RESULTS REPORT
Assessment of the Program's Impact on School Management in the States of Espírito Santo and Pará

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RESUMO

Há uma série de programas voltados para o desenvolvimento profissional de diretores de escolas, sob a hipótese de que a gestão escolar tem um grande impacto no funcionamento da escola e na aprendizagem dos alunos. No entanto, pouco se sabe sobre quais práticas gerenciais devem ser desenvolvidas nos diretores das escolas para melhorar o aprendizado dos alunos. Neste artigo, propomos e empregamos um instrumento, projetado para medir treze práticas gerenciais. Investigamos o impacto de um programa de formação de gestores (Programa Jovem de Futuro) com efeitos comprovados na proficiência dos alunos. Para isso, exploramos o desenho experimental do programa no Estado do Espírito Santo e no Pará, Brasil, para identificar o impacto do programa nas práticas de gestão escolar. Nossos resultados mostram um efeito significativo do programa nas práticas de gestão, especificamente naquelas relacionadas à avaliação dos profissionais das escola e na elaboração de metas das escolas.

PALAVRAS-CHAVE: Economia da educação, Gestão escolar, Educação pública, Política educacional, Jovem de Futuro

ABSTRACT

There are a number of programs focused on the professional development of school principals under the assumption that school management has a major impact on school functioning and students' learning. However, little is known about which managerial practices school principals should develop to enhance student learning. In this article, we propose and employ a survey instrument designed to measure thirteen managerial practices. We investigate the impact of a specific administrator training program (Program Jovem de Futuro) with proven effects on students' proficiency. We explore the experimental design of the program in the states of Espírito Santo and Pará, Brazil, to identify the Program's impact on school management practices. Our results show the Program has significant effect on management practices, specifically those related to evaluating staff and developing the schools' goals.

KEYWORDS: Economics of education; School management; Public education, Education policy; Jovem de Futuro

Summary

1. Introduction

The role of school management in school functioning and, ultimately, in student learning is an issue that has been increasingly studied by researchers and educators. With this in mind, this article aims to measure the impact of Jovem de Futuro, a program created in 2008 by Instituto Unibanco and implemented in public secondary schools in several Brazilian states, on the quality of school management. The Program offers theoretical and practical training to school administrators and to supervisors of state Education Departments, and its aim is to provide support for the schools' management. Paes de Barros et al. (2018) have given robust evidence that the Program has a positive and relevant impact on the average performance of students in standardized Portuguese Language and Mathematics tests. However, we could not ascertain if this effect is due to improvements in the practices adopted by principals of the schools benefited by the training activities offered by Jovem de Futuro.

Measuring the quality of a school's management is not a simple task. Several instruments have been developed with this goal, including the one by Bloom et al. (2015). This instrument was used to measure the quality of management in more than 18,000 schools in fifteen countries, and revealed that good managerial practices are associated with better student performance.

Although it has shown itself capable of capturing variations between school management practices, the instrument was developed to do this in countries with very different institutional contexts. Thus, it might not be able to identify much variation between practices of schools operating within the same institutional context. Because of this, we decided to develop an instrument capable of capturing variations in school management practices in public state schools.

Our instrument is based on the one by Bloom et al. (2015), with a several adaptations. The first round of adaptations gave rise to an instrument that was applied in the state of Espírito Santo in 2015.[1] Numerous statistical exercises validated it and showed that the captured measure correlates not only with learning data but also with other instruments that capture, to a certain degree, managerial practices within a school.

However, it was found that this instrument was not able to capture variations in some relevant practices. More than that, the study by Madeira and Meloni (2018) found no evidence that the Program Jovem de Futuro impacts quality of school management. Since we have documented confirmation of the Program's positive impact on learning and of the importance of good school management, it is possible that the lack of evidence derives, at least in part, from the lack of statistical power to identify it.

As a result, further adaptations were made to the instrument, including a reduction of the number of managerial practices evaluated, a less suggestive roadmap of questions made to principals and, mainly, a more granular rubric system to better capture the differences in managerial practices and increase the power of statistical exercises.

This article is structured as follows: Section 2 discusses the conceptual framework of school management; Section 3 describes both the data used and the development of the instrument to measure management quality; Section 4 describes the methodological aspects; Section 5 displays the results obtained; and Section 6 offers final considerations on outcomes.

[1] Results can be found in Madeira & Meloni (2018).

2. Conceptual framework of school management

2.1 School management *vs.* business management

The idea that management is the ability to articulate, mobilize and allocate physical and human resources to achieve a certain goal may suggest there are no significant differences between managing a private company and managing a public school. After all, almost every institution, public or private, has goals and some type of physical and human resources at its disposal. However, a deeper reflection on the subject reveals that the management challenges of private companies are, in fact, very different from those of public schools. This difference is due, fundamentally, to two essential elements for the practice of management: the aspired goals and the restrictions on managerial instruments.

In private companies, the goals pursued by a manager, or by the management team, are those established by the company's shareholders – typically, the pursuit of medium- or long-term profitability, even if other shorter-term intervening goals may exist, such as gaining market share or innovating products, with no immediate effect on profits. With regard to the availability of instruments, private companies are limited by labor legislation and by the practices allowed by a legal framework that preserves competition in the markets where they operate. To achieve more durable goals in the contexts where companies normally operate, managers make pricing decisions that eventually exclude potential consumers, fire and promote employees to induce desired behaviors, and discard potential markets where costs might be greater than additional revenues.

School administrators, in turn, according to the mission socially assigned to public education, must aim to ensure their students' right to learning. Thus, the "shareholders" of public schools are the citizens, whose interests are

presented to school administrators by the body of laws that define society's commitment to public education. Given the meritorious nature of public education (i.e., the fact that it is a right), the school administrator, unlike the business manager, cannot decline to assist potential students achieve their goals, since the exclusion of students would go directly against that nature. Furthermore, school administrators are usually subject to restrictions on managerial instruments that are very different from those business managers must abide.

Considering the differences that exist between the challenges of school and corporate management, what is understood as a good practice in the business universe cannot be simply transposed to the school universe. The same goes for managerial skills; that is, it is not at all obvious that skills desirable in the business environment are also desirable in the school environment. Thus, the challenge of evaluating management practices and mapping the skills required for good school management demands a kind of reflection that takes into account the peculiarities of the universe of public education.

