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The impact of longer school days on mothers' and children's labor force participation

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Abstract

Extending the school day has been one of the key elements of public education reform in Brazil and several other Latin American countries in recent years. We investigated the impact of a policy that financed the extension of school schedules from half to full days in Brazil on different maternal and child labor participation outcomes. Using a regression discontinuity design, we did not find any significant impact of increasing the length of the daily school schedule on mothers' or children's labor decisions.

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1 Introduction

Extending the school day has been one of the key elements of public education reform in several Latin American countries in recent years. The main goal of most of these policies is to improve academic performance, especially in countries with low-quality public education. However, several recent studies evaluating the impact of increasing daily time that school-aged children spend in school in Latin American countries have found little or no effect on student performance in standardized tests (Cerdan-Infantes & Vermeersch, 2007; Bellei, 2009; Arzola, 2010; Pattal et al., 2010). Brazil is no different. Recent evaluations of the More Education Program (Programa Mais Educação - PME), the main funding policy for implementing whole-day education in Brazilian schools, indicate that the program had no impact on student performance in standardized tests (Almeida et al., 2016; Oliveira & Terra, 2016).

Although these results are worrisome and indicate the need to redesign these policies, programs to extend the duration of the school day can also affect variables unrelated to academic performance. A classic example is the impact of the provision of daycare centers and of other child care policies on the participation of women in the labor force (Blau & Currie, 2006; Cascio, 2009; Fitzpatrick, 2010, 2012). By determining the time the child is under the supervision of teachers and school staff, school schedules can also impact the maternal labor supply. Graves (2013), for example, showed how the redistribution of school days into shorter intervals over the year negatively affected the labor force participation of mothers. Berthelon et al. (2015) in a similar study, showed how extending school hours in Chile had a significant positive effect on the participation of mothers in the labor market.

Extending the school day may also impact child labor (Orazem & Gunnarsson, 2003). The longer students remain at school, the less time they have to work – either as a paid employee or helping with domestic activities. Initiatives such as the Program for the Eradication of Child Labor (PETI), implemented in rural states of Brazil in 1996, adopted school-day extension as one of their main components and had a positive impact on reducing the probability of child labor (Yap, Sedlacek, and Orazem (2001).

In line with those studies, we evaluated the impact of the school day extension funded by the PME in Brazil on the participation of mothers and children in the labor force. For this, we explored the discontinuity in the PME prioritization criteria that started in 2012. In that year, the Ministry of Education began to favor schools where more than 50% of students belonged to families that were beneficiaries of a federal CCT program called the *Programa Bolsa Família - PBF*[1]. We analyzed data on approximately 1 million families with

[1] PBF is the most important conditional cash transfer program in Brazil. The program is directed toward the poorest families (per capita income of less than approximately US$ 45 per month) and consists of a monthly cash benefit that varies according to the family profile. The program imposes various conditions, including school attendance by children aged 6 to 17 years.

children enrolled in the 3rd, 5th, 7th and 9th grades of the public education system of the state of São Paulo.

We did not find any significant impact of the adoption of full-time education by schools on the participation of mothers in the labor force, unemployment, or employment quality (permanent or temporary). Also, there is no evidence of a significant effect of the extension of the school day on the percentage of adolescents at work. We also explored several heterogeneous effects, according to student grade, maternal age, educational level, and the presence of other preschool-aged children. We did not find the program to have significant effects on any of the estimates.

The remainder of this paper is structured into seven sections. In Section 2, we briefly describe some characteristics of the Brazilian full-time education program. Section 3 presents the databases, and Section 4 discusses the empirical strategy in detail. In Sections 5 and 6, we analyze the main results. Section 7 presents the study conclusions.

2 The *Mais Educação* Program

PME is a federal policy designed to fund after-school activities. The program's design and short-term development reflect to a great extent the lack of an impact evaluation culture in Brazil. There was no pilot. No impact evaluation was planned. In addition, presentations and official documents that "evaluate" the program focus only on inputs: number of students/schools covered and overall investment costs.

The use of input metrics to "evaluate" the program creates a natural incentive to launch it on a large scale and to expand it. In its first year (2008), the program funded the implementation of full-time education in 1,380 schools. In just 6 years, the number of schools served reached almost 60,000 (Figure 1). The program's costs increased proportionally, from around US$ 28 million in 2008 to almost US$ 400 million in 2014, making it one of the biggest educational programs in Brazil.

The PME's resources are transferred directly to schools, which have the autonomy to employ them in various types of activities, such as sports, culture, photography, dance, painting, theater, and health promotion. Participating schools must have at least seven hours a day of school activities. The only obligatory activity is pedagogical monitoring in Portuguese and Mathematics, which must be carried out for a minimum of one hour per day. After-school activities are conducted by volunteer monitors, who receive a small allowance. The federal government plays no role in the way each school implements after-school activities. Its only responsibility is to send the money.

