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Extended School Day and Teenage Fertility in Dominican Republic *

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Work in progress. Please do not circulate. This version: June 12, 2023

Abstract

This paper investigates the potential impact of extended school days in reducing teenage fertility. We study the *Jornada Escolar Extendida* program, which doubled the school-day length from 4 to 8 hours in the Dominican Republic, and exploit the geographic and time variation induced by its gradual implementation. We find evidence that a higher exposure to JEE in the municipality, measured as the percentage of secondary students covered by the program, reduces the incidence of teenage pregnancies, and that the effect is stronger after the program has reached at least half of secondary students in the municipality. The estimates are robust to various specifications and alternative checks. These results suggest that extended school-day policies can have spillover effects regarding teenagers' fertility choices.

JEL Classification: H52, I18, I28, J13, O15
Keywords: School day extension, risky behavior, teenage fertility, Dominican Republic.

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1 Introduction

Early pregnancy is a major obstacle to women's educational and labor market opportunities. Given social norms and the state of public policies, the strong demand for time and resources associated with child-rearing activities falls disproportionately on women (Berniell *et al.*, 2022). It has been largely demonstrated that early pregnancy has negative socioeconomic impacts, inducing lower educational achievements, lower participation in (or delayed entrance into) the labor market, and access to lower-quality jobs, with lower wages and benefits (Angrist and Evans, 1996, Arceo-Gomez and Campos-Vazquez, 2014, Black *et al.*, 2008, Chevalier and Viitanen, 2003, Fletcher and Wolfe, 2008, 2009, Goodman *et al.*, 2020, Levine and Painter, 2003). The consequences of early pregnancy affect even future generations: children of teenage mothers are more likely to have low birth weight, they present higher infant mortality rates and, as adults, they are more likely to have lower socioeconomic status and to engage in risky behaviors (Azevedo *et al.*, 2012, Fletcher and Yakusheva, 2016, Francesconi, 2008). Moreover, this phenomenon has also significant consequences on the distribution of roles within the household, imposing additional constraints on women, and reinforcing traditional gender roles.

Despite a significant reduction in fertility rates in Latin America during the last decade, teenage fertility rates are still high (Marchionni *et al.*, 2019). In the case of the Dominican Republic, teenage fertility is a first-order concern: more than 90 over 1,000 girls aged 15 to 19 had a birth in 2019, which represents the highest adolescent fertility rate in the region. Not only the prevalence of teenage fertility is high in levels but, unlike other countries in the region, its reduction over time has been slow.

There are different policy options designed to tackle the issue of teenage pregnancy in the developing world. Some of them, such as comprehensive sexual education, are intended to expand youth and adolescents' access to information on contraception. Overall, the evidence suggests that interventions based on information are effective at reducing teenage pregnancy (Agha, 2002, Cabezón *et al.*, 2005), although a study by Duflo *et al.* (2011) finds no impact of teacher-provided sexual and reproductive health information on early pregnancy. Another group of policies comprises Conditional Cash Transfer (CCT) programs, which offer cash incentives to families, typically conditional on some health and education requirements for their children. Azevedo *et al.* (2012) study the effects of different CCT programs in Latin America, and find that they do have a negative impact on teenage pregnancy, although the magnitude is small. Other policies, such as extended school-day programs, can have indirect effects on teenagers' fertility decisions, despite being designed mainly to improve academic achievement and not to tackle teenage pregnancy directly. There is a growing consensus about the non-academic role that schools can have in the lives of teenagers, by reducing the incidence of early pregnancy, or the likelihood of committing crime by adolescents (Alzúa and Velázquez, 2017, Berthelon and Kruger, 2011, Black *et al.*, 2008).

In this paper, we study the effect of a school-day extension on teenage fertility in the Dominican Republic. The *Jornada Escolar Extendida* (JEE) program, a flagship intervention of a more ambitious government strategy to improve educational quality in the country, lengthened the school-day from 4 to 8 hours.[1] The JEE was officially launched in 2013 (after a pilot conducted in 2011 and 2012) and was gradually rolled out across the country, with significant variability in the timing and degree of implementation across geographic areas. We combine administrative information of the JEE program with household-survey microdata from the *Encuesta Nacional de Fuerza Laboral* to asses whether the likelihood of teenage pregnancy was affected by a higher exposure to extended school day in the municipality. We exploit the gradual implementation of the JEE program, which induces geographic and time variations in the exposure to extended school days, in a model with municipality and year fixed effects.