2.2 The Brazilian context and the Program Jovem de Futuro

In the context of Brazilian public education, some aspects that define the goals and scope of action of school administrators deserve special attention. With regard to the goals of school management, it could be argued that the administrator's main social commitment is defined by the system of targets of the Basic Education Development Index (Ideb), established by the Ministry of Education (MEC) in 2005. The system defines annual targets (until 2021) for municipal and state schools, which their administrators must pursue. Regarding the managerial instruments available to school administrators, Brazilian society opted for a public education model where all the offerings come directly from the State, imposing a series of restrictions on the possible

forms of school management. In particular, the rules that govern civil service emphasize lifetime employment and wage parity, so that school administrators cannot hire, promote or fire employees, nor use different compensation systems to induce desired behaviors.

Within this context, the Program Jovem de Futuro program trains and instrumentalizes administrators of state school systems to improve the quality of school management and contribute to the achievement of the learning commitments stipulated by the Ideb goals. The training initiatives of the Program operate on the three levels of state school systems – the Education Department itself, the Regional Offices and the schools – with greater emphasis on the latter. In addition to initial theoretical training, the schools' management teams (principals and pedagogical coordinators) also receive on-the-job training through the implementation of a version of the interactive and evidence-based management method known as PDCA (Plan, Do, Check, Act), duly adapted to the educational milieu. The Program's main challenge is to develop the skills required for a school administrator to successfully implement the proposed methodology. For the PDCA to work, it is essential that administrators develop an investigative and executive mindset, so as to be able to propose and validate hypotheses based on relevant information from their school, develop action plans and mobilize teams to execute them. It should be clear that all this must take place within the management possibilities allowed by the institutional context of Brazilian public schools. In other words, one of the essential pillars of the transformation proposal of the Jovem de Futuro program's actions is the ability to develop key managerial skills and reframe the administrators' mindset in an institutional context where the classic instruments of business management are nowhere to be found.

In order to test this transformation proposal in line with perspective outlined above, it is desirable to assess the Program's impact on the

administrators' managerial skills and mindset. However, directly measuring mindset and managerial skills is not a simple task. The practical feasibility of separately measuring managerial competences and practices is in itself questionable. Faced with this challenge, the option was made for a more practical course of action: to use an instrument capable of measuring managerial practices.

3. Data and the management instrument

3.1 The instrument

In this section, we discuss the data used in this article and present descriptive statistics for both treatment and control schools. We also describe the details of the instrument for measuring school management practices developed by our research.

As mentioned, this instrument is based on an adaptation of the one created by Bloom et al. (2015). Like the original, our adapted instrument assesses several managerial practices. This is done through scripted interviews, comprising a set of open questions, which help surveyors assign a score from 1 to 5 to the interviewed administrator in each of the practices/dimensions evaluated. To better rate the responses, the instrument provides a description of the expected answers for each score level, with examples and models, reducing the subjectivity of the answers. Thus, unlike traditional questionnaires, there are no closed answers for each question. On the contrary, interviewers assess the administrators' responses according to the instrument's guidelines.

The instrument has a double-blind and double-scoring format. As per the former, administrators are not informed that they will be evaluated and the interviewers have no information about the school whose administrator they are interviewing. As per the latter, a new assessment is performed by another interviewer based on a recording of the first interview, also without any information about the school being assessed. In other words, after the first telephone interview, a second assessment is carried out by a different, randomly assigned surveyor who listens to the first interview and reevaluates the administrator without knowing the score given by the first surveyor.

The first adaptation of the instrument, used in Madeira and Meloni (2015), comprised seventeen dimensions/practices, with scores ranging from 1 to 3. Based on this first adaptation, as mentioned, we developed a new one in which the number of assessed practices was reduced from 17 to 13 by eliminating redundant dimensions. The script for the questions was also changed to make it less suggestive. The score scale used by interviewers to rate managerial practices became more granular, increasing from 3 to 5 levels. In addition, an attempt was also made to give less emphasis to normative or socially desirable aspects in the administrators' answers.

Table 1 shows how the instrument measures the 13 managerial practices.

Table 1 – Dimensions and their measurements

Practice	Measurement
1. School Political-Pedagogical Project/School planning	Identify how the PPP is developed and how it is communicated to the school
2. Pedagogical planning processes	Assess the quality of pedagogical planning processes
3. Personalization of teaching and learning	Identify the administrator's role in adopting pedagogical strategies to work on different levels of student learning
4. Use of data to analyze student flow	Assess how the school administrator deals with truancy, failing grades and school abandonment
5. Improvement of existing practices and pursuit of new teaching practices	Identify whether the administrator encourages the improvement and continuous search for new teaching practices in his/her school
6. Continuous improvement and management of consequences	Assess the problem-solving process adopted by the administrator
7. External evaluation process	Assess the use of external evaluation indicators
8. Internal evaluation process	Assess the internal student performance evaluation processes adopted by the school administrator
9. Goal setting	Determine whether the administration is focused on goals as well as the quality of this process
10. Definition of the roles of administrators and other leaders	Assess how the administrator identifies leaders and assigns responsibilities
11. Evaluation of school staff	Identify and qualify the existence of a performance evaluation system for school staff
12. Performance management and retention of good professionals	Identify management's attitude toward the performance of faculty and specialists (coordinator, vice-principial, supervisor etc.)
13. Creation of a distinctive school value	Assess whether the administrator is active in creating an identity for the school

3.2 The data

Data from the aforementioned instrument were collected between September and October 2017. The evaluation of the Program Jovem de Futuro in Espírito Santo began by defining a sample of 222 schools with at least ten enrolled secondary school students in 2015 – 69 schools in the northern region of the state, 92 in the Greater Vitória area and 60 in the south (one of them had no available score for 2014, so it was not possible to establish a baseline and pair it, and the school had to be discarded). Thus, the sample comprised 221 schools – 151 control and 70 treatment schools. Their pairing was done as follows: 59 clusters with three schools and 11 clusters with two were created, based on the predicted school performance evolution between 2014 and 2016. From each of these clusters, one school was randomly drawn to become the control school.

In Pará, the assessment was similarly designed, with the important caveat that 102 schools were left out. Thus, the assessment in that state comprised a total of 87 schools – 42 in the control group and 45 in the treatment group. The strata, almost entirely, were composed of one treatment and one control school, with the exception of three comprising two treatment and one control school. Table 2 summarizes the composition of the sample in the two states.

