobre o tema. A terceira seção apresenta a estrutura educacional de Portugal e a metodologia utilizada para atingir os objetivos propostos. A quarta seção discute os resultados e, por fim, a última seção traz as conclusões do artigo.

3.2 REFERENCIAL TEÓRICO E EMPÍRICO

Esta seção apresenta o referencial teórico e empírico. A primeira parte abordará a Teoria da Escolha Racional, que servirá de base para as análises feitas

neste estudo. A segunda parte abordará a inflação de notas, suas motivações e consequências.

3.2.1 Teoria da escolha racional

A Teoria da Escolha Racional (TER) surge nos Estados Unidos da América na década de 1950 e busca explicar como os indivíduos tomam decisões a partir de métodos empíricos (WARD, 2002; BECKER, 1976). A Teoria pressupõe que os indivíduos são auto interessados (SCHEEFFER, 2013) e tomam decisões de maneira a maximizar sua utilidade. O conceito de racionalidade adotado na TER não significa um comportamento que possa ser classificado como ser “sensato”, mas um comportamento que é guiado por avaliações e por ordens lógicas de preferência (WARD, 2002).

Conforme formalizado por John von Neumann e Oskar Morgenstern, em 1944, em *Theory of Games and Economic Behavior* (2007), a teoria da escolha racional parte da premissa de que os agentes econômicos tomam decisões maximizando sua utilidade esperada, sujeito a restrições. De modo formal tem-se que:

$$x^* = \operatorname{argmax}_{x \in X} U(x) \quad (3.1)$$

Caso haja incerteza, a decisão passa a ser modelada por uma função de utilidade esperada, onde p_i são as probabilidades associadas a cada estado do mundo s_i . De modo formal tem-se:

$$EU = \sum_i p_i U(x_i) \quad (3.2)$$

Em seu trabalho seminal *The Economic Approach to Human Behavior*, Becker (1976) expandiu a Teoria da Escolha Racional para além da economia tradicional, aplicando-a a áreas como crime, família, educação e discriminação. Para o autor, os agentes maximizam sua utilidade sob restrições independente do contexto ser ou não mercadológico. Becker assume três pressupostos: a) os indivíduos são agentes racionais que buscam maximizar sua utilidade; b) as escolhas envolvem restrições, como tempo e orçamento e; c) as preferências são estáveis e podem ser representadas por funções de utilidade. Formalmente, tem-se que:

$$\max_{x \in X} U(x) \quad \text{sujeito a} \quad \sum_i p_i x_i \leq M \quad (3.3)$$

Neste estudo, o objeto de análise são as escolas. De acordo com a Teoria da Escolha Racional, espera-se que as escolas tenham diferentes motivações em suas atuações que levem ou não à prática de inflacionar as notas. Por exemplo, espera-se que haja uma maior prática de inflação de notas nas escolas privadas, visto que reter um aluno maximiza seu lucro, ou seja, a utilidade da firma em questão. Já para as demais dependências administrativas, outros fatores além dos financeiros podem estar impulsionando ou reduzindo essa prática. Deste modo, a maximização da utilidade não será necessariamente a maximização do lucro, visto que somente as privadas possuem intrinsecamente esse objetivo.

3.2.2 Inflação de notas (*Grade inflation*)

A inflação de notas (*grade inflation*) é definida como “a obtenção de notas mais altas pelos alunos, independentemente do aumento dos níveis de desempenho acadêmico” (EISZLER, 2002, p. 489). Nesse sentido, a inflação de notas é uma deterioração da validade externa das notas dos alunos (OLEINIK, 2009). Em geral, são usadas notas de exames externos, como PISA ou exames nacionais, para medir a inflação de notas.

3.2.3 Modelos de inflação de notas

Alguns modelos foram desenvolvidos para formalizar a explicação do fenômeno da inflação de notas²⁴. Yang e Yip (2003) propuseram um modelo para explicar a causa da inflação de notas e suas consequências. Segundo os autores, a inflação de notas surge como uma prática contagiante entre as instituições de ensino que buscam maximizar sua utilidade. Isso ocorre, pois as firmas não dispõem de meios para verificar se a nota alta de fato representa uma alta capacidade do aluno. Deste modo, as empresas vão tender a contratar somente com base na reputação da instituição, acreditando que a nota alta sinalize, de fato, uma alta performance. Ou seja, as instituições de ensino possuem incentivos para inflacionar as notas para que seus alunos sejam alçados a melhores posições nas empresas, pois isso trará benefícios à imagem

²⁴ Para maiores detalhes sobre a formalização matemática dos modelos ver Yang e Yip (2003), Chan, Hai e Suen (2007), Popov e Bernhardt (2013) e Ehlers e Schwager (2016).

da instituição. O modelo de Chan, Hai e Suen (2007), também baseado na teoria da escolha racional, chega em conclusões similares. Segundo os autores, a inflação de notas é usada para sinalizar às firmas que os alunos possuem boas capacidades, entretanto, as firmas não possuem essa informação, fazendo com que essa assimetria faça que alunos medíocres sejam contratados como alunos de habilidade elevada.

Popov e Bernhardt (2013) também destacam em seu modelo que as firmas não possuem capacidade de distinguir se uma instituição de ensino avalia de forma justa ou não seus alunos e que o aumento de empregos qualificados eleva a prática de inflação de notas. Contudo, inflacionar as notas demasiadamente pode levar a uma desvalorização do diploma da instituição (CHOWDHURY, 2018). Nesse sentido, Ehlers e Schwager (2016), introduziram em seu modelo a preocupação com a reputação, e encontraram evidências de que, na verdade, a inflação de notas é prejudicial à reputação da instituição e tal preocupação pode amenizar, ou até mesmo mitigar, essa prática. Esses modelos também são baseados na teoria da escolha racional.

Deste modo, de acordo com a teoria, as instituições vão inflacionar as notas enquanto a utilidade dessa prática for maior que a desutilidade gerada. Em outras palavras, enquanto a recompensa financeira e reputacional for maior que a possível perda de alunos e credibilidade.

3.2.4 Inflação de notas e a sinalização

A literatura mostra que a inflação de notas não afeta apenas as escolhas das firmas, mas também a escolha dos estudantes. A inflação de notas também pode afetar a escolha da Universidade, de modo que alunos que estão em escolas secundárias que inflacionam as notas, tendem a escolher universidades melhores, por acreditarem que possuem alto rendimento (NORDIN; HECKLEY; GERDTHAM, 2019). Ainda segundo os autores, tal dinâmica também prejudica alunos de alto rendimento que estão em escolas que não inflacionam as notas, pois esses passam a acreditar que não possuem a mesma capacidade de colegas que estão em escolas que praticam mais a inflação de notas. Além disso, segundo Nata, Pereira e Neves (2014), ao analisarem a inflação de notas com uma amostra de alunos Portugueses, apontaram que esse fenômeno pode corromper o processo seletivo no ensino superior em países que utilizam as

notas do ensino secundário como critério de acesso. Ainda segundo os autores, as escolas privadas são as que possuem maiores incentivos para inflacionar as notas de seus alunos. Na mesma direção, Finefter-Rosenbluh e Levinson (2015) apontam que a prática de inflação de notas no ensino privado pode levar a uma maior desigualdade, visto que isso pode enviesar os processos seletivos para as universidades. O mesmo foi observado por Ilie e Maragkou (2024), durante a pandemia, na Inglaterra. As autoras destacam que durante esse período a admissão nas universidades inglesas passou a ser exclusivamente com a nota obtida na escola, o que levou a um aumento significativo nas notas dadas aos alunos. Além disso, esse fenômeno foi observado em maior grau nas escolas particulares.