Participation in the PME is voluntary (schools must apply to take part). Prioritization criteria are defined by the Ministry of Education. Until 2012, the program prioritized schools with low performance on a national indicator measuring educational

quality, called IDEB[2]. Since then, the government has placed greater emphasis on social vulnerability criteria, adopting the percentage of students from families who were beneficiaries of the PBF as the main eligibility criterion for the program. Thus, the concept of "majority PBF schools" was created: schools in which at least 50% of the students belong to families benefiting from the program. These schools were prioritized by the federal government to participate in the PME.

The focus on "majority PBF schools" reflects the program's secondary outcomes of interest. Although its main purpose is to *contribute to the improvement of learning by increasing the length of time children stay in school*, its legislation also mentions its importance as a way to improve the social situation of families and to prevent and combat child labor (Brasil, 2007).

3 Data

We used data from the School Performance Evaluation System of the State of São Paulo (*Sistema de Avaliação do Rendimento Escolar do Estado de São Paulo* – SARESP) to construct our main variables. In its 2012 edition, SARESP had two main instruments: a proficiency exam in language, mathematics, humanities, life sciences, and writing, carried out at the end of each academic year with students in the 3rd, 5th, 7th and 9th grades; and an extensive questionnaire that must be filled by students and their parents, with questions about the family's socioeconomic status, satisfaction with the school and behavior patterns.

Based on these questionnaires, we constructed three discrete variables for the status of mothers in the labor force: i) participates in the labor force[3]; ii) has permanent employment[4]; and iii) is unemployed. In addition, we constructed two variables for the participation of adolescents in the labor force: i) works outside the home on school days; and ii) helps with housework on school days. The question of child labor is only found in the 7th and 9th-grade questionnaires.

Table 1 presents the descriptive statistics according to the percentage of PBF students in the schools (more or less than 50% PBF students). We restricted our analysis to families inside the 10 p.p. cutoff (as explained in the next section). As expected, there are significant differences between families in both groups of schools. These differences follow the expected direction. Families from majority PBF schools have a lower number of mothers

[2] The Basic Education Development Index (*Índice de Desenvolvimento da Educação Básica* - IDEB) is an indicator that evaluates the average performance of schools in Brazil. It is composed of the average score of students on standardized Portuguese and mathematics exams at the end of each primary education stage (5th and 9th grade) and the average pass rate of students at each stage.

[3] We defined participation in the labor force as mothers who declared themselves as employed, self-employed, business owners, temporary workers or unemployed.

[4] We defined permanent employment as mothers who declared themselves employed, self-employed or business owners.

with permanent employment and a higher number of unemployed mothers (Panel A of Table 1). The percentage of students working outside the home is neither large nor insignificant: approximately 8% of students in minority PBF schools and 8.5% in majority PBF schools. Families from majority PBF schools also have a higher percentage of young mothers (up to 34 years old), a higher probability of having a child aged 0 to 5 years, lower educational levels (both maternal and paternal) and lower family income (Panel D of Table 1).

As expected, there is a significant difference between majority and minority PBF schools in terms of the percentage that took part in the PME in 2012 – approximately 24% of majority PBF schools took part in the program in that year, whereas only 6% of minority PBF schools did so (Panel C of Table 1). As explained earlier, PME uses the percentage of families on PBF in each school as a prioritization – and not as an exclusion – criterion: some minority PBF schools were authorized to enter the program in 2012.

4 Identification

Our identification strategy consists of exploring the discontinuity in eligibility for the PME as a function of the percentage of PBF beneficiary students to test whether joining the program led to a change in the social indicators of families from "near-eligible" and "near-ineligible" schools around the eligibility criterion (50% PBF beneficiary students)[5]. For this, we adopted a fuzzy regression discontinuity (RD) design (Lee & Lemieux, 2010).

Let Y_i be the outcome variable (y) for families with children enrolled in school i; P_i is the percentage of PBF beneficiary students in school i in 2010, and $\bar{p} = 50\%$; and D_i is a dummy variable that indicates whether the school has a majority of PBF beneficiary students. Our regression model is then simply given by:

$$Y_i = \beta_0 + \beta_1(P_i - \bar{p}) + \alpha D_i + \beta_2 D_i(P_i - \bar{p}) + u_i \quad (1)$$

To evaluate the effects of the treatment, we estimated local linear regressions with triangular kernel weights using observations to the left and right of the cutoff within a predetermined bandwidth (h). The estimated impact (α parameter) is simply the difference between the limits of these regressions to the left and right of the cutoff. In line with Lee and Card (2008), we clustered the standard errors by the values of the eligibility variable (percentage of PBF beneficiary students in the schools)[6].