Table 2 – Stratification: Espírito Santo and Pará, assessment of the Program Jovem de Futuro

	Total	Treatment	Control
Participating schools – Pará	87	45	42
Participating schools – Espírito santo	221	151	70
Participating schools not assessed – Pará	102		

In addition to the information collected by applying the management quality instrument and the schools' status as participants or not participants of the Program Jovem de Futuro, we also used data on their performance in Portuguese Language and Mathematics state exams – the Pará Educational

Evaluation System (SisPAE) and the Espírito Santo Basic Education Assessment Program (Paebes) –, as well as information regarding school flow in 2017, condensed in IDEPA and IDEBES.[2] With these data, it is possible to investigate the existence of a correlation between the schools' academic performance and the quality of their management.

[2] Indexes similar to Ideb for state-wide rather than national assessments.

4. Methodology

Given the random nature of the implementation of the Program Jovem de Futuro, it is possible to infer the Program's impact by simply comparing the means of the control and treatment groups, according to the regression represented in Equation 1 below:

$$y_i = \beta_o + \beta_1 PJF_i + \varepsilon_i$$

where y_i is the variable of interest – in this case, the measure of the quality of school management obtained through the instrument we developed – and PJF_i is a binary variable equal to one (if the school participated in the Program) or zero (if it did not).

To increase the precision of the estimates, we chose to include fixed cluster effects. That is, for each cluster of schools, we defined a binary variable that takes the value 1 for schools that belong to it. The inclusion of this variable ensures that we are comparing the variable of interest y_i of schools in the same cluster. Since they were paired according to their predicted performance, we can thus ensure that we are comparing the variable of interest of similar schools in dimensions relevant to increases in school performance.

5. Results

5.1 Descriptive Statistics

In this section, we present descriptive statistics of the collected data for the states of Pará and Espírito Santo. Given the subjective characteristic of the instrument and the fact that the answers are evaluated by two independent interviewers at two different moments, we will work on our exercises with the means of the answers obtained by the two surveyors.

Table 3 shows the mean, the variance and other dispersion measures of each dimension of the educational management instrument for all schools that participated in the survey.

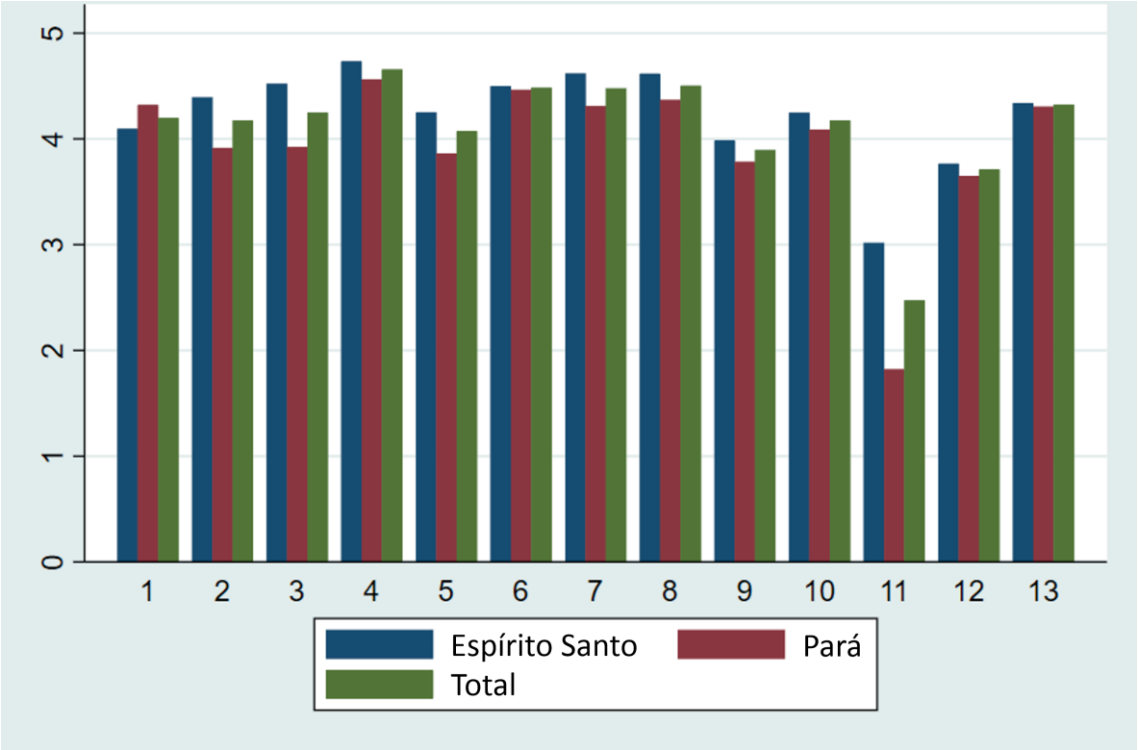
Table 3 – Descriptive statistics of the 13 practices (Pará and Espírito Santo)

Issue	Mean	Standard deviation	Min.	Max.
1. School Political-Pedagogical Project/School planning	4.19	0.94	1	5
2. Pedagogical planning processes	4.17	0.65	2	5
3. Personalization of teaching and learning	4.24	0.86	1	5
4. Use of data to analyze student flow	4.65	0.44	3	5
5. Improvement of existing practices and pursuit of new teaching practices	4.07	0.80	1	5
6. Continuous improvement and management of consequences	4.48	0.62	1	5
7. External evaluation process	4.47	0.89	1	5
8. Internal evaluation process	4.50	0.72	1	5
9. Goal setting	3.89	1.14	1	5
10. Definition of the roles of administrators and other leaders	4.17	0.58	2	5
11. Evaluation of school staff	2.47	1.5	1	5
12. Performance management and retention of good professionals	3.71	0.55	1.5	5
13. Creation of a distinctive school value	4.32	0.53	2	5

The first thing one notices is that, except for practice 11, which refers to how administrators assess school staff, all other means are higher than 3. Despite practice 11's low mean, its standard deviation is the highest among all practices, indicating that although on average schools perform poorly in this dimension, some are able to obtain good scores. This is particularly surprising because, in the context of Brazilian public schools, administrators have little autonomy to allocate teachers. Dimension 9 also draws attention for having a lower mean than the others. This dimension (which aims to identify the existence and effectiveness of goals for teachers, staff and/or students), not only deals with a very controversial topic in the eyes of educators and researchers in Brazil, who worry it might undermine the intrinsic motivation of school staff, but also involves a practice in which school administrators have little leeway.