Por sua vez, Al-Jarf (2022a) aponta, em seu estudo realizado em universidades e escolas Sauditas, que as instituições pressionam os professores para que os alunos recebam notas mais elevadas, pois há uma crença de que notas mais elevadas mostrariam excelência no aprendizado. Entretanto, não é o que se observa nos testes, que segundo Al-Jarf (2022a), são feitos de maneira a avaliar um pequeno conjunto de habilidades e a capacidade de memorização dos alunos, ou seja, não medem as capacidades exigidas no nível superior. Essa pressão se torna maior em escolas privadas, pois há uma cobrança maior para o sucesso dos alunos, uma vez que os pais estão pagando por isso (FINEFTER-ROSENBLUH; LEVINSON, 2015).

Resultados similares foram encontrados por Gershenson (2018) que analisou o ensino secundário no Estado da Carolina do Norte nos EUA durante o período de 2005 e 2016 e concluiu que as notas internas não são um bom preditor das notas obtidas nos exames estaduais, de modo que um “A” não é mais capaz de sinalizar excelência no aprendizado. Além disso, o autor ainda destaca que esse fenômeno ocorre com maior intensidade em escolas de classes mais abastardas.

Há uma preocupação por parte das instituições de ensino superior e dos empregadores de que as notas não reflitam a real capacidade dos alunos. Diante dessa preocupação, Yeritsyan, Mjelde e Litzenberg (2022) argumentam que uma melhor seleção dos alunos pode tornar o aumento das notas um real aumento na aprendizagem. Contudo, como Nata, Pereira e Neves (2014) ressaltam, a

inflação de notas pode afetar a capacidade das universidades em fazer essa seleção, visto que, como mostrado na literatura, tal prática está presente nos diversos níveis de ensino.

3.2.5 Inflação de notas por parte dos professores

A literatura também aponta que a inflação de notas não é uma prática somente das instituições de ensino, mas também traz benefícios aos professores, visto que este fenômeno tende a ser maior em instituições nas quais não há estabilidade e a avaliação docente faz parte dos critérios de promoção na carreira dos docentes (CHOWDHURY, 2018; STROEBE, 2020; GRIFFITH; SOVERO, 2021). Por exemplo, Stroebe (2020) encontrou evidências de que as os SETs (*Student Evaluations of Teaching*) são usados pelos alunos para recompensar professores que distribuem mais notas e punir os que são mais rigorosos nas avaliações. Nesse sentido, Chen (2023), com uma amostra de estudantes chineses, concluiu que o processo de avaliação dos docentes por parte dos alunos tende a piorar o ensino, uma vez que isso pode moldar o comportamento dos professores em relação as avaliações, fazendo com que os professores se tornem menos rigorosos.

Chen, Liao e Zhang (2024) argumentam que a nota que os alunos esperam obter afeta a avaliação dada ao docente, de modo que se o aluno espera uma nota alta e tira uma nota baixa, tende a avaliar professor com notas mais baixas. Park e Cho (2023), com uma amostra de alunos sul coreanos, identificaram que durante a pandemia da COVID-19 a prática de inflação de notas aumentou e, conseqüentemente, as notas dos SETs também, indicando que quanto mais o professor distribui nota, melhor é sua avaliação por parte dos alunos. De modo similar, Ellis *et al* (2003) e Griffith e Sovero (2021), com amostras de alunos estadunidenses, e Maamari e Naccache (2022) com uma amostra de alunos libaneses, descobriram que professores que atribuem maiores notas aos alunos tendem a receber maior avaliação dos mesmos nos questionários de avaliação docente, de modo que professores podem inflacionar as notas visando uma boa avaliação interna. Já Madani e Ghasempour (2022), com uma amostra de estudantes iranianos, apontaram que ao praticar a inflação de notas, professores recebem um aumento que varia de 1% a 4% na avaliação feita por parte dos alunos. Por fim, Berezvai, Lukáts e Molontay (2020),

mostraram que avaliações mais brandas tendem a aumentar as notas dos professores entre 0,2 e 0,4.

Deste modo, como em muitas instituições a promoção e permanência no cargo do professor depende da avaliação dos alunos, essa troca de notas passa a acontecer de maneira sistemática (CHOWDHURY, 2018). Por exemplo, como professoras possuem maiores dificuldades de ascenderem em suas carreiras, são as que mais tendem a praticar a inflação de notas (JEWELL; MCPHERSON, 2012; GRIFFITH; SOVERO, 2021; CHENG; KONG, 2023).

3.2.6 Inflação de notas e incentivos eleitorais

A literatura empírica mostra que o desempenho escolar impacta diretamente o comportamento do eleitor (MAASER; STROBL, 2024). Por exemplo, Berry e Howell (2007) encontraram evidências de que um melhor desempenho acadêmico está positivamente relacionado com os votos recebidos no conselho escolar. De modo similar, Barrows (2015) encontrou evidências que mostram que o apoio ao conselho escolar que está no poder cresce à medida que o aumento nas notas eleva o conceito para A.

Além disso, a educação tem sido usada como ferramenta política. Em um estudo feito na Espanha, Veja Gil, Beltrán e Redondo (2016) argumentam que o governo usa o resultado obtido no PISA como parâmetro para medir a eficiência das políticas educacionais, seja no contexto nacional ou local. De modo similar, Santos, Tavares e Mesquita (2021) encontraram evidências de que, em Portugal, nos anos eleitorais as notas para admissão no ensino superior sobem de maneira significativa. Os autores ainda apontam que a inflação de notas pode agir como uma ferramenta eleitoral para o governo em exercício. Até mesmo em Governos municipais as notas parecem influenciar. Lay e Tyburski (2017), ao analisarem dados de 16 cidades nos Estados Unidos, concluíram que em municípios em que o controle da educação passou dos conselhos eleitos para o prefeito, os eleitores que avaliam a educação como boa, tendem a recompensar o prefeito durante as eleições.

Isto posto, a recompensa dada pelo eleitor por uma percepção de boa educação pode ser vista como um motivo para que haja inflação de notas em períodos próximos as eleições. Deste modo, é possível que o grupo político em

exercício no poder utilize as notas para sinalizar um maior grau de aprendizagem, em busca de benefícios eleitorais.

3.2.7 Inflação de notas em outras situações e motivações

Por fim, situações adversas também promovem a inflação de notas, visando compensar alguma vulnerabilidade permanente ou momentânea. Por exemplo, a pandemia da COVID-19, uma situação adversa na qual os professores facilitaram a avaliação dos alunos como forma de compensar as circunstâncias negativas (KARADAG, 2021). Não somente as circunstâncias sociais impactaram o aumento da inflação de notas, mas também a transição para a modalidade online de ensino (KARADAG, 2021; AL-JARF, 2022b).

Finefter-Rosenbluh e Levinson (2015) apontam que a inflação de notas persiste ao longo dos anos por três motivos éticos principais. O primeiro é a ética do cuidado; professores inflacionam as notas de seus alunos para proteger o bem-estar emocional e não os prejudicar futuramente por causa de uma nota baixa. O segundo motivo é a ética de mercado e dever fiduciário, ou seja, escolas privadas enfrentam pressões Governos e sistemas educacionais inflacionam notas para evitar críticas públicas ou sanções políticas, como corte de verbas. Por sua vez, Chowdhury (2018) também destaca que o sistema de ensino pode praticar a inflação de notas, visando uma redução nas desigualdades existentes, fazendo com que os alunos menos favorecidos tenham menos desvantagens em relação aos alunos das classes sociais mais abastardas.