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[5] To create the eligibility variable, we obtained data on the number of PBF students per school from the Brazilian Ministry of Social Development. Both the prioritization criteria and the schools approved to join the program in 2012 were decided in 2011. Hence, we adopted the year 2010 as a reference to calculate the percentage of PBF students in each school.

[6] As the percentage of PBF beneficiary students is a continuous variable and presents the same value for all families in the same school, this allows an unrestricted correlation in the results of families from the same community.

We used the implicit sharp design in (1) to estimate the discontinuity in the probability of joining the PME (first stage). For the second stage, we instrumented the treatment variable (joining PME in 2012) using a dummy variable that indicates if the school has a majority of PBF beneficiary students (D_i). Our fuzzy RD can, therefore, be understood as an estimation strategy based on instrumental variables, in which discontinuity is used as an instrumental variable for the treatment status (Angrist & Pischke, 2009).

Because in a regression discontinuity strategy the results are often sensitive to the choice of bandwidth (h), we present the results of the first stage for two fixed bandwidths around the cutoff – 10 and 15 percentage points – and for the "optimal bandwidths" of Imbens and Kalyanaraman (2012)[7]. For simplicity of presentation, and to facilitate comparisons, we report the results of the second stage only for the 10-percentage points bandwidth. The results were robust to variations in the bandwidth[8].

5 Results

Table 2 shows the results of the first-stage estimates. The columns show the results for different bandwidths around the cutoff. We estimated an increase of more than 200% (or 20 percentage points) in the probability of joining the PME in 2012 in schools located around the cutoff. The estimated coefficients were consistent across the three bandwidths and significant at 1% and 5%[9].

The estimated results for the first stage are shown graphically in Figure 2, which shows the relationship between participation in the PME and the percentage of PBF beneficiary students. We centered the cutoff on 0 – meaning schools to the right of the cutoff have more than 50% PBF beneficiary students and schools to the left of the cutoff have less than 50% PBF beneficiary students. The discontinuity in the probability of participation around the cutoff is quite large.

As a robustness check, we re-estimate equation (1) taking into account participation in PME in 2011 – i.e. one year before the criterion that gives priority to PBF majority schools was created. As expected, we did not find any discontinuity around the cutoff in that year (Figure A.1 and Table A.1)

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[7] The method for defining optimal bandwidths was developed by Imbens and Kalyanaraman (2012) and seeks to minimize the mean squared error of the RD estimator, given the choice of the order of the approximation polynomial and the kernel function, which is why it is known as MSE-optimal. For a detailed description of this method, see Imbens and Kalyanaraman (2012) and Calonico et al. (2014).

[8] The results do not change when we use optimal bandwidths as can be seen in the Appendix (Table A.2).

[9] The estimated coefficient is also consistent with Oliveira and Terra (2016), who, using a sample with schools all over Brazil, also estimated an increase of approximately 20 pp in the probability of joining the program at the cutoff.

In Table 3, we evaluated the effects of joining PME on the employment status of mothers. Column (1) shows the results for the participation of mothers in the labor force, column (2) for the percentage of mothers in permanent employment, and column (3) for the percentage of unemployed mothers. We did not find a significant impact on any of the three variables. The evolution of the participation of mothers in the labor force around the cutoff can be observed in Figure 3(a), which confirms the absence of discontinuity.

The results are surprising. It would be reasonable to expect that full-time education, by freeing mothers from the responsibility of caring for their children after school, would facilitate their entry into the labor force – as we have seen in the case of Chile, where extending the school day had a positive impact on the labor supply of mothers (Berthelon et al., 2015).

One hypothesis is that our premise is wrong and that the responsibility for caring for children is not, in São Paulo, an obstacle to entering the labor force. It is possible that working mothers already had a solution for this issue (e.g., leaving their children with friends and relatives or alone, in case of older children) and that full-time education simply offered an additional option. In this case, there would be no correlation between the labor supply and the obligation to care for children and, consequently, we would not observe any impact of full-time education on these variables. The absence of impact may also result from the fact that the school year does not cover the entire calendar year, which may reduce the potential effect of the full-time school day on the participation of mothers in the labor force. Mothers may also need more than one year to adjust. If this is the case, our results should be interpreted as a lack of short-term impact of the program on labor force participation.

Columns (4) and (5) of Table 3 show the program's effects on child labor – whether helping with domestic activities (4) or working outside the home (5). Again, we found no evidence that the PME had a significant impact. Figure 3(b) illustrates the absence of discontinuity on the probability of a student working outside the home on school days.