There are different channels through which an increase in the length of school days could affect the prevalence of teenage fertility. First, longer school days may increase human capital by improving learning and educational achievement, increasing the perceived return to education in the labor market (the 'human capital' effect). A higher educational attainment is expected to reduce the likelihood of teenage pregnancy by increasing the opportunity cost of being a mother and not working. Second, there is a purely mechanical channel through which extended school days may affect early pregnancy: students spent more time supervised by responsible adults and, consequently, they are left with less time to engage in risky behaviors such as unprotected sex (the 'incarceration' or 'incapacitation' effect). Furthermore, more educated students may have better knowledge about reproductive health and access to contraceptive methods, contributing to a decrease in early pregnancies (Cleland, 2002). Peer effects could also be relevant to how a higher exposure to JEE affects teenage fertility. The evidence has shown that a teen girl's fertility choices and marital decisions are influenced by her exposure to

[1] As part of this government strategy to improve education, public spending on education increased from 2.5 percent of GDP in 2012 to 4.2 percent in 2013.

high rates of risky sexual behaviors and early marriage among her peers, be it her classmates, friends or neighbors (Adamopoulou, 2012, Fletcher and Yakusheva, 2016, Morales, 2015). This leaves open the possibility that an increase in the intensity of the JEE in a municipality, not only affects the likelihood of early pregnancies among girls that attend school, but also indirectly among those not attending school, through their peers. Finally, there is a possibility that the JEE moves teenage fertility in the opposite direction: if the JEE imposes an extra cost of attending school, then certain students facing higher opportunity costs might be tempted to drop out, generating a more propitious scenario towards risky behaviors.

Our results show that teenage women are less likely to give birth in municipalities with a higher exposure to extended school days, and the impact is economically and statistically significant. Specifically, an increase of 10 percentage points in the share of secondary enrollment covered by the JEE in the municipality causes a decrease in the probability that a teenage girl is a mother by 0.4 percentage points, which represents a 3 percent drop relative to the average before the introduction of the JEE. This result is robust to different specifications and alternative sources of data. Compared to other studies, the size of the effect is relevant. For instance, it represents more than twice the size of the impact found in Chile by Berthelon and Kruger (2011).[2]

We also explore the existence of threshold effects, that is, whether the impact of exposure to the JEE on teenage fertility shows up after it reaches a given percentage of secondary enrollment in the municipality.[3] We find that the effect starts being statistically significant when the average exposure of the JEE in each municipality is 50% and 60%, but not at other thresholds. We confirm this threshold effect with an event study approach, where the event analyzed is having reached at least half of secondary enrollment with JEE in the municipality. We align all municipalities at the event date and analyze the change in teenage fertility before and after this date. We find that after achieving JEE coverage of at least 50% of secondary enrollment, the adolescent fertility rate drops almost continuously:

[2]However, it is necessary to take into account that the Chilean teenage fertility rate is half the one in Dominican Republic, and that the magnitude of the school-day extension was smaller -from 32 to 39 hours per week- than in Dominican Republic -from 20 to 40 hours per week, both factors potentially leading to the difference in effects found.

[3]There is an abundant literature about the role of social networks in spreading information, ideas, and behaviors. One of the models that tries to capture this diffusion process is the Linear Threshold Model (LTM). According to the LTM, an individual adopts an idea or product after the proportion of their neighbors who have adopted it reaches certain threshold. For a more detailed review see Tran and Zheleva (2022).

during the 2 years after the event, the probability that a teenage woman becomes mother drops between 3 and 4 percentage points on average, relative to the last year before. This negative effect reaches almost 8 percentage points 4 years after the event.