Em relação ao sentimento de merecimento, estudos têm mostrado que os alunos enxergam a inflação de notas como um para garantir o sucesso de seus alunos e atender às expectativas de seus pais pagantes. Por fim, a autopreservação dos sistemas educacionais, por esse motivo

aumento resultante do seu mérito acadêmico (BAGLIONE; SMITH, 2022; KIRATLI; DEMIRKASIMOĞLU, 2024), enquanto os professores relatam que os alunos acreditam sempre merecer uma nota que não condiz com seu desempenho acadêmico, mas que acabam cedendo para os alunos e inflacionando suas notas (KIRATLI; DEMIRKASIMOĞLU, 2024). A literatura também mostra que as alunas são mais favorecidas pela inflação de notas no ensino secundário (CHENG; KONG, 2023). Já no ensino superior, a lógica

parece se inverter, e os alunos do gênero masculino recebem maior incidência da inflação de notas (KOLEVZON, 1981).

3.3 O SISTEMA EDUCACIONAL PORTUGUÊS

O sistema educacional português é formado majoritariamente por escolas públicas (SANTOS; TAVARES; MESQUITA, 2021) e é dividido nos níveis: pré-escolar, básico, secundário e terciário²⁵. O ensino pré-primário é frequentado por alunos de 3 a 5 anos, o básico por alunos de 6 a 14 anos, o secundário por alunos dos 15 aos 18 anos e o terciário corresponde ao ensino superior (SILVA *et al.*, 2023). Até aos 18 anos a escolaridade é obrigatória, pública e gratuita, embora existam também escolas particulares. Em Portugal as escolas secundárias podem ser divididas em quatro grupos, as públicas, as privadas, as escolas privadas com contrato com o Governo e as escolas confessionais que apesar de pertencerem à Igreja Católica, gozam de benefícios dados pelo Governo Português. As escolas privadas financiadas pelo governo atuam em áreas em que a oferta pública é insuficiente para atender a toda demanda local, não podem cobrar mensalidades (SILVA *et al.*, 2023) e possuem o processo de seleção igual ao das escolas públicas (NATA; PEREIRA; NEVES, 2014). Ou seja, as escolas privadas financiadas pelo governo atuam como pública e não na lógica de mercado. Ao final do ensino secundário, os alunos realizam o Exame Nacional do Ensino Secundário (ENES).

Para ingressar nas universidades em Portugal, os alunos prestam os exames nacionais do ensino secundário, cujo resultado é consolidado na Ficha ENES (Exames Nacionais do Ensino Secundário). A nota de candidatura é calculada com base na média final das classificações obtidas no ensino secundário e nas notas dos exames nacionais exigidos como provas de ingresso.

O peso relativo de cada componente (nota do secundário e exames) varia conforme o curso e a instituição de ensino superior, podendo incluir também outros critérios, como a realização de pré-requisitos específicos, como provas físicas, entrevistas, testes vocacionais ou portfólios.

²⁵ De acordo com a Classificação internacional Padrão da Educação (ISCED), o ensino secundário em Portugal é classificado com ISCED 3.

Cada universidade e curso define os exames nacionais aceitos como provas de ingresso e estabelece mínimos exigidos para esses exames. O processo de candidatura é feito online, por meio do portal da Direção-Geral do Ensino Superior (DGES), onde o estudante pode escolher até seis opções de cursos/instituições, por ordem de preferência. A colocação depende da nota de candidatura e do número de vagas disponíveis em cada curso.

Por fim, de acordo com o Estatuto da Carreira dos Educadores de Infância e Professores dos Ensinos Básico e Secundário²⁶, um dos critérios para promoção de professores na rede pública é a avaliação do desempenho do docente que, embora não inclua uma avaliação direta dos alunos, as notas e a taxa de aprovação são levadas em consideração.

3.4 PROCEDIMENTOS METODOLÓGICOS

Nesta seção, serão apresentadas as bases de dados utilizadas e os recortes temporais adotados. Além disso, também serão expostos os modelos empregados para alcançar os objetivos deste estudo.

3.4.1 Base de dados

Os dados utilizados são do Exame Nacional do Ensino Secundário (ENES) em Portugal e o período analisado será de 2008 a 2019. A base também contém as características dos alunos, como sexo e idade. A medida da inflação das notas foi feita com base na diferença das notas dos alunos nas disciplinas obtidas na escola comparada com a nota obtida nos exames nacionais (ENES). A nota da escola também está disponível com os resultados dos exames nacionais. A base não fornece um identificador do aluno, de modo que seja possível analisar sua evolução no tempo. A dependência administrativa das escolas também é fornecida pela base do ENES, assim como se são ou não financiadas pelo Governo. A identificação das escolas confessionais foi realizada através da consulta do Anuário Católico²⁷. Os dados de controle, taxa de criminalidade, população e carros vendidos, foram obtidos pelo censo de Portugal.

²⁶ Disponível em: < <https://diariodarepublica.pt/dr/legislacao-consolidada/decreto-lei/2012-117105579>>

²⁷ https://www.anuariocatolicoportugal.net/lista_escolas_catolicas.asp

Em Portugal, algumas escolas privadas recebem recursos do Estado para atuarem como públicas. Contudo, em 2018, algumas dessas escolas deixaram de receber o financiamento, passando a atuar novamente como privadas. O fim do financiamento público não foi uma opção das escolas, mas uma decisão do próprio Governo de Portugal, criando um experimento que permite avaliar se as escolas que mudaram de dependência administrativa também alteram seu comportamento em relação à inflação de notas. Ao todo, 20 escolas foram retiradas da política de financiamento no ano de 2018.

Além disso, somente os estudantes que realizaram o exame na primeira fase foram mantidos na base, uma vez que colocar os alunos inscritos na segunda fase poderia gerar viés, já que esses alunos da segunda fase realizam a prova depois dos alunos da primeira fase, fazendo com que tenham mais tempo de estudo em relação aos que realizaram o exame na primeira fase. Além disso, alunos que não tentaram ingresso no ensino superior também foram descartados, para que a base fosse composta somente com indivíduos que tinham os mesmos objetivos e motivações, reduzindo possíveis vieses não observáveis na amostra.

3.4.2 Modelo

Foram rodados quatro modelos a nível dos alunos para responder aos objetivos deste estudo. Os primeiros dois modelos foram estimados com dados indo de 2008 até 2019. Contudo, nesses dois primeiros modelos não foram incluídas as variáveis de controle a nível dos concelhos²⁸. Essa decisão se deu por causa dos períodos em que os dados de controle dos concelhos estavam disponíveis, pois estes não estavam completos ou disponíveis nos anos de 2008 até 2010 e 2019. O Modelo 3.1 foi estimado duas vezes, uma para as notas de matemática e a segunda para as notas de português. A amostra possui 365.843 observações na disciplina de matemática e 562.491 em língua portuguesa. O modelo 3.1 estimado (apresentado na equação 3.4), por mínimos quadrados ordinários (MQO), sem os controles a nível do concelho é dado por:

²⁸ Em Portugal, os **Concelhos** equivalem aos municípios brasileiros e possuem órgãos próprios, como a **Câmara Municipal** (órgão executivo) e a **Assembleia Municipal** (órgão deliberativo).

$$\begin{aligned}
Y_{i,t,x} = & \beta_0 + \beta_1 pubpriv + \beta_2 religiosa + \beta_3 privfin + \beta_4 religiosafin + \beta_5 Id_{i,t} \\
& + \beta_6 Fem_i + \beta_7 elec_{09} + \beta_8 elec_{11} + \beta_9 elec_{15} + \beta_{10} elec_{19} + \beta_{11} trat \\
& + \mu_{it} \quad (3.4)
\end{aligned}$$