This is, again, an unexpected conclusion, as the students in schools taking part in PME must stay at school for at least 7 hours a day, which, at least in theory, would make them less available for work activities. The results are contrary to those estimated by Yap et al. (2001), who found that the PETI had significant effects on the reduction of child labor. However, the context of the evaluations is quite distinct. The PETI was implemented in rural regions of poor states in northeastern Brazil, characterized by high rates of child labor (17% in Pernambuco and Sergipe and 38% in Bahia), whereas our evaluation was conducted at urban schools in the country's richest state, with a relatively small percentage of working students (8%). In addition, the PETI is composed not only of a school day extension but also of a financial transfer to parents of children with school attendance greater than 80% and who participate in after-school activities, whereas in the PME the students' participation is not compulsory. As it turns out, in relatively rich states, just extending the school day may not affect child labor at all.

Following Berthelon et al. (2015), who show that the positive effects of extending the school day in a Chilean case are concentrated in the 1st and 2nd grades (2nd and 3rd grades in Brazil), we performed several heterogeneity tests, restricting our analysis to i)

mothers of 3rd and 5th graders, ii) mothers without other children up to 5 years of age, iii) young mothers (up to 34 years of age) and iv) mothers who completed secondary education. In all cases, the estimated results were not statistically significant[10].

6 Robustness checks

In an RD strategy, we assume that the assignment to treatment around the cutoff would resemble a random experiment (Lee, 2008). This would not occur if schools could, for instance, change their percentage of PBF students, making them eligible for the treatment. Intuitively, we know it is highly unlikely that this manipulation could have been achieved in the case of PME. Our eligibility variable (percentage of PBF students in 2010) was only adopted as a prioritization criterion in 2011 – i.e., to manipulate this variable, schools would have to have foreseen the use of this criterion by the program. Therefore, we know beforehand that the assumption that agents do not have control over the eligibility variable does hold. Regardless, we ran the formal test proposed by Cattaneo et al. (2017), in line with McCrary (2008). As expected, we did not observe any discontinuity in the density of the eligibility variable around the cutoff. The absence of manipulation is consistent with our assumption that assignment to treatment around the cutoff is "as good" as a random assignment.

Also, one of the most important assumptions of an RD design is the continuity of the outcome variables around the cutoff in the absence of treatment. One common way to assess the validity of this premise is to test for the existence of discontinuity in a series of covariates that should not be affected by the treatment. To do so, we used the same methods applied to our outcome variables in previous sections in a series of covariates related to the families' socioeconomic backgrounds. These included: students' and mothers' race, students' sex, mothers' age and education, families' income, fathers' education, and fathers' status in the labor market (we assume that extending the school day does not affect the participation of fathers in the labor market).

The results of these estimates are shown in Table 4. We did not find any evidence of significant discontinuity in any of the analyzed variables, which is once again consistent with an assignment "as good as" random.

7 Conclusion

The implementation of full-time education programs has entered the agenda of most Latin American countries in recent years, regardless of the political faction in power. Despite its focus on academic performance, extending school days, particularly in public schools, may also have a strong social component.

[10] The results of these estimates are available upon request to the authors.

In this paper, we tested this hypothesis by investigating the impact of a policy that financed the extension of school schedules from half to full days in Brazil on different maternal and child labor participation outcomes. Despite the program's shift in focus to prioritize schools with low-income families, we did not find any evidence of a positive impact on any of the estimates.

We conclude the paper with comments on some limitations of this study. First, by using extensive margin measures of labor force participation, we are not able to evaluate the program's impact on the intensive margin of labor supply. Although we think that the lack of evidence of an impact in our labor variables (particularly maternal participation in the labor force) offers an indication of the program's inability to affect maternal and child labor participation in general, we cannot rule out the possibility of some effect in, for example, hours worked or wages.

Second, we acknowledge the limitations of our fuzzy RD design especially concerning i) the lack of external validity (since our results are by definition 'local') and ii) the precision of our estimates. For this reason, we alert the readers to interpret our results with caution, since the confidence intervals were too wide for a definitive statement on the ability of PME to impact labor decisions and allows for the possibility of small yet important effects that we did not have sufficient power to detect. For this reason, it makes sense to view our results in the context of other studies in the field, that usually show a significant relationship between child care and school schedules and maternal labor supply (Blau & Currie, 2006; Cascio, 2009; Fitzpatrick, 2010, 2012; Graves, 2013; Berthelon et al. 2015). Future studies based on fine-grained data on the intensive margin of labor supply and a more robust identification strategy (e.g. experimental design) will enable better counterfactual inference for the impact of educational reforms on labor decisions.