Overall, our results show that the JEE has significantly contributed to a decrease in teenage fertility. However, data constraints do not allow us to disentangle the different channels behind the observed impact. Yet, the fact that we study a rather short-term effect of the policy, we speculate that our results are driven by teenagers spending more time in school under adult supervision, consistent with an 'incapacitation effect'. In addition, although we cannot rule out a potential contribution of a peer effect, we are unable to measure its relevance with the available information.

This paper contributes to the growing body of evidence on the effects of education on adolescent fertility, in general, and the effect of longer school days in particular. Black *et al.* (2008) and Alzúa and Velázquez (2017) exploit extensions in the number of years of mandatory education and find a negative impact of education on teenage fertility rates. Yet, while several countries in the region have introduced extended school-day policies, and the literature suggests a positive impact on students' academic achievement and educational trajectories, its effects on early pregnancy have been much less studied.[4] This paper joins the very few causal studies that do so. To the best of our knowledge, the only study that analyzes the impact of longer school days on early pregnancy is Berthelon and Kruger (2011), which focuses on the Chilean case. The authors find that teens living in municipalities with greater access to full-day high schools had lower probabilities of becoming mothers, mostly through an incarceration effect. Relatedly, for the case of Peru, Sánchez and Favara (2019) finds that being a student in an extended school-day school increases educational aspirations and psycho-social competencies, both found to be predictive of early fertility. Yet, it is not clear that these results will hold in contexts of much higher prevalence of early pregnancies. Our study contributes to this literature by studying the potential of school-day extensions on teenage pregnancy in Dominican Republic, the country with the highest teenage fertility rate in the region.

Finally, the JEE is the main educational policy in the Dominican Republic that brought about a substantial increase in public expenditure. Our study contributes to the specific analysis of the effects of the JEE. Garganta and Zentner (2021) showed that this introduction of longer school days in the country had a positive impact on female labor

[4]See Busso *et al.*, 2017 and Veleda, 2013 for a review of studies analyzing the effects on educational performance in the region.

force participation, particularly for low-educated women who are not the primary earner in the household. We add up to this literature by analyzing its impacts on risky behaviors among adolescents, particularly on the prevalence of teenage fertility.

The remainder of the paper is organized as follows. Section 2 describes the background, including the situation of teenage fertility in the Dominican Republic, as well as the main features of the educational system and the JEE program. Section 3 presents the data sources used. Section 4 describes the empirical strategy and presents the main results of the paper, while Section 5 performs robustness checks of our main result. Finally, Section 6 concludes.

2 Background

2.1 Teenage fertility in Dominican Republic

Although Latin America has experienced a notable decrease in fertility rates over the last decade, this pattern has not been mirrored by adolescent fertility rates (Marchionni *et al.*, 2019). The share of young women who are mothers is remarkably high in the region, not only relative to other regions in the world, but also relative to its social and economic indicators (see panel (a) of Figure 1). Moreover, the incidence of early pregnancy is much higher among women from lower socioeconomic status. According to Marchionni *et al.* (2019), while about 5 percent of girls in the richest quintile of the per capita income distribution are mothers, this proportion increases to 20 percent among those in the bottom quintile.

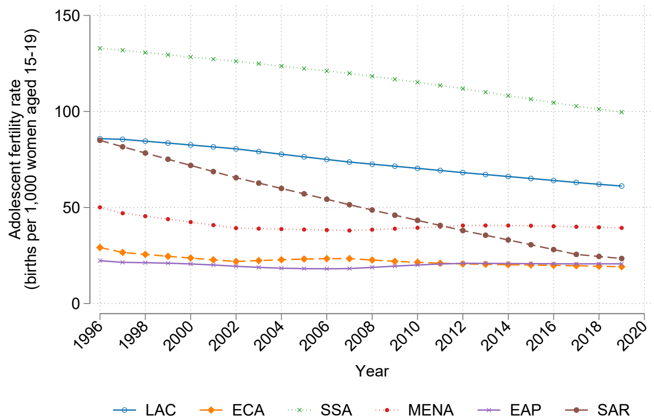
In the case of Dominican Republic, teenage pregnancy is a first-order concern. For almost 15 years now, the country stands out for having the highest adolescent fertility rate in Latin America: in 2019, more than 90 over 1,000 adolescents in the ages 15 to 19 had a birth. Indeed, even compared to other countries with similar levels of per capita GDP, teenage fertility rate in Dominican Republic is remarkably high (see panel (b) of Figure 1). Yet, probably more worrying is the observed persistence of these high rates, as they do not seem to follow the same downward trend observed for other countries in the region (see panel (c) of Figure 1).