Onde, $Y_{i,t}$ é a variável de interesse, a inflação de notas Y da escola i no momento t na disciplina x . Essa variável é a diferença média entre a nota obtida nas provas internas e o teste nacional. Vale ressaltar que essa nota pode variar de 0 até 200. O intercepto é dado pela variável β_0 . A variável $pubpriv$ é uma *dummy* que assume valor 1 quando a escola é somente privada, não contando as privadas financiadas, e 0 caso contrário. De modo análogo a variável $religiosa$ assume valor 1 quando a escola é somente religiosa e 0 caso contrário. A variável $privfin$ assume valor 1 quando a escola é privada e recebe financiamento público e 0 caso contrário. De modo similar, a variável $religiosafin$ assume valor 1 quando é uma escola religiosa e recebe financiamento e 0 caso contrário. As escolas públicas formam o grupo de comparação. As variáveis Id e Fem são a idade e o sexo do aluno, respectivamente, que assume valor 1 quando o aluno é do sexo feminino e zero caso contrário. As variáveis $elec$ são *dummies* que assumem valor 1 quando estamos no ano indicado (que são os anos eleitorais). A variável $trat$ assume valor 1 quando a escola que recebia o financiamento do governo deixa de receber. Por fim, α_t e μ representam o efeito fixo de tempo e o termo de erro, respectivamente.

O modelo 3.2, apresentado na equação (3.5), também foi estimado por MQO e é similar ao modelo 3.1, apresentado na equação (3.4), mas com a retirada das *dummies* das eleições de 2009 e 2019, visto que a base não abrange esses anos quando são incluídos os controles a nível dos concelhos. A variável $crime$ representa a taxa de criminalidade do concelho a cada 100 mil habitantes e, de modo similar, a variável $carro$ é a taxa de carros vendidos por concelho, servindo como uma *proxy* de renda da região. Por fim, a variável pop é a população de cada concelho.

$$\begin{aligned}
Y_{i,t,x} = & \beta_0 + \beta_1 pubpriv + \beta_2 religiosa + \beta_3 privfin + \beta_4 religiosafin + \beta_5 Id_{i,t} \\
& + \beta_6 Fem_i + \beta_7 elec_{11} + \beta_8 elec_{15} + \beta_9 trat + \beta_{10} crime + \beta_{11} pop \\
& + \beta_{12} carro + \mu_{it} \quad (3.5)
\end{aligned}$$

Foram realizados os testes de White e Durbin-Watson que apontaram a existência de heterocedasticidade e autocorrelação, respectivamente. Por isso, o modelo foi estimado com erros padrões robustos por Newey-West. Também não foi detectada a existência de multicolinearidade em níveis prejudiciais²⁹.

3.5 RESULTADOS E DISCUSSÃO

Antes de entrar nos resultados, são apresentadas as estatísticas descritivas. A Tabela 3.1 mostra as estatísticas descritivas a nível do aluno nas disciplinas de Matemática e Língua Portuguesa e o resultado do Teste t para confirmar se as médias da inflação das notas das escolas eram ou não diferentes de zero.

Tabela 3.1 - Estatísticas Descritivas da Inflação de Notas

Exame	Dependência Administrativa	Média	Desvio-Padrão	Mediana	Min	Max	Teste t
Matemática	Pública	24,072	31,368	23	-97	165	427,14***
	Privadas	27,602	31,541	25	-86	151	142,57***
	Privadas com financiamento	18,555	29,201	15	-75	135	67,67***
	Religiosas	17,425	30,514	14	-81	142	59,69***
	Religiosas com financiamento	18,280	28,970	15	-75	130	53,57***
	Geral	23,844	31,305	23	-97	165	460,69***
Português	Pública	25,423	24,735	25	-85	170	719,80***
	Privadas	28,251	25,505	29	-72	145	200,46***
	Privadas com financiamento	23,688	24,035	24	-58	132	124,98***
	Religiosas	21,857	24,474	21	-61	121	104,66***
	Religiosas com financiamento	22,302	24,656	23	-68	123	87,92***
	Geral	25,398	24,774	25	-85	170	768,89***

Nota: O teste T aponta se as notas são estatisticamente diferentes de zero

Legenda: '****' - 1%; '***' - 5%;

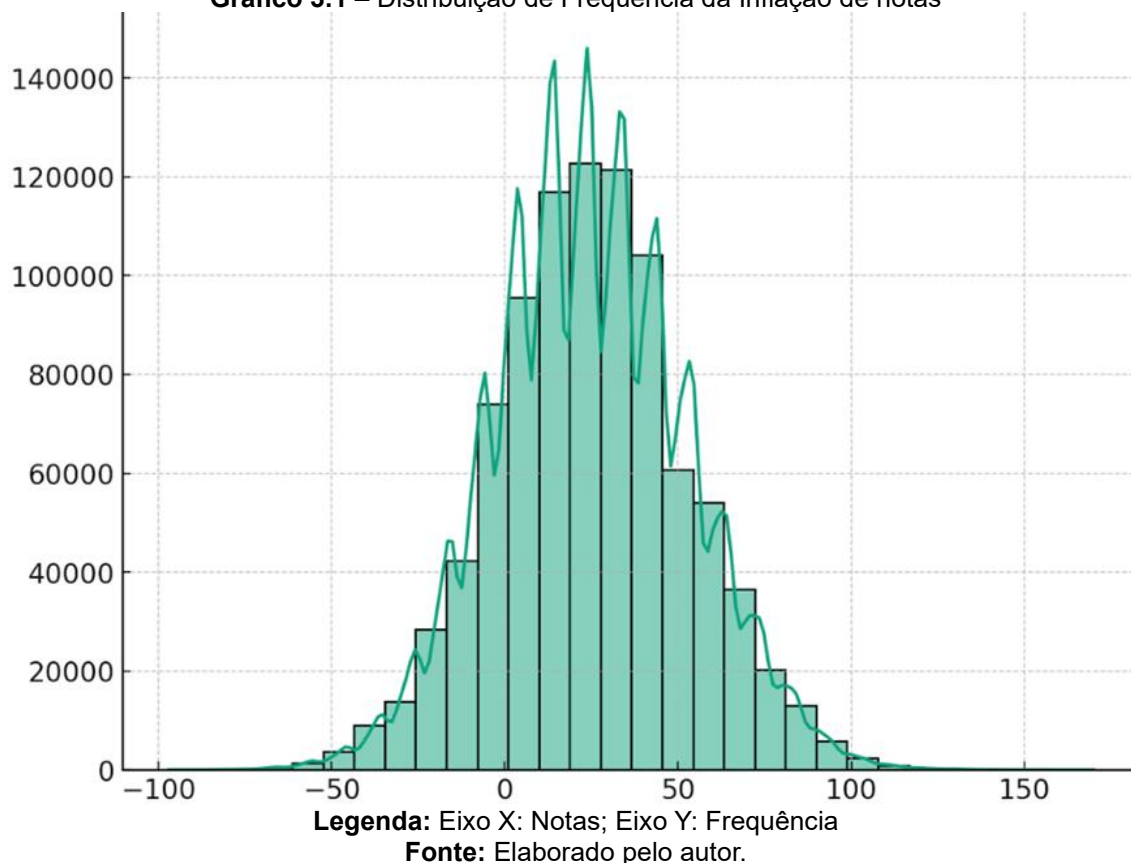
Fonte: Elaborado pelo autor

É possível notar que todas as escolas praticam a inflação de notas positiva e diferente de zero, corroborando os trabalhos de Yang e Yip (2003), Chan, Hai e Suen (2007) e Popov e Bernhardt (2013), que apontam que tal prática se espalhou entre todas as instituições. As escolas privadas possuem a maior média de inflação de notas, em ambas as disciplinas. Em sequência, as escolas públicas aparecem como as segundas que mais adotam essa prática. Já as escolas financiadas e confessionais, embora também adotem a inflação de

²⁹ Os resultados obtidos no VIF (*Variance Inflation Factor*) estavam abaixo de 5, nível no qual a existência de multicolinearidade é considerado prejudicial.

notas, mostram um nível menor nas duas disciplinas analisadas. O Gráfico 3.1 mostra a distribuição de frequência da inflação de notas para todas as escolas independente da dependência administrativa. No eixo Y tem-se a frequência e no eixo X o valor da inflação de notas.