Figure 1 shows the mean of the results of each of the 13 practices for the states of Pará and Espírito Santo. One can see that, on average, managerial practices obtained better scores in Espírito Santo, with the exception of the first one, related to the school's Political-Pedagogical Project. Our attention is also drawn to the very high disparity between states in practice 11, which ascertains how managers assess school staff.

Figure 1 – Mean scores in each practice (Pará and Espírito Santo)



Figures 2 and 3 show the means for the control and treatment groups for the states of Espírito Santo and Pará, respectively. Overall, the differences between the control and treatment groups are greater in Pará than in Espírito Santo, which can be explained in part by the fact that the means in the first state are smaller, making it easier for the Program to foster improvements in school management practices.

Figure 2 – Mean of scores in Espírito Santo (control × treatment)

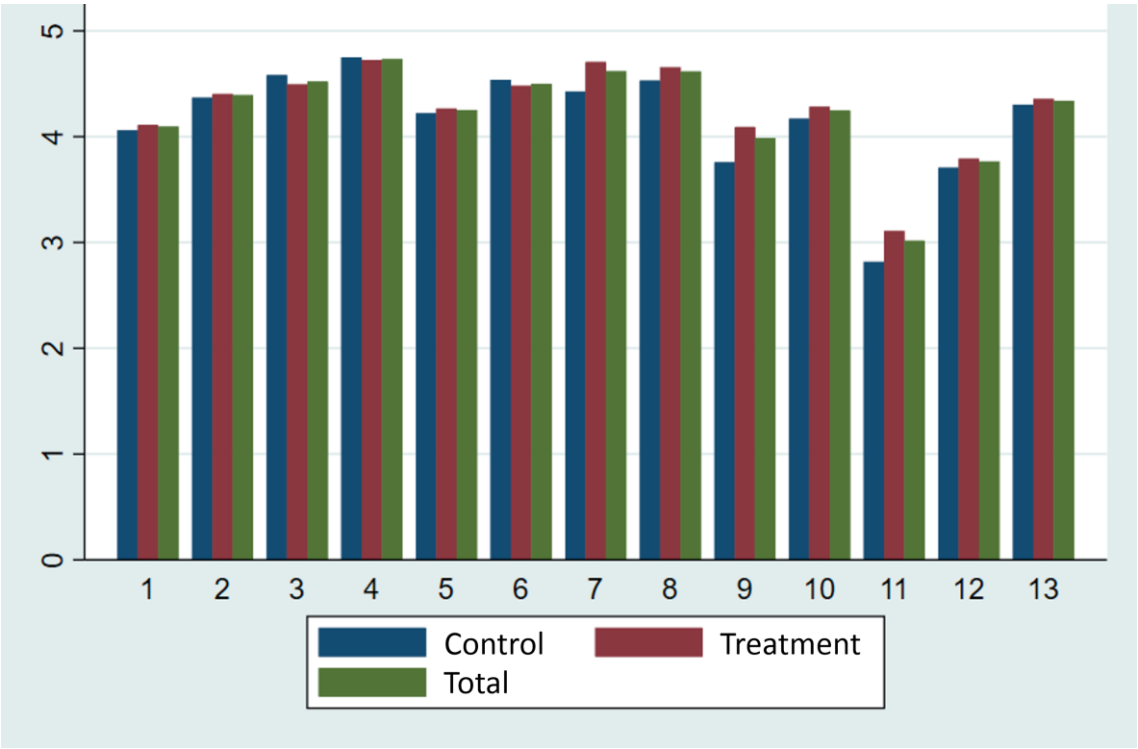


Figure 3 – Mean of scores in Pará (control × treatment)

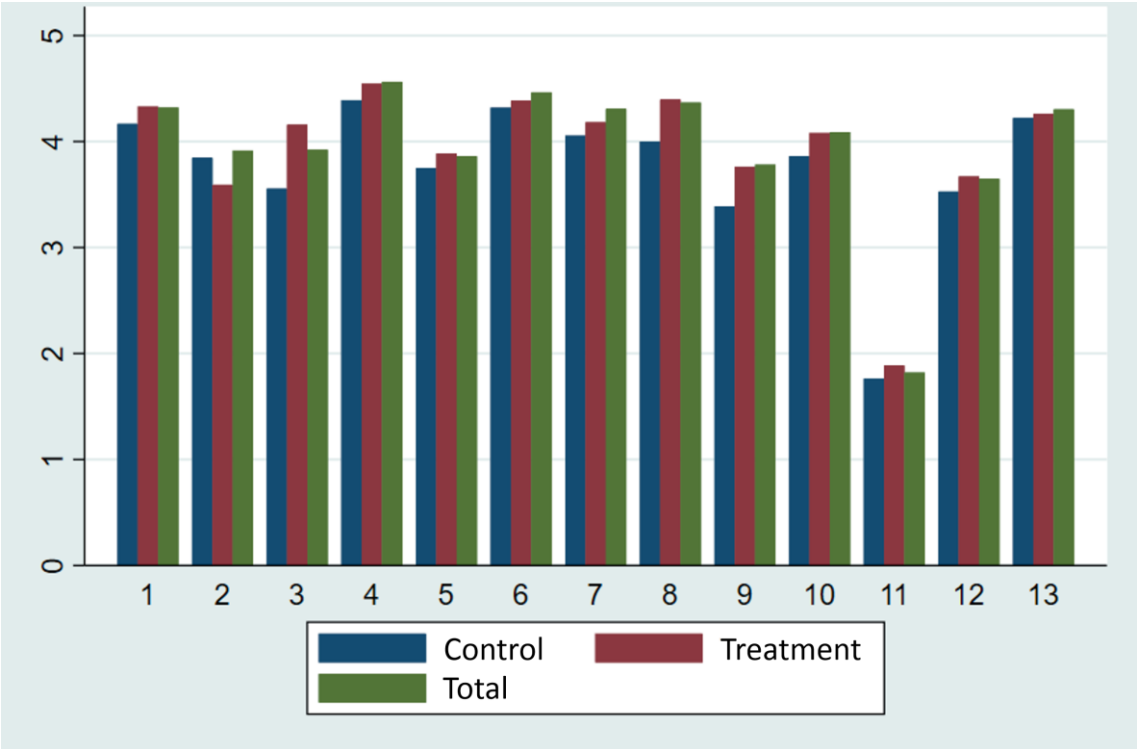


Table 4, in turn, in addition to the means reported in Figures 2 and 3 for the treatment and control groups, also shows the standard deviations. The means for schools of the treatment group are higher than the means for the control schools in every practice. Table 4 also shows that the treatment reduced standard deviation in nine of the 13 dimensions. This result suggests that, in addition changing the mean of the results at treatment schools, the Program changes the variance of the schools' scores.