2.2 Educational system in Dominican Republic

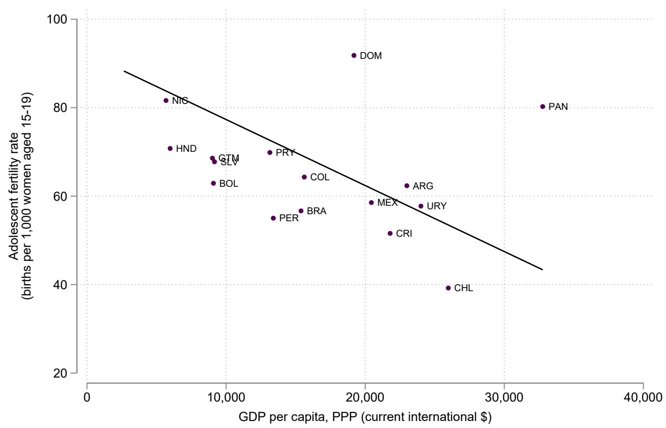
The educational system in Dominican Republic is structured around four levels: pre-primary education from ages 0 to 5, primary education from 6 to 12, secondary

Figure 1: Prevalence of adolescent fertility (15 to 19 years old)

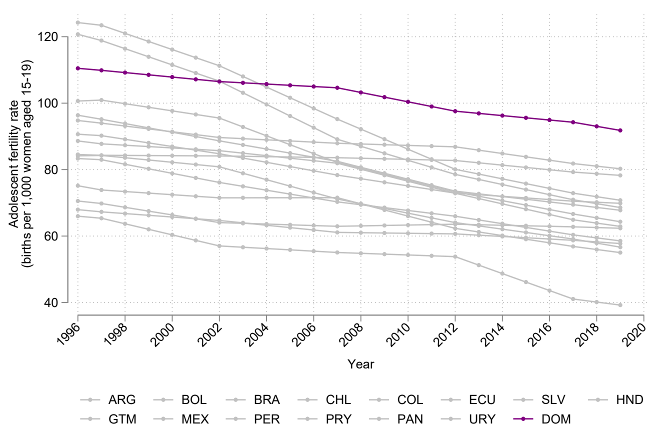
(a) Adolescent fertility rate, regions of the world



(b) Adolescent fertility rate and per capita GDP, Latin American countries



(c) Adolescent fertility rate, Latin American countries



Source: authors' elaboration based on World Development Indicators (World Bank). Note: The acronyms for regions of the world in Panel (a) are: LAC = Latin America; ECA = Europe and Central Asia; SSA = Sub-Saharan Africa; MENA = Middle East and North Africa; EAP = East Asia and Pacific; SAR = South Asia.

education from 13 to 17, and higher education. The student assignment process in public schools is such that students attend school in the same municipality where they reside.[5]

Schooling is mandatory starting at age 5 (last year of preschool) until age 17 (last year of senior high school), and it has not changed over the period of analysis.[6] However, attendance rates vary substantially between levels. By 2019, access to primary school was almost universal: the net attendance rate for children aged 6 to 12 was 98.2 percent. For those aged 13 to 17, however, dropout becomes a significant concern: the secondary net attendance rate was about 70 percent in 2019.[7]

One of the most important factors associated to school dropout among girls is early pregnancy. According to a survey carried out in 2015 by the Development Bank of Latin America, 36 percent of girls aged 15 to 25 in the region reported having dropped out of school because of getting pregnant (CAF, 2016). With the high prevalence of early pregnancies in Dominican Republic, this country is not an exception. Indeed, according to estimates from the 2013 Demographic and Health Survey (DHS) for Dominican Republic, 25 percent of adolescent females (aged 15 to 19 years) who dropped out of school did so because they got pregnant.