Finally, it is worth noting that the main goal of most – if not all – existing full-time education programs is to improve academic performance. Our study, therefore, analyzed the impact of PME on outcomes that are not its primary goals. Nevertheless, we think it is important that analyses of programs such as the Brazilian PME not be limited to their impact on students' academic performance. It is indisputable that school is an essential part of the lives of children and adolescents and their families, exerting an influence that goes far beyond academic development. Although the evaluation of education policies is one of the most popular branches of impact evaluation literature, there is a shortage of studies aimed at evaluating indirect impacts of full-time education and other educational programs, not only on mothers' labor decisions but also on a series of other social indicators, such as criminality and risk behaviors.

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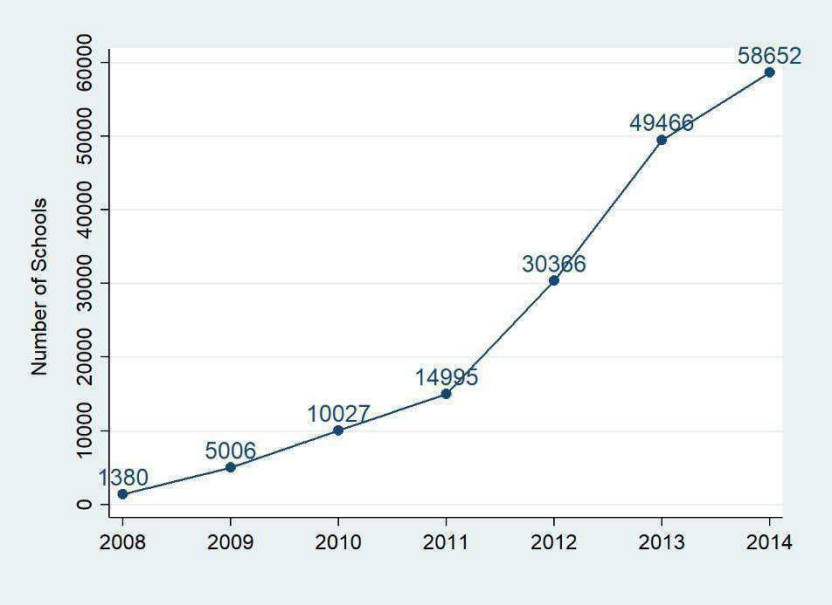
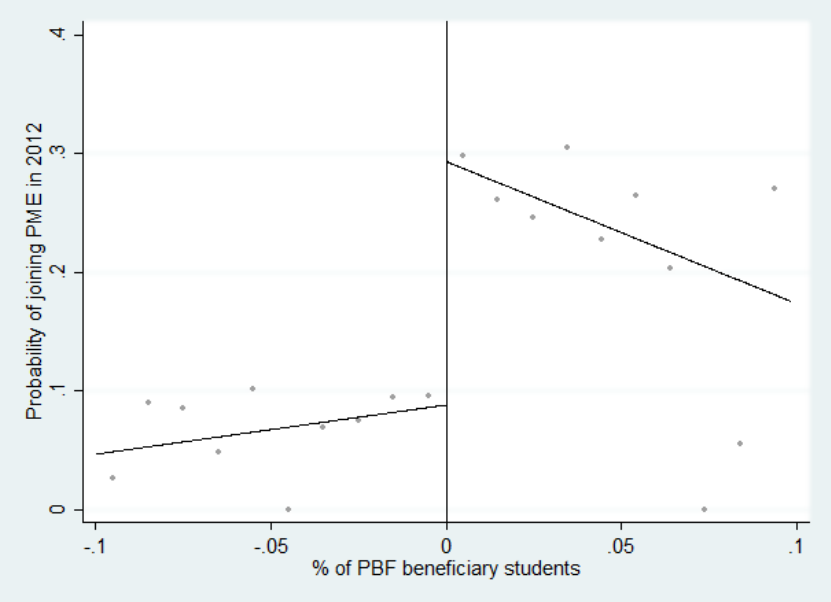
Figures

Figure 1. Evolution in the number of schools participating in PME (2008-2014)