Gráfico 3.1 – Distribuição de Frequência da Inflação de notas



O Gráfico 3.1 parece indicar que mais da metade das escolas praticam a inflação de notas, dado que é corroborado pela Tabela 3.1. As medianas indicam que mais da metade das escolas, em todas as dependências administrativas, praticam a inflação de notas.

Os resultados dos modelos 3.1 e 3.2 são apresentados na Tabela 3.2. A base de comparação são as escolas públicas.

Tabela 3.2 - Resultado dos Modelos 3.1 e 3.2

Variável	Modelo 3.1		Modelo 3.2	
	Matemática	Português	Matemática	Português
Intercepto	24,574 (0,135)***	26,845 (0,079)***	35,553 (0,319)***	28,016 (0,217)***
Privadas	4,173 (0,486)***	3,005 (0,358)***	5,371 (0,343)***	3,833 (0,260)***

Privadas com financiamento	-5,165 (0,515)***	-1,683 (0,396)***	-6,183 (0,506)***	-2,616 (0,358)***
Religiosas	-5,628 (0,800)***	-3,267 (0,475)***	-5,008 (0,554)***	-2,786 (0,371)***
Religiosas com financiamento	-5,350 (0,756)***	-2,806 (0,499)***	-4,142 (0,573)***	-3,323 (0,468)***
Idade	5,134 (0,108)***	2,032 (0,058)***	4,644 (0,121)***	1,887 (0,074)***
Sexo Feminino	1,399 (0,108)***	-0,747 (0,070)***	2,135 (0,121)***	-1,255 (0,085)***
Eleição 09	-9,340 (0,238)***	-9,707 (0,135)***		
Eleição 11	3,993 (0,243)***	11,566 (0,160)***	-1,828 (0,340)***	11,781 (0,262)***
Eleição 15	-9,880 (0,233)***	-2,590 (0,159)***	-15,858 (0,329)***	-2,151 (0,214)***
Eleição 19	-0,278 (0,232)	-10,270 (0,145)***		
Tratamento	3,042 (1,315)***	-2,156 (1,052)***	1,850 (0,929)***	-1,099 (0,800)
Carros			-0,277 (0,014)***	-0,151 (0,009)***
População			0,000079 (0,00001)***	-0,000004 (0,0000008)***
Crime			0,031 (0,010)***	0,0637 (0,006)***

Nota: Os valores entre os parênteses são os desvios-padrão robustos.

Legenda: '***' – significante a 1%; '**' - significante a 5%;

Fonte: Elaborado pelos autores.

Os resultados obtidos apontam que as escolas privadas são as que possuem maiores níveis de inflação de notas. À luz da Teoria da escolha racional, as escolas privadas possuem incentivos claros para a prática da inflação de notas, visto que os coeficientes são positivos, variando de 3,005 até 5,371 pontos, indicando que possuem níveis maiores de inflação de notas em relação às escolas públicas. As escolas incorrem na inflação de notas esperando que essa prática reduza a evasão (COTE; ALLAHARM, 2011; BAIRD; CARTER;

ROOS, 2019), melhore a imagem da escola (YANG; YIP, 2003; CHAN; HAI; SUEN, 2007; POPOV; BERNHARDT, 2013), proporcione vantagem aos seus alunos no acesso ao ensino superior e, por fim, atenda às expectativas dos pais que pagam (FINEFTER-ROSENBLUH; LEVINSON, 2015). Embora tal prática possa prejudicar a imagem da instituição (EHILERS; SCHWAGER, 2016), as escolas privadas continuarão a praticar a inflação de notas, enquanto perceberem que estão sendo mais beneficiadas do que prejudicadas. Além disso, por ser um fenômeno dominante nas escolas portuguesas, é possível que o prejuízo na imagem não ocorra em níveis suficientes para desencorajar essa prática.

É razoável supor que o incentivo principal das escolas privadas para a prática da inflação de notas é a maximização dos lucros, visto que, quando essas escolas perdem a preocupação com a captação e retenção de alunos, a prática da inflação de notas cai. Os resultados das escolas privadas com financiamento do Governo, mostram que a prática da inflação de notas ocorre em menor nível, visto que em todos os modelos os coeficientes foram negativos, variando de -6,183 até -1,683, indicando que essa dependência administrativa pratica a inflação de notas com menos intensidade que as escolas públicas. Os dois grupos são formados por escolas privadas, mas possuem diferentes incentivos na sua atuação. As escolas privadas que possuem contrato com o Governo, recebem um valor fixo que independe da quantidade de alunos, os alunos são enviados pelo Governo e, além disso, estão em regiões em que a oferta pública de vagas é insuficiente (SILVA *et al.*, 2023), podendo reduzir até mesmo a preocupação com o rompimento do contrato, fazendo com que as escolas tenham um incentivo reduzido a inflacionar as notas. Também não há pressão dos pais em relação ao pagamento da escola, fazendo com que, mesmo que haja pressão da comunidade e dos pais dos alunos, a capacidade de pressionar a escola seja menor, uma vez que não pagam para seus filhos estudarem lá.

Assim, a necessidade de agradar aos pais e manter uma boa imagem institucional pesa de forma distinta entre os grupos, impactando diretamente a decisão de inflacionar as notas. Esse mecanismo reforça a ideia de que a inflação de notas não ocorre de forma aleatória, mas sim como resposta racional

às pressões e incentivos do ambiente escolar, o que pode ter implicações diretas na qualidade do ensino e na credibilidade das avaliações acadêmicas.

Para as escolas religiosas, os resultados mostram que, tanto nas que recebem financiamento do Governo quanto nas que não recebem, a prática de inflacionar as notas ocorre em menores níveis do que nas escolas públicas. Nas escolas religiosas sem financiamento, a inflação de notas variou de -5,628 até -2,786 pontos, já nas religiosas com financiamento, a variação foi de -5,350 até -2,806. Contudo, neste caso o contexto é diferente, pois essas escolas pertencem à Igreja Católica e, todas elas recebem diversos incentivos do Governo de Portugal, atribuídos no âmbito da Concordata entre a República Portuguesa e a Santa Sé, celebrada em 2004. Além disso, essas escolas não possuem fins lucrativos, fazendo com que a inflação de notas ocorra em níveis similares ao das escolas privadas que recebem financiamento do Governo.

Outro fator que distingue as escolas religiosas das demais é a própria motivação religiosa dominante nessas instituições. Deste modo, é possível que haja uma conduta diferente por parte dos seus professores. A religiosidade pode ser definida como “um conjunto de condutas e costumes enriquecidos com vários pressupostos e princípios consagrados, que servem para dar valor à existência mortal” (MATHEW; PRASHAR; RAMANATHAN, 2018, p. 305), podendo ser intrínseca e extrínseca³⁰. Assumindo que os indivíduos nessas instituições são intrinsecamente religiosos, pode-se inferir que os incentivos das escolas confessionais não são unicamente financeiros, mas também visando a transmissão dos valores do Evangelho³¹. Ou seja, a maximização da utilidade nessas escolas pode, genuinamente, ser o aprendizado dos alunos, fazendo com que Teoria da Escolha Racional seja levada em um direcionamento em que maximizar o lucro não é uma escolha racional.