2.3 Extended school-day program: *Jornada Escolar Extendida (JEE)*

With the objective of improving students' academic achievement and reinforce the role of schools as spaces providing social protection to vulnerable children and youth, the Dominican government launched the *Jornada Escolar Extendida* (JEE) program. According to official documents of the Ministry of Education, the JEE *"[...] is adopted as a State policy aimed at achieving a comprehensive education, directed towards improving learning by optimizing time and diversifying actions to develop quality educational activities with equity"*. In addition, *"[...] An extended school day protects students from disadvantaged social backgrounds, by providing a support that their families cannot always offer [...]"* (MINERD, 2013, own translation).

[5] An exception to this general rule are technical schools (*Politécnicos*), which usually have excess demand and thus apply admission tests to be admitted.

[6] Before 2014, the 12-year period of primary and secondary education was structured differently, with 8 years of primary education -from first to eight grade- and 4 years of secondary education. Since 2015, the last two grades of primary education became the first two years of secondary education, resulting in two levels of six years each. Given that the number of mandatory years of schooling remained unchanged, we do not expect this change to affect our results.

[7] It is worth noting, however, that secondary net attendance rates have increased almost 15 percentage points over the last decade.

The JEE program was the flagship policy of an ambitious plan of the government to improve educational quality in the country. As part of this plan, government spending on education increased from 2.5 percent of GDP in 2012 to 4.2 percent in 2013, that is, 75 percent in a single year. Although the percentage of spending allocated to education is low compared to other countries in the region, this increase (as a share of GDP) is equivalent to the cost of the INPRES primary school construction program evaluated by Duflo (2001) as signalled by Dinerstein *et al.* (2020).[8]

After conducting a pilot in 2011 and 2012 in a few schools, the JEE was officially launched in 2013 and was gradually extended across the country. Although a considerable number of municipalities adopted the JEE as early as in 2013, in most cases it only covered a small fraction of students. Over time, the JEE was extended to more municipalities and more schools within municipalities, providing both time and geographic variation in its implementation. The initiative aimed at establishing the full-day schooling model throughout the country, with the goal that, by 2016, 80 percent of students in public education attend schools operating with a full-day schedule.

Before the inception of the JEE, most public schools operated under full- capacity, with a system of two (or three) shifts of four hours each. In 2012, there were almost 36 thousand classrooms that served 1.75 million students organized into 73 thousand four-hour shifts. Transitioning from half-day shifts to a single full-day shift, without increasing the number of classrooms, would have resulted in 49 students per classroom on average.[9] Extending the school day from four to eight hours required substantial investments in infrastructure, as well as recruiting additional teachers and staff. In order to meet the needs of full-time schooling with acceptable class sizes, the JEE program was coupled with the national school construction program (*Programa Nacional de Edificaciones Escolares* - PNEE) that had the objective of constructing 28,000 classrooms across primary and secondary schools over a four-year period, an increase of more than three quarters relative to number of available classrooms in 2013 (Damaris, 2014a, Dinerstein *et al.*, 2020).

[8]The INPRES school construction program had a total cost of 500 million 1990 U.S. dollars, about 1.5 percent of Indonesian GDP in 1973 (Duflo, 2001).

[9]According to the Statistical Yearbook of the Ministry of Education, only 2 percent of students attended full-day schooling, while 53 percent attended a morning shift and 32 percent an afternoon shift (the remaining proportion was distributed between night shifts for adult education and blended education) (Anuario Estadístico MINERD 2012-2013).

The school selection process

The first step in the process was to verify the overall status of every school across the country and determine which schools were in a position to offer full-time schooling. For this, a National Commission including regional and district authorities was created, that carried out this process during the months of January-July each year, and decided which schools would start offering JEE at the beginning of the next academic year.

The first schools to adopt the JEE were those meeting three criteria: (i) they had enough available space in order to organize students into a single full-day shift with no more than 35 students per class; (ii) their infrastructure was in good conditions already or in the process of being repaired or constructed and would be finished before the beginning of