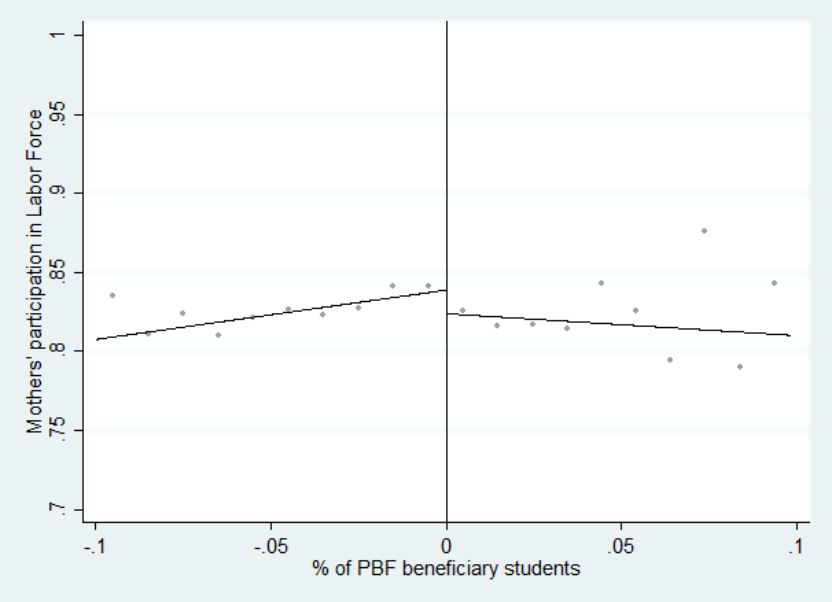
Note: Graphic illustration of the evolution in the number of schools participating in PME between 2008 and 2014.

Figure 2. Estimates of the effect of eligibility on participation in PME in 2012.

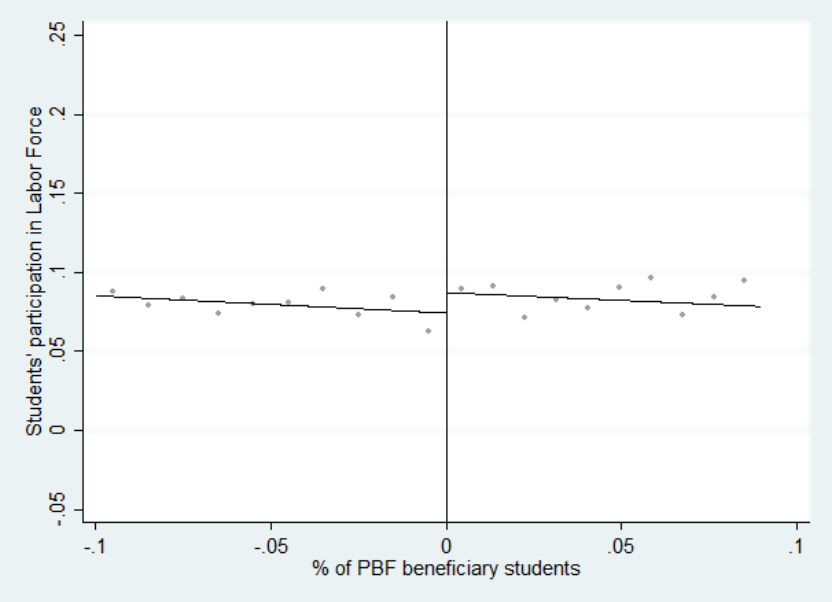


Note: Evolution in the probability of joining PME in 2012 as a function of the average percentage of students from families enrolled in the PBF in the school. The vertical line corresponds to the limit of the eligibility criteria (values centered at 0). The figure also shows the predicted values of local linear regressions – one to the right and one to the left of the cutoff – in a 10-percentage-point bandwidth, using triangular kernel weights.

Figure 3. Estimates of the effects of the PME on labor decisions



(a)



(b)

Note: Evolution of the participation of mothers in the labor force (panel a) and child labor (panel b) as a function of the average percentage of students of families enrolled in the PBF in the school. The vertical line corresponds to the limit of the eligibility criteria (values centered at 0). The figure also shows the predicted values of local linear regressions – one to the right and one to the left of the cutoff – in a 10-percentage-point bandwidth using triangular kernel weights.

Tables

Table 1. Descriptive statistics

	PBF < 50%			PBF > 50%			P-value (difference)
	Média	Std, Dev,	N	Média	Std, Dev,	N	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Dependent Variables (Mothers)							
Labor Force	0.824	0.380	78,529	0.819	0.385	20,011	0.10
Permanent Employment	0.530	0.499	78,529	0.496	0.500	20,011	0.00
Unemployed	0.232	0.422	78,529	0.256	0.436	20,011	0.00
Panel B: Dependent Variables (Students)							
Work - Outside the Home	0.081	0.272	32,383	0.085	0.279	6,737	0.25
Work - Domestic	0.411	0.492	32,383	0.417	0.493	6,737	0.33
Panel C: Treatment Variable							
Participation in PME (2012)	0.064	0.245	82,108	0.24	0.427	20,910	0.00
Panel D: Characteristics of Families							
Male student	0.514	0.026	82,108	0.516	0.027	20,910	0.00
White mother	0.501	0.500	78,186	0.505	0.500	19,916	0.25
Child 0 to 5 years old	0.418	0.493	72,499	0.432	0.495	18,498	0.00
Mother - 16 to 24 years old	0.020	0.141	78,131	0.022	0.147	19,878	0.08
Mother - 25 to 34 years old	0.412	0.492	78,131	0.434	0.496	19,878	0.00
Mother - Primary education	0.184	0.387	78,529	0.179	0.383	20,011	0.10
Mother - Secondary education	0.229	0.420	78,529	0.202	0.401	20,011	0.00
Mother - Higher education	0.028	0.164	78,529	0.024	0.153	20,011	0.00
Father - Primary education	0.158	0.365	78,529	0.155	0.362	20,011	0.25
Father - Secondary education	0.194	0.396	78,529	0.176	0.381	20,011	0.00
Father - Higher education	0.022	0.147	77,700	0.018	0.133	19,798	0.00
Family Income < R$ 1.275	0.559	0.497	77,828	0.584	0.493	19,810	0.00
Family Income > R$ 2.126	0.071	0.257	77,828	0.057	0.232	19,810	0.00