Contudo, mesmo nas escolas que não possuem motivação financeira, a inflação de notas persiste. Deste modo, podem existir outros fatores que

³⁰ A religiosidade extrínseca é quando o indivíduo busca a religiosidade para benefício próprio (DORDUNU; OWUSU; SIMPSON, 2020). Já a religiosidade intrínseca é parte do indivíduo e influencia suas ações (WEAVER; AGLE, 2002)

³¹ *c.f* CONGREGAÇÃO PARA A EDUCAÇÃO CATÓLICA (2022) - https://www.vatican.va/roman_curia/congregations/ccatheduc/documents/rc_con_ccatheduc_do_c_20220125_istruzione-identita-scuola-cattolica_po.html#_Toc99011511

contribuem para a prática. Uma das explicações pode estar ligada à ética do cuidado (FINEFTER-ROSENBLUH; LEVINSON, 2015), na qual professores inflacionam as notas dos alunos visando não os prejudicar futuramente. No caso português, isso se torna ainda mais relevante, visto que as notas do ensino secundário são usadas como critério de acesso ao ensino superior. E isso pode se aplicar não somente a professores intrinsecamente religiosos, mas a todos. Nessa direção, os professores de escolas públicas podem estar adotando a inflação de notas para que seus alunos se motivem e não fiquem prejudicados em relação aos alunos das escolas privadas no processo seletivo de acesso ao ensino superior (KIZILTAŞ, 2024).

Além disso, em muitas instituições portuguesas, a avaliação docente por parte dos alunos faz parte dos critérios de promoção, fazendo com que professores distribuam mais notas para serem melhor avaliados (ELLIS *et al.*, 2003; CHOWDHURY, 2018; BEREZVAI; LUKÁTS; MOLONTAY, 2020; GRIFFITH; SOVERO, 2021; GRIFFITH; SOVERO, 2021; MAAMARI; NACCACHE, 2022; MADANI; GHASEMPOUR, 2022). Nesse sentido, Stroebe (2020) mostra que os alunos usam a avaliação docente para moldar o comportamento dos professores. Deste modo, à luz da Teoria da Escolha racional, para que seus ganhos sejam maximizados, os professores adotam o comportamento de distribuir nota aos alunos para minimizar possíveis confrontos.

Outro motivo para a persistência da inflação de notas em todas as dependências administrativas pode estar relacionado ao sexo dos professores. A literatura aponta que as professoras possuem mais dificuldades para ascender na carreira docente do que os professores, fazendo com que pratiquem a inflação de notas para serem melhor avaliadas pelos alunos e, assim, receberem maiores chances de promoção. (JEWELL; MCPHERSON, 2012; GRIFFITH; SOVERO, 2021; CHENG; KONG, 2023). Segundo dados da Direção-Geral de Estatísticas da Educação e Ciência (DGEEC), em Portugal, o corpo docente do ensino secundário, no período da amostragem deste estudo, era formado, em média, por 70% de professoras. Além disso, Cheng e Kong (2023) mostram que as meninas são mais favorecidas pela inflação de notas no ensino secundário, lógica que se inverte no superior (KOLEVZON, 1981).

Contudo, os resultados encontrados apontam um favorecimento para as meninas somente na disciplina de matemática, em português, os meninos são mais favorecidos pela prática da inflação de notas. Esses achados contrariam os resultados de Robinson-Cimpian *et al.* (2014) que apontaram que os meninos são vistos como melhores em matemática do que as meninas e por isso recebem mais notas em desempenhos similares. Vale ressaltar que a literatura não aponta para qualquer diferença cognitiva entre meninos e meninas. Para mais, os resultados também mostram que quanto mais velho for o aluno, mais ele é favorecido pela inflação de notas. Este fenômeno pode estar ligado à ética do cuidado, como são alunos que já estão “atrasados” em sua vida acadêmica, é possível que os professores inflacionem suas notas para que consigam a aprovação. Outra possível explicação pode ser a maturidade do aluno ou a possibilidade de ser um aluno repetente que já tenha visto aquele conteúdo (PEREIRA; REIS, 2014)

Para as escolas públicas a inflação de notas pode ocorrer por motivos relacionados aos professores. Além das avaliações, os professores podem estar praticando a inflação de notas visando reter alunos com menores capacidades acadêmicas (BAIRD; CARTER; ROOS, 2019), visto que um dos objetivos da escola pública é manter o aluno. Como são escolas que não possuem motivação financeira, a ética do cuidado também pode ser uma das motivações da prática de inflação de notas, visto que são alunos de condições sociais mais vulneráveis. Além disso, há também pressão dos administradores públicos para que as escolas públicas inflacionem as notas, pois assim, passará a sensação de que a educação está melhorando e evitará cobranças públicas (FINEFTER-ROSENBLUH; LEVINSON, 2015; CORREIA, 2024).

Por fim, os resultados mostram que em anos eleitorais a inflação de notas tende a diminuir, mostrando uma facilitação nas provas nacionais. Este resultado só não é verdade para o ano de 2011, em que há um aumento na inflação de notas, indicando que as provas nacionais estavam mais difíceis. Todavia, em 2011, as eleições ocorreram antes das provas nacionais, fazendo com que o incentivo eleitoral não tivesse influência alguma. Tais resultados corroboram os achados de Pereira dos Santos, Tavares e Mesquita (2021), que apontaram a

existência de um viés eleitoral para deixar a provas mais fáceis, visando atrair mais votos.

O viés eleitoral pode estar relacionado aos achados de Masser e Strobl (2024) e Barrows (2015) que sustentam que um bom desempenho escolar é capaz de influenciar positivamente os votos recebidos. Para mais, a educação pode ser usada como ferramenta política, como apontaram Gil, Beltrán e Redondo (2016), em um estudo feito na Espanha, e Santos, Tavares e Mesquita (2021), em um estudo feito em Portugal. Para os políticos, em um período eleitoral, mostrar resultados positivos na educação pode ser uma ferramenta de campanha. Deste modo, a inflação de notas ocorre na tentativa de mascarar possíveis problemas com notas altas nos exames nacionais, na expectativa de que isso sinalize uma melhora na educação. Com base na Teoria da Escolha Racional, políticos vão maximizar sua utilidade, que nesse caso é receber o maior número de votos possíveis, através da educação, fazendo com que a inflação de notas seja usada como uma ferramenta eleitoral.

A inflação de notas se apresenta como um fenômeno oriundo de várias fontes e por motivações diversas. Contudo, é um fenômeno prejudicial para os estudantes e para a sociedade como um todo. Algumas ações podem ser tomadas para minimizar a prática da inflação de notas. Por exemplo, as instituições podem criar mecanismos de promoção e/ou demissão que não envolvam diretamente a avaliação dos alunos. Além disso, promover a equidade entre professores e professoras, para que não haja incentivos baseados na discriminação de gênero. As universidades podem criar processos de seleção que não envolva a nota obtida no secundário. Por fim, as provas nacionais poderiam ser elaboradas com base na Teoria da Resposta ao Item, visando que proficiência necessária em cada prova não se alterasse de um ano para o outro. Embora seja em fenômeno generalizado e alguns dos incentivos para sua ocorrência não possam ser retirados, é possível amenizar e/ou excluir outros.