Table 4 – Means and standard deviations (control × treatment)

Practice	Control		Treatment	
	Mean	Standard deviation	Mean	Standard deviation
Overall Mean	4.03	0.52	4.19	0.48
1. School Political-Pedagogical Project/School planning	4.10	0.96	4.16	0.97
2. Pedagogical planning processes	4.19	0.67	4.22	0.65
3. Personalization of teaching and learning	4.23	0.93	4.42	0.69
4. Use of data to analyze student flow	4.63	0.51	4.68	0.42
5. Improvement of existing practices and pursuit of new teaching practices	4.06	0.80	4.18	0.82
6. Continuous improvement and management of consequences	4.46	0.59	4.46	0.69
7. External evaluation process	4.30	1.02	4.59	0.80
8. Internal evaluation process	4.35	0.78	4.60	0.72
9. Goal setting	3.63	1.25	4.02	1.04
10. Definition of the roles of administrators and other leaders	4.06	0.59	4.24	0.59
11. Evaluation of school staff	2.45	1.58	2.83	1.61
12. Performance management and retention of good professionals	3.64	0.53	3.76	0.56
13. Creation of a distinctive school value	4.27	0.56	4.33	0.53

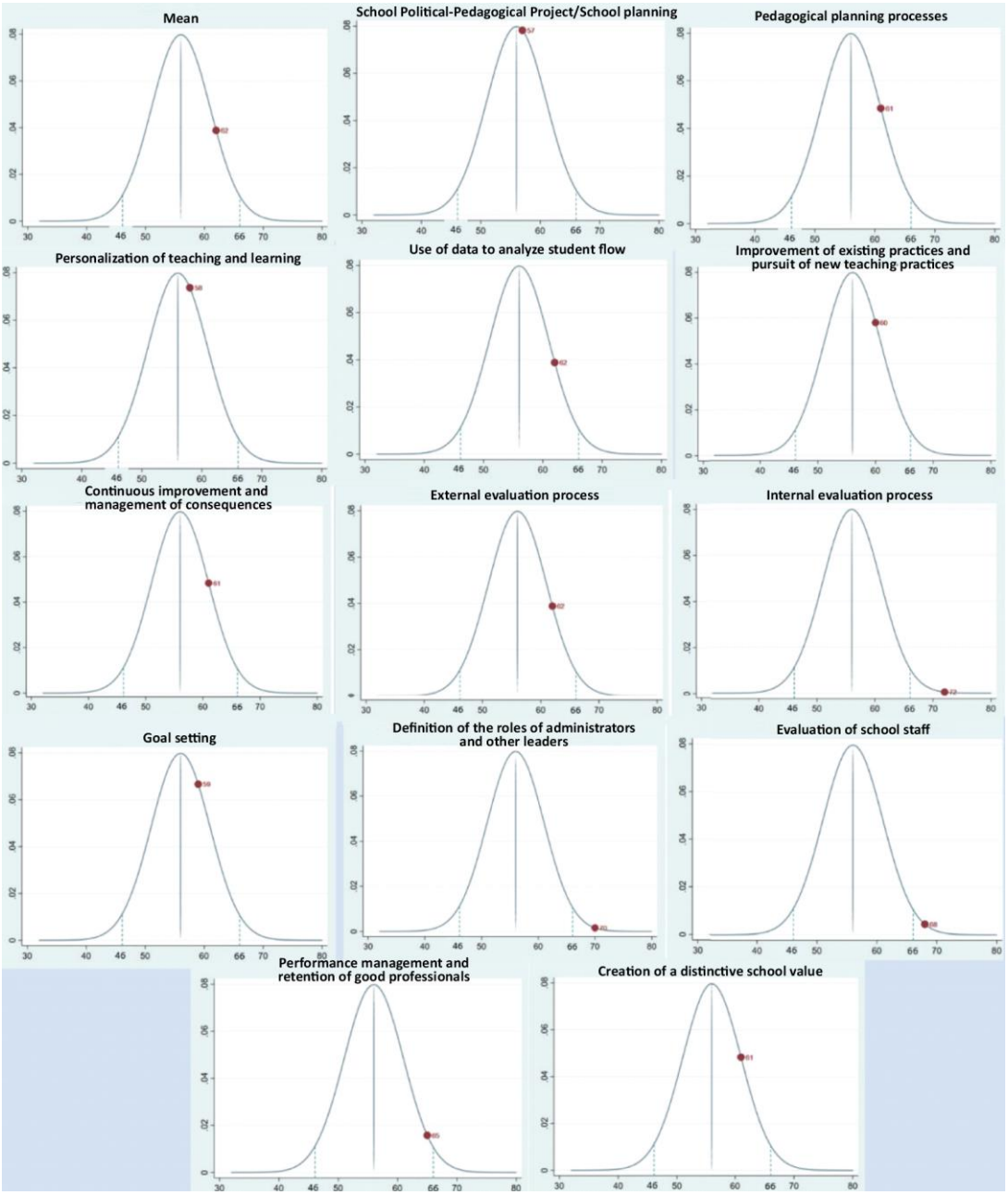
5.2 The Program's impact – Extensive margin

In this subsection, we begin to answer the main question of this article, namely, whether there is evidence of the Program's impact on school management

practices as measured by the instrument used in this research. Toward this end, we will initially investigate all 112 pairings, including schools in Pará and Espírito Santo, to calculate how often the schools in the treatment group performed better than those in the control group. Under a null impact hypothesis, we should expect that the treatment group would perform better than the control group approximately half the time. More specifically, considering the 112 pairings of treatment and control schools, and a confidence interval of 95%, we should expect treatment schools to outperform their non-treatment peers between 46 and 66 times. If we find results outside this range, and considering a 5% significance level, we can say that the difference between treatment and control schools did not result from a random process. In other words, the Program had an impact.