Note: The table shows the mean rate of unemployment, child labor, participation in the *Mais Educação* Program in 2012 and the characteristics of families. The family income and maternal educational level categories reflect the categories of the SARESP questionnaire. The child labor statistic is reported only for 7^{th} and 9^{th} graders since there is no statistic available in the SARESP for 3^{rd} and 5^{th} graders.

Table 2. Estimates of the effects of eligibility on participation in the *Mais Educação* Program (PME) in 2012.

(first stage)

	Participation PME	Participation PME	Participation PME	Participation PME	Participation PME
	(1)	(2)	(3)	(4)	(5)
Majority PBF	0.200**	0.206**	0.199***	0.207**	0.260*
	-0.08	(0.09)	(0.077)	-0.09	-0.15
Bandwidth	0,12	0.10	0.15	0.10	0.10
Observations	139.601	103,018	190,618	98,540	39,120
Constant	0.0858	0.088	0.084	0.0886	0.0490

Note: The table reports the first stage results. The variable Majority PBF is an indicator of whether the school has more than 50% of students enrolled in PBF. The number of observations refers to the number of families within the bandwidths. The first column presents the results for optimal bandwidths following Imbens & Kalyanaraman (2012). The second and third columns presents the results for two fixed bandwidths around the cutoff – 10 and 15 percentage points. In the fourth and five columns we restricted the samples to consider only families with data for the variables labor force, permanent employment, and unemployed (column 4) and for the variables domestic work and work outside the home (families with children in 7th and 9th grades) (column 5).

Table 3. Estimates of the effects of the *Mais Educação* Program (PME) on labor indicators

(second stage)

	Labor Force	Permanent Employment	Unemployed	Domestic Work	Work Outside the Home
	(1)	(2)	(3)	(4)	(5)
PME (2012)	-0.073	-0.145	0.079	0.086	0.045
	(0.057)	(0.094)	(0.062)	(0.101)	(0.065)
Bandwidth	0.10	0.10	0.10	0.10	0.10
Observations	98,540	98,540	98,540	39,120	39,120
Constant	0.839	0.535	0.239	0.407	0.074

Note: The table reports the two-stage least squares (2SLS) coefficients estimated by local linear regressions (second stage). The PME (2012) variable is an indicator of whether the school joined PME in 2012 (instrumented by an indicator of whether the school had more than 50% of students enrolled in the PBF). The number of observations refers to the number of families within the bandwidth. Columns (4) and (5) include only 7th and 9th graders. All estimates were performed considering a 10-percentage point bandwidth around the cutoff. Robust standard errors are clustered by the percentage of students in the PBF in the school (in parentheses). *** p <0.01 and ** p <0.05.

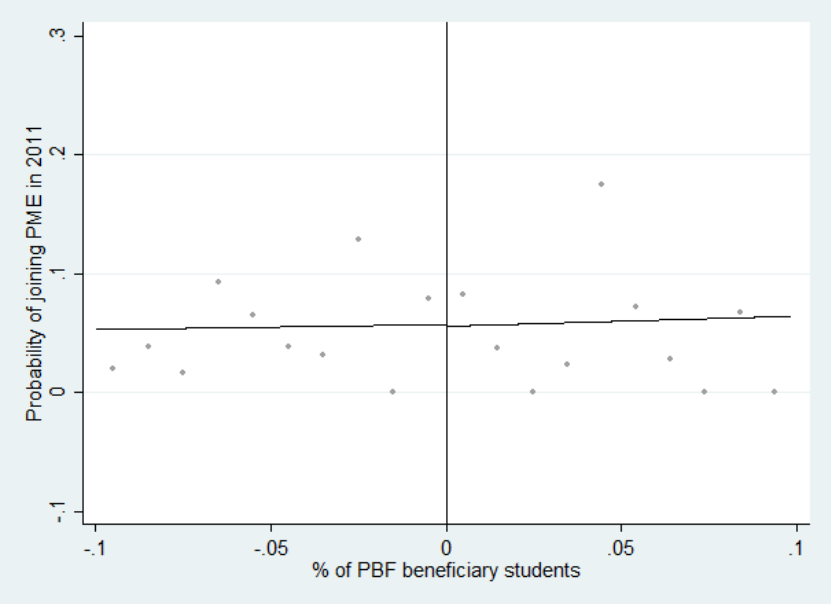
Table 4. Estimates of the effects of the *Mais Educação* Program (PME) on covariates (second stage)