3.6 MUDANÇA DE DEPENDÊNCIA ADMINISTRATIVA

A literatura apresentada neste estudo mostra que escolas públicas e privadas possuem diferentes incentivos para a prática de inflacionar as notas. Diante disso, este estudo se propôs a estudar o impacto de mudança administrativa na inflação de notas. O Governo de Portugal, no ano de 2018, por

decisão unilateral, retirou do programa 20 escolas, fazendo com que elas deixassem de atuar como públicas e voltassem a atuar como privadas, criando um experimento que permite verificar se a mudança nos incentivos de fato altera o comportamento das escolas em relação à inflação de notas. Para isso, foi incluída, nos modelos 3.1 e 3.2, a variável “Tratamento”, que apresenta os resultados das escolas privadas que deixaram de ser financiadas pelo governo após o fim contrato, ou seja, as escolas que deixaram de receber o tratamento.

Os dois modelos mostram que a escola que foi retirada da política de financiamento teve um aumento da inflação de notas na disciplina de matemática, sendo de 3,042 no modelo 3.1 e de 1,850 no modelo 3.2. O fenômeno acontece com maior intensidade na disciplina de matemática, o que pode indicar uma intenção da escola em beneficiar seus alunos, uma vez que os estudantes portugueses, em média, possuem maiores dificuldades com a disciplina de matemática (NOGUEIRA, 2010). Por sua vez, na disciplina de língua portuguesa os modelos mostraram um impacto negativo ou nulo sobre a inflação de notas. Outra possível explicação pode estar no fato de que a prova de língua portuguesa é obrigatória para todos os estudantes, enquanto a prova de matemática é obrigatória somente para os alunos que vão prestar vestibular de cursos mais ligados à exatas. Isso pode fazer com que as escolas tendam a facilitar as provas de matemática, uma vez que não são todos os estudantes que prestaram vestibulares que cobraram essa disciplina.

Para uma maior robustez aos resultados obtidos nos modelos anteriores sobre a mudança de comportamento das escolas que foram retiradas da política de financiamento, foi estimado um modelo de diferenças-em-diferenças, com o uso do método de pareamento exato, para a construção dos grupos de controle e de tratamento. A tabela com os resultados do balanceamento é apresentada no Apêndice III.

As bases de Português e Matemática foram filtradas somente para os anos de 2017 (pré-tratamento) e 2018 (pós-tratamento). O pareamento dos alunos foi realizado com as seguintes variáveis: idade e sexo dos alunos, e carro, crime e população dos concelhos em que eles estudavam. O pareamento foi eficiente ao eliminar as diferenças de médias entre os grupos, de modo que

ficassem balanceados, tanto na disciplina de matemática, quanto na disciplina de língua portuguesa.

A base da disciplina de Português, após o pareamento, ficou com 13320 observações, sendo 700 do grupo de controle. Para a disciplina de Matemática, após o pareamento, a base passou a ter 9137 observações, sendo 587 no grupo de controle. Em ambos os casos, o pareamento reduziu para zero a distância entre os grupos de controle e tratamento. As médias dos grupos e os resultados dos testes de balanceamento estão no Apêndice III. O modelo de diferenças-em-diferenças estimado foi um 2x2 clássico (CUNNINGHAM, 2021) e os resultados estão na Tabela 3.3.

Tabela 3.3 - Resultados *Diff-in-Diff*

Disciplina	Coeficientes	Desvio-Padrão	P-valor
Português	Intercepto	24,6654	0.000***
	Tratamento	-1,8905	0.288
Matemática	Intercepto	27,9770	0.000***
	Tratamento	5,1476	0.03**

Legenda: '***' 1%; '**' 5%; '*' 10%

Fonte: Elaborado pelos autores

Os resultados obtidos são, na disciplina de matemática, consistentes com os encontrados nos modelos 3.1 e 3.2, indicando um aumento de 5,14 pontos nas notas dos alunos (que variam de 0 até 200), após a escola passar a atuar como privada, ou seja, inserida na lógica de mercado. Na disciplina de língua portuguesa os resultados obtidos no modelo de diferenças-em-diferenças convergem com os resultados dos modelos 3.2. O modelo 3.1 mostra um impacto negativo de 2,156 e o modelo 3.2 aponta para um impacto não significativo. O modelo de diferenças-em-diferenças o resultado aponta para um impacto negativo não significativo de 1,89 pontos na inflação de notas.

Os resultados podem indicar que a partir do momento em que a escola passa a se preocupar com a retenção e captação dos alunos, com o ingresso dos alunos no ensino superior e passa a sofrer pressão dos pais, que agora são pagantes, o comportamento em relação as avaliações tende a mudar, favorecendo a prática da inflação de notas. A relação passa a ser comercial, acrescentando mais um fator que favorece tal prática. Uma possível explicação para isso pode ser uma intenção da escola em sinalizar um aumento na aprendizagem do aluno para satisfazer as pressões dos pais e, deste modo, conseguir reter a maior quantidade possível de estudantes. Como os estudantes

portugueses possuem mais dificuldades com matemática (NOGUEIRA, 2010), é possível que nessa disciplina a prática da inflação de notas tenha sido mais incentivada.

Por fim, ressalta-se ainda que é possível que os teste escolares e o nacional estejam avaliando competências e habilidade diferentes. Ou seja, nos testes locais, as escolas e professores podem estar cobrando outras competências, fazendo com que o desempenho caia no teste nacional em virtude da diferença dos sistemas avaliativos em si.

Vale ressaltar que foram utilizadas somente alunos das escolas privadas que foram retiradas da política de financiamento no início do ano letivo, fazendo com que esses resultados refletissem apenas um ano de mudança na dependência administrativa. É possível que com mais períodos, o aumento dessa prática se torne mais evidente.

3.7 CONCLUSÃO

Este artigo teve como objetivo analisar as motivações para a inflação de notas, investigando como diferentes dependências administrativas e períodos eleitorais influenciam essa prática nas escolas secundárias. Com uma amostra de estudantes portugueses, os achados mostram que há diferença na prática da inflação de notas entre as escolas de diferentes dependências administrativas. Os achados também apontam que ao mudar de dependência administrativa, os incentivos de uma escola também mudam, e a prática de inflacionar as notas é afetada, sendo assim, uma evidência de que diferentes motivações impactam nessa prática. A Teoria da Escolha Racional foi utilizada de base para fornecer explicações de como escolas de diferentes dependências administrativas maximizam suas utilidades, uma vez que recebem diferentes incentivos e motivações. Entretanto, os achados também mostram que a prática de inflação de notas parece ter se espalhado por todo sistema de ensino secundário português, uma vez que todas as dependências administrativas apresentam níveis positivos de inflação de notas, divergindo apenas na intensidade com que adotam tal prática.

Também foram analisadas as possíveis motivações de professores e políticos para que a prática aconteça. Com a inclusão das escolas religiosas, que

pertencem à Igreja Católica, novas motivações para a prática de inflação de notas foram abordadas, como a religiosidade intrínseca, tema que, até o momento, não havia sido abordado na literatura sobre a inflação de notas. A ética do cuidado também surge como uma possível explicação para a prática da inflação de notas aqui observada nos contextos das escolas religiosas e públicas. Por fim, foi também abordada a motivação política, tanto como explicação para o elevado nível de inflação de notas nas escolas públicas, como em períodos eleitorais. Os achados mostraram que em anos eleitorais, nos quais a eleição ocorreu depois das provas, a inflação de notas reduziu, indicando uma prova nacional mais fácil. Já em anos eleitorais em que a votação ocorreu antes das provas, há um aumento na inflação de notas, indicando uma prova nacional mais difícil. Nesta direção, Correia (2024) mostrou que os professores portugueses são pressionados pelos gestores da educação para que haja boas notas, o que também pode indicar uma pressão política fora dos períodos eleitorais.