Figure 4 shows the number of times that treatment schools performed better than their non-treatment peers in both the overall average and in each of the 13 assessed practices.

Figure 4 – Program's impact on measures of school management practices



With regard to the overall mean, the treatment schools performed better than the control ones in 62 of the 112 pairings. However, there is a non-zero probability that this same result might have occurred even if the Program had no impact on managerial practices. When we look at individual practices, we see that in practice 8 (concerning internal evaluation) schools in the treatment group outperformed their peers in 72 of the 112 pairings, a highly improbable

result if the Program had no impact on this practice. Thus, in this instance we rejected the hypothesis that the Program has no impact on internal evaluation practices.

Likewise for practices 10 and 11, which respectively verify how the school evaluates its staff and how it deals with poor performance and retains good professionals: we also reject the hypothesis that the Program has no impact whatsoever.

It is clear, therefore, from this first analysis, that the program had an effect on some school management practices, most notably on those related to the management and evaluation of school staff.

5.3 The Program's impact – Intensive margin

The analysis above revealed that the Program has a statistically positive effect in three of the 13 managerial practices evaluated. With regard to the others, however, it was not possible to find a statistically significant impact. Yet, it is possible that the Program has heterogeneous effects on different schools, that is, it is possible that, regardless of the number of times treatment schools outperformed control schools, the magnitude of the effect in certain schools makes the result statistically significant when all schools are taken together.

With this in mind, we calculated Equation 1, described in the previous section, for each of the 13 practices and for the average score given to each school. The results for the schools' average scores are shown in Table 5. To make these results comparable with other interventions described in the literature, we chose to place the dependent variables according to the mean and the standard deviation of the control group.

Table 5 – Effect of the Program Jovem de Futuro on school management practices (Pará and Espírito Santo)

	1	2	3
	Pará and Espírito Santo	Pará	Espírito Santo
Program Jovem de Futuro	**0.42**	0,38	0,25
	(0.00)	(0.13)	(0.19)
Constant	0.00	-0,04	-0.05
	(0.95)	(0.84)	(0.76)
Observations	297	80	217

Note: Estimates in which the P-value (between parentheses) is lower than 10% are indicated in **bold type**.

Column 1 indicates the causal effect of the Program Jovem de Futuro on school management practices, measured here by the average score obtained in the school management instrument. The line below the estimated coefficient is the corresponding P-value. Table 5 shows that the Program has an effect of 0.42 standard deviations from the mean school management quality and that this result is statistically significant at any usual level of significance. Columns 2 and 3 show the estimated effect for the states of Pará and Espírito Santo, respectively. In both states, the results are not statistically different from zero. However, it should be emphasized that the result shown in column 1, where both states are taken together, is a strong indication that the lack of significance is due to the lack of statistical power.

We then analyzed whether there is evidence of the Program's impact on each dimension. The results in Table 6 show that, indeed, there is evidence of that in some dimensions. Column 1, again, indicates the effects of the Program by jointly analyzing the states of Pará and Espírito Santo. It can be seen that there is a significant impact on six of the 13 dimensions. More specifically, there is evidence of the Program's positive impact on practices related to the evaluation and management of school staff, that is, on practices 7 to 11: External evaluation process, Internal evaluation process, Goal setting, Definition of the

roles of administrators and other leaders, and Evaluation of school staff. There is also evidence of a positive impact on one of the pedagogical practices: Personalization of teaching and learning. As for the other pedagogical practices, although point estimates are positive, there is no evidence that the effect on them is statistically significant.

Table 6 – Impact of the Program Jovem de Futuro on 13 practices

Practice	1 Pará and Espírito Santo	2 Pará	3 Espírito Santo
1. School Political-Pedagogical Project/School planning	0.09 (0.57)	0.21 (0.33)	0.13 (0.50)
2. Pedagogical planning processes	0.22 (0.14)	-0.27 (0.21)	0.13 (0.54)
3. Personalization of teaching and learning	**0.37** (0.01)	**0.51** (0.04)	-0.22 (0.23)
4. Use of data to analyze student flow	0.16 (0.25)	0.28 (0.26)	-0.30 (0.19)
5. Improvement of existing practices and pursuit of new teaching practices	0.16 (0.28)	0.32 (0.19)	-0.11 (0.60)
6. Continuous improvement and management of consequences	-0.02 (0.89)	0.25 (0.31)	-0.32 (0.21)
7. External evaluation process	**0.46** (0.00)	0.13 (0.60)	**0.45** (0.00)
8. Internal evaluation process	**0.45** (0.00)	0.39 (0.11)	**0.30** (0.10)
9. Goal setting	**0.29** (0.04)	0.36 (0.12)	0.19 (0.31)
10. Definition of the roles of administrators and other leaders	**0.44** (0.00)	0.39 (0.14)	**0.39** (0.05)
11. Evaluation of school staff	**0.39** (0.00)	0.15 (0.60)	**0.39** (0.04)
12. Performance management and retention of good professionals	0.19 (0.21)	0.23 (0.43)	0.00 (1.00)
13. Creation of a distinctive school value	-0.03 (0.81)	0.08 (0.77)	-0.25 (0.18)

Note: Estimates in which the P-value (between parentheses) is lower than 10% are indicated in **bold type**.

Column 2 indicates the results for the state of Pará. Although point estimates are positive for all practices related to management and evaluation of

staff, as in column 1, the small number of observations means that none of the effects estimated for these practices is statistically different from zero. There is, however, evidence of positive and significant effects on the practice Personalization of teaching and learning for schools in Pará.

Column 3 show the results for the state of Espírito Santo. Again, point estimates are positive for all practices associated with managing and evaluating staff. In this case, despite the small number of observations, the result was statistically significant at 10% significance for three of the four practices, being non-significant only for Goal setting. Finally, with regard to pedagogical practices, that is, to practices 1 to 5, the estimated coefficient is negative for three of them, but is not statistically significant.