	Covariates				
	Bandwith	Constant	PME (2012)	Std. Dev.	N
Panel A: Characteristics of Families					
Male student	0.18	0.51	0.00	0.02	253234
White mother	0.12	0.49	0.03	0.11	122461
Child 0 to 5 years old	0.13	0.58	-0.07	0.08	138728
Mother - 16 to 24 years old	0.11	0.02	0.01	0.01	116912
Mother - 25 to 34 years old	0.14	0.42	0.19	0.12	166420
Mother - Primary education	0.15	0.53	-0.17	0.11	181965
Mother - Secondary education	0.17	0.18	0.02	0.04	217351
Mother - Higher education	0.11	0.22	0.11	0.09	113854
Father - Primary education	0.16	0.03	0.00	0.02	192196
Father - Secondary education	0.15	0.16	0.05	0.04	182248
Father - Higher education	0.12	0.18	0.07	0.07	126285
Family Income < R$ 1,275	0.11	0.06	-0.04	0.04	116478
Family Income > R$ 2,126	0.16	0.58	0.08	0.06	200855

Note: The table reports the two-stage least squares (2SLS) coefficients estimated by local linear regressions (second stage). The PME (2012) variable is an indicator of whether the school joined PME in 2012 (instrumented by an indicator of whether the school had more than 50% of students enrolled in the PBF). The number of observations (N) refers to the number of families within the bandwidths. All estimates were performed considering optimal bandwidths around the cutoff following Imbens & Kalyanaraman (2012). Robust standard errors are clustered by the percentage of students in the PBF in the school. *** p <0.01 and ** p <0.05.

Appendix

Figure A.1. Estimates of the effect of eligibility on participation in PME in 2011.



Note: Evolution in the probability of joining PME in 2011 as a function of the average percentage of students from families enrolled in the PBF in the school. The vertical line corresponds to the limit of the eligibility criteria (values centered at 0). The figure also shows the predicted values of local linear regressions – one to the right and one to the left of the cutoff – in a 10-percentage-point bandwidth, using triangular kernel weights.

Table A.1. Estimates of the effects of eligibility on participation in the *Mais Educação* Program (PME) in 2011.

(first stage – placebo test)

	Participation PME (2011) (1)	Participation PME (2011) (2)	Participation PME (2011) (3)
Majority PBF	-0.01	0.00	-0.01
	(0.042)	(0.051)	(0.041)
Bandwidth	0.15	0.10	0.15
Observations	191,859	107,162	198,936
Constant	0.061	0.057	0.060

Note: The table reports the first stage results. The variable Majority PBF is an indicator of whether the school has more than 50% of students enrolled in PBF. The number of observations refers to the number of families within the bandwidths. The first column presents the results for optimal bandwidths following Imbens & Kalyanaraman (2012). Robust standard errors are clustered by the percentage of students in the PBF in the school (in parentheses). *** p <0.01 and ** p <0.05.

Table A.2. Estimates of the effects of the *Mais Educação* Program (PME) on labor indicators using optimal bandwidths

(second stage)

	Labor Force	Permanent Employment	Unemployed	Domestic Work	Work Outside the Home
	(1)	(2)	(3)	(4)	(5)
PME (2012)	-0.082	-0.143	0.068	0.125	0.072
	(0.063)	(0.092)	(0.050)	(0.134)	(0.092)
Bandwidth	0.092	0.104	0.177	0.085	0.074
Observations	85,306	104,113	233,111	31,328	26,426
Constant	0.841	0.534	0.242	0.406	0.072

Note: The table reports the two-stage least squares (2SLS) coefficients estimated by local linear regressions (second stage). The PME (2012) variable is an indicator of whether the school joined PME in 2012 (instrumented by an indicator of whether the school had more than 50% of students enrolled in the PBF). The number of observations refers to the number of families within the bandwidth. Columns (4) and (5) include only 7th and 9th graders. All estimates were performed considering optimal bandwidths around the cutoff following Imbens & Kalyanaraman (2012). Robust standard errors are clustered by the percentage of students in the PBF in the school. *** p <0.01 and ** p <0.05