Este estudo contribui com a literatura ao analisar os diferentes incentivos das escolas com base em sua dependência administrativa, visto que o incentivo financeiro e mercadológico muda de uma dependência para outra. Contribui também ao mostrar como uma mudança na dependência administrativa altera a intensidade da prática de inflacionar as notas, trazendo possíveis mudanças de motivações como explicação. Deste modo, outras razões para a persistência da inflação de notas foram fornecidas com base na Teoria da Escolha Racional. Contribui ainda ao explorar possíveis motivações para a prática de inflação de notas nas escolas religiosas, uma dependência administrativa que até o momento não havia sido abordada na literatura sobre o tema. Este estudo também abordou as motivações com base nas características dos alunos, como sexo e idade. Os resultados sobre o impacto do sexo dos alunos na inflação de notas diferem da literatura existente sobre o assunto. Já para a idade, os resultados apontam que alunos mais velhos tendem a receber mais notas de seus professores, que podem fazer isso com base na ética do cuidado, visando minimizar os prejuízos para o aluno em questão. Por fim, contribui também ao fornecer novas evidências em contextos além dos EUA.

Uma limitação deste estudo está em não ter uma pesquisa de campo com os professores para entender melhor suas motivações. Além disso, a restrição nos dados de controle fez com que o segundo modelo, embora mais completo, tivesse seu recorte temporal reduzido. Estudos futuros podem explorar a diferença de incentivos em outras dependências administrativas, como escolas militares e/ou filantrópicas. Outra sugestão é realizar uma pesquisa qualitativa com os professores, para que se possa identificar possíveis novas motivações para inflação de notas e comparar as motivações dos professores nas diversas dependências administrativas.

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APÊNDICE III

Tabela - Resultados do PSM

Língua Portuguesa				
Variável	Amostra	Média		Balanceado
		Controle	Tratados	
População	Sem pareamento	170272,51	222437,86	Sim
	Com Pareamento	222437,86		
Idade	Sem pareamento	17,23	17,07	Sim
	Com Pareamento	17,07		
Crimes	Sem pareamento	32,81	33,29	Sim
	Com Pareamento	33,32		
Carro	Sem pareamento	25,09	27,86	Sim
	Com Pareamento	27,86		
Sexo Feminino	Sem pareamento	0,55	0,54	Sim
	Com Pareamento	0,54		
Matemática				
População	Sem pareamento	169023,81	233762,37	Sim
	Com Pareamento	233762,99		
Idade	Sem pareamento	17,19	17,04	Sim
	Com Pareamento	17,04		
Crimes	Sem pareamento	38,41	38,45	Sim
	Com Pareamento	38,45		
Carro	Sem pareamento	27,15	28,48	Sim
	Com Pareamento	28,47		
Sexo Feminino	Sem pareamento	0,50	0,52	Sim
	Com Pareamento	0,52		

Fonte: Elaborado pelos autores

CONSIDERAÇÕES FINAIS

Esta tese teve dois focos principais, a economia da educação e a avaliação de impacto de políticas públicas educacionais. A teoria do capital humano foi utilizada como base para nortear o entendimento de educação adotado neste trabalho, ou seja, a visão da educação como um investimento que gerará retornos futuros, para o indivíduo e para a sociedade como um todo.

Os dois primeiros ensaios focaram na educação em tempo integral, motivados pela falta de consenso existente na literatura sobre sua eficácia na aprendizagem. Buscou-se analisar se o desenho da política poderia impactar nos resultados da aprendizagem. Além disso, desenvolvimentos metodológicos recentes (CALLAWAY; SANT'ANNA, 2021) trouxeram novas ferramentas mais adequadas para avaliar o programa Mais Educação. A escolha dos programas se deu pela sua abrangência nacional e por terem sido programas em que a diferença entre ambos foi o desenho da política. Na verdade, como já apontado neste trabalho, o Novo Mais Educação é uma atualização do Mais Educação, com um novo desenho e com novas metas. Nossos resultados sugerem que a mudança no desenho política, do Mais Educação para o Novo Mais Educação, foi um dos fatores que contribuiu para um melhor desempenho na aprendizagem dos alunos, ressaltando que estamos considerando como aprendizagem as notas obtidas no SAEB. Mais estudos nesse sentido são necessários, mas o objetivo de propor uma nova questão sobre o debate da educação integral foi alcançado. Além disso, com a nova metodologia, nossos resultados sobre o impacto do Mais Educação na aprendizagem divergem dos estudos feitos anteriormente e foi, até então, o primeiro estudo a estimar o impacto total do programa.

O último ensaio abordou a temática da inflação de notas. A teoria da escolha racional foi utilizada como base para as explicações das motivações das escolas, professores e políticos. Por ser um fenômeno prejudicial para educação e para a sociedade, pois gera falsas sinalizações para as universidades, mercado e sociedade em geral, entender as causas é fundamental para que se consiga combater esse fenômeno. Embora já haja uma literatura sólida sobre as motivações das escolas privadas, públicas, professores e políticos, a literatura não abordou, até o momento, escolas religiosas. Além disso, a política do

governo de Portugal de financiamento de escolas privadas para atuarem como públicas, propiciou, ao retirarem da política 20 escolas de maneira unilateral, uma possibilidade para estudar se a influência da dependência administrativa na prática de inflação de notas. Este cenário permitiu avaliar com maior rigor a motivação nas diferentes dependências administrativas. Os resultados apontam que diferentes dependências administrativas praticam a inflação de notas em níveis diferentes. Contudo, o fenômeno pode ser observado de forma generalizada entre as escolas portuguesas. O incentivo mercadológico parece influenciar claramente na inflação por notas, o que pode estar sendo acentuado dada a relação comercial estabelecida entre escolas, alunos e os pais pagantes. Os resultados sugerem que a mudança de dependência administrativa das escolas que foram retiradas da política de financiamento influenciou no aumento da prática da inflação de notas, em especial na disciplina de matemática. Embora o resultado do diferenças-em-diferenças não tenha sido significativo em português, a explicação pode estar no curto período analisado, dado que, em função da pandemia, os dados de 2020 podem apresentar algumas particularidades que causem viés nos resultados e não foram utilizados. Contudo, em matemática o resultado é positivo e significativo, corroborando a literatura sobre o assunto e indo de acordo com o que se esperava com base na teoria da escolha racional. Por fim, é possível que a inflação de notas aconteça com maior ênfase nas disciplinas em que os alunos possuem maior dificuldade, como é o caso da matemática em Portugal (NOGUEIRA, 2010).

O impacto político também foi discutido neste ensaio. Os achados apontam que em anos eleitorais, a inflação de notas reduz quando as eleições ocorrem depois das provas e, quando ocorrem antes, a inflação de notas aumenta, sugerindo que há um viés político nas provas nacionais do ensino secundário de Portugal. Por fim, algumas sugestões para reduzir a inflação de notas foram apresentadas.

Esta tese buscou trazer novas perspectivas sobre os temas abordados, trazendo novos elementos para a literatura da educação em tempo integral e da inflação de notas. Estudos futuros podem aprofundar mais na análise das hipóteses propostas. Por exemplo, estudar de forma comparativa diferentes políticas de educação integral, visando estabelecer mais precisamente como são

desenhadas as políticas que geraram os melhores resultados, com a finalidade de estabelecer se há ou não algum padrão.

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