These results, taken together with the results presented earlier, indicate that there is heterogeneity in the response of schools. In the exercises that follow, we'll understand this pattern better.

It is not a trivial thing to interpret the uncovered effects from the point of view of school management practices. As an illustrative effect, we will exemplify this with some of the dimensions on which the impact is more robust, namely, dimensions 8, 10 and 11.

In dimension 8, where the goal is to analyze the processes of internal evaluation of student performance adopted by the school administrator, the mean of the schools was 4.35, which indicates, according to the grid, that:

> *There is a specific mechanism for internal evaluation that is carried out regularly. In addition, the school follows up on the data from external evaluations but does not seek to compare them with internal data nor prepare an action plan based on this reflection. The results of these assessments are widely, clearly and objectively disclosed to school staff to involve them in the improvement processes.*

An effect of 0.45 is the same as saying that 45% of treatment schools advanced one point in the grid in this dimension. Analyzing the grid, this would mean that about half of the treatment schools not only follow up on the data from external evaluations, but also try to compare them with internal data to develop an action plan.

In dimension 10, which assesses how the administrator identifies leaders and assigns responsibilities, the mean for the control group was 4.06. According to the grid, a score of 4 indicates that,

> *Principals understand well their role in the pedagogical and administrative management of the school, as well as their relationship with the students' learning outcome. The desired roles, responsibilities and competencies for teachers and other leaders are clearly defined. This definition is based on factors pertaining to the quality of pedagogical work and the well-being of everyone at school, as well as to the good organization and functioning of the institution.*

The effect of 0.44 can be interpreted similarly to the effect of dimension 8. The difference in dimension 5, where some of the schools in the treatment group begin to score, is that schools regularly revise roles and functions with school staff.

Finally, in dimension 11, which aims to identify and qualify the existence of a system for evaluating the performance of professionals and where schools obtained the lowest score, the control schools attained an average score of 2.35. According to the grid, this means that, on average, control schools,

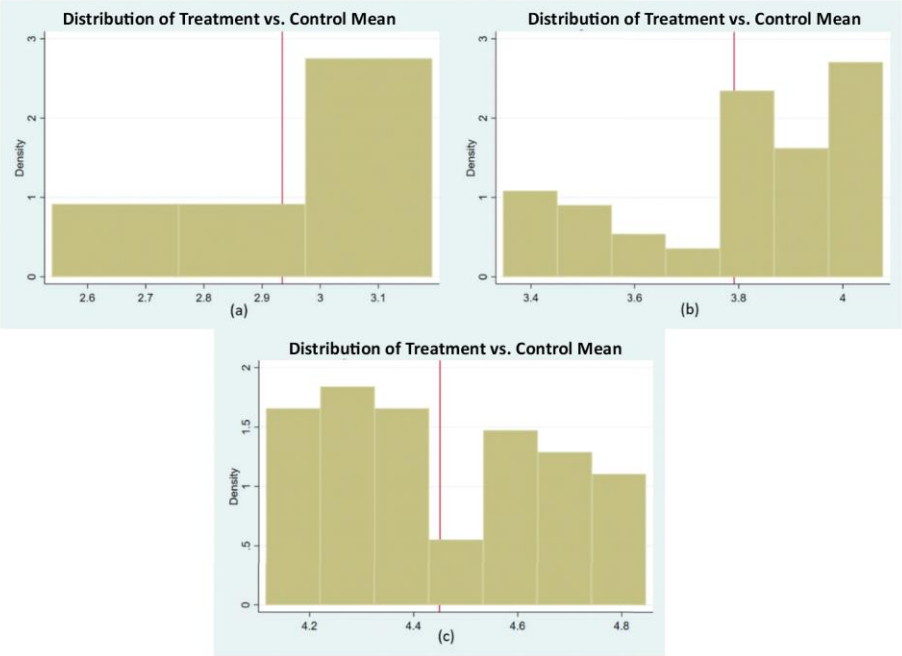
> *[have] an informal evaluation system or one developed by the administration office (or by the principal's office) that is applied only sporadically by the school and by the administrator. Some professionals are praised and recognized for their good performance, and general feedback is given without requiring work on the issues that need to be reviewed.*

The effect of 0.39, similar in magnitude to the one identified in the dimensions mentioned above, indicates that some of the schools advance on the grid from a score of around 2 to a score closer to 3. This means that in part of the schools in the treatment group "there is a formal evaluation system, […] periodically applied by the management team". In addition, unlike schools that score in dimension 2, "each professional is notified of their results".

5.4 The Program's impact – Heterogeneity between schools

The analyses above have shown that the Program's impact is heterogeneous. In this subsection, we will examine how different schools react to the Program. Figure 5 ranks the schools according to the scores of the control groups, divided into three groups: those paired with low-performing treatment schools, those paired with medium-performing treatment schools, and finally, those paired with high-performing schools. Subfigures 5a-5c depict the distribution of treatment school scores for each of these groups. One can see that treatment schools perform better than the average of the control group, especially those paired with medium- and low-performing schools. This indicates that the Program's impact is greater on schools that are at the bottom of the distribution, that is, on those that obtained a lower score before the onset of the Program. It should be mentioned that an alternative explanation for us not finding a relevant impact on treatment schools paired with high-performing control schools is that the instrument might be incapable of identifying management practices at the top of the distribution. In other words, it is possible that there are relevant differences in the management practices adopted by the treatment and the control schools in the high-performing group that were not captured by the instrument.

Figure 5 – Distribution of treatment for different levels of control management



5.5 The Program's impact – Heterogeneity between practices

Finally, to understand the heterogeneity of the Program's effect between different practices, we carried out a descriptive exercise to see how the Program's mean impact correlates with the observed impact on each of the 13 practices.

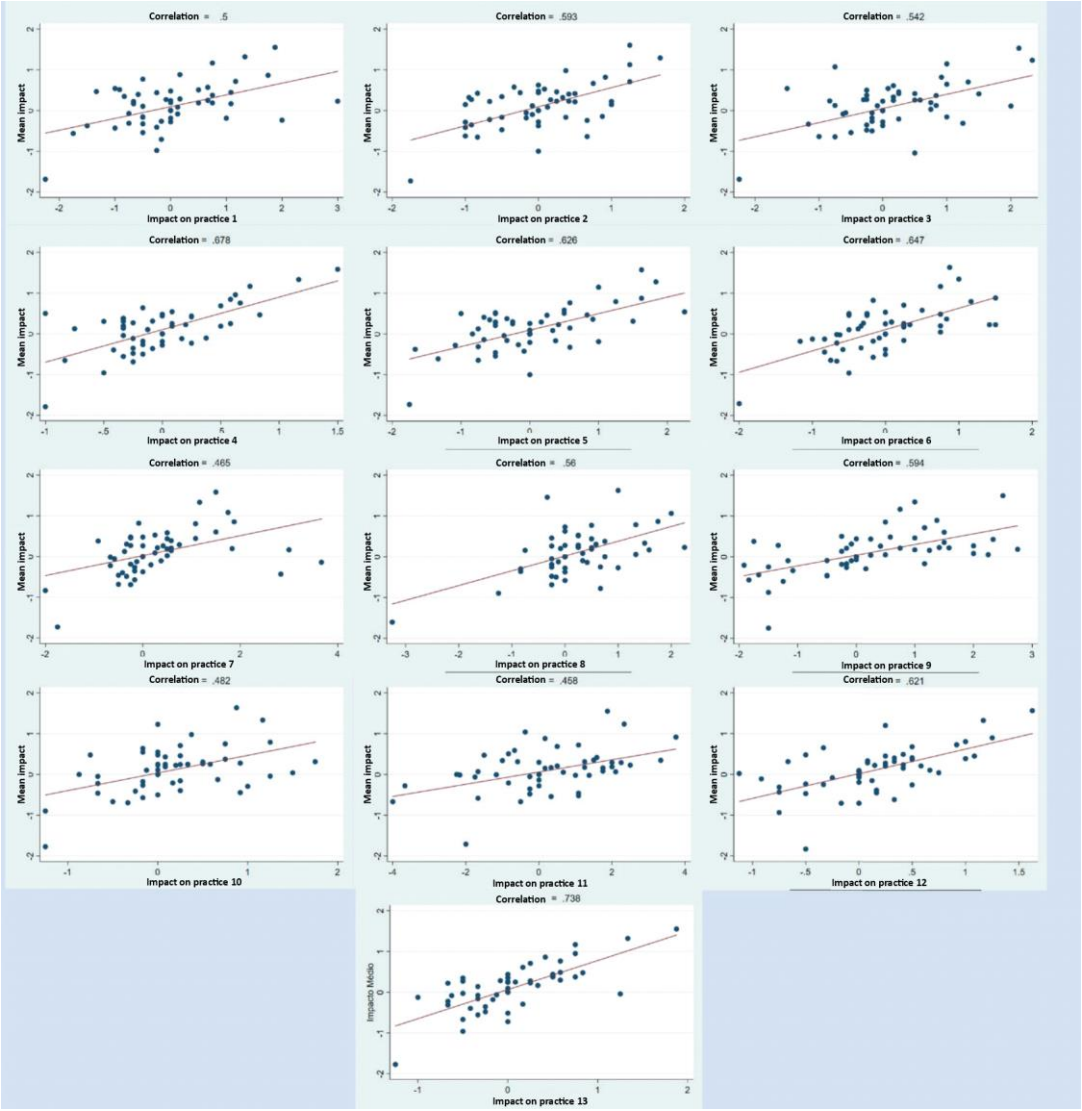
With this in mind, we calculated the means for treatment and control schools in each of the 71 clusters. We then obtained the differences between these means and interpreted them as the Program's impact on each cluster. This was done for each of the practices and for the mean score. We then correlated the Program's impact on each practice with the impact on the mean score (excluding the practice in question to avoid a mechanical correlation between the data).

Figure 6 shows the results. Overall, it can be seen that the impact on all dimensions correlates well with the mean impact. The practices that have the lowest correlation with the mean scores are those associated with the evaluation

of the school and its professionals – more specifically, practices 7 (External evaluation process), 10 (Definition of staff roles) and 11 (School staff evaluation). Practice 1 (Political-Pedagogical Project) also shows low correlation compared to the others. The impact on this practice was expected to have a higher correlation with other pedagogical practices, but the fact that this practice was the first to be assessed may have introduced more noise in its evaluation, explaining its relatively lower score.

Finally, it is worth noting that, among all practices, practice 13 (Creating a distinctive school value) has the highest correlation with the Program's mean impact.

Figure 6 – Correlation between the impact of each dimension and the mean impact



5.6 Correlation between managerial practices and educational performance

Lastly, we present a brief analysis of the relationship between the schools' management quality score and their performance in the Educational Development Index of Pará (Idepa) and Espírito Santo (Idebes), both of which consolidate the results of state proficiency tests in Portuguese Language and Mathematics and the pass rates of students.

The graphs below depict this relationship by state, and separately for the treatment and control groups. For both states, the graphs indicate a positive relationship between school performance and the management quality score for

schools in the treatment group. In other words, among the schools enrolled in the Program Jovem de Futuro, it is possible to observe that, on average, those with the highest score management quality obtain higher marks in the standardized exams.

For schools in the control group, however, no such relationship exists. This observation *suggests* that there may be a cause-and-effect relationship between the quality of school management and student performance.

Figure 7

6. Conclusion

This article sought to study the effects of Jovem de Futuro, a program created by Instituto Unibanco with the main goal of transferring conceptual and empirical knowledge on management practices to participating schools' staff and to supervisors in state Education Departments.

Toward this end, we developed an instrument to measure the quality of school management based on the work of Bloom et al. (2015) and Meloni and Madeira (2015). We performed a series of adaptations on the original instrument by Bloom et al. (2015), taking into account especially the little managerial leeway public school administrators have. The resulting instrument, however, showed some weaknesses that made it impossible to identify in Meloni and Madeira (2017) a significant impact on school management practices.

Therefore, we made additional adaptations to the school management instrument and repeated the survey, this time in the states of Pará and Espírito Santo. The results, presented in this article, indicate that there is, indeed, evidence of impact of the Program Jovem de Futuro on school management practices. This impact, however, is quite heterogeneous.

First, we noted that the effect on management practices is quite diverse. There is clearer evidence of impact on practices related to evaluating and managing professionals and school goals than on pedagogical practices. Lastly, we also identified that the impact is greater in schools that had a lower "starting score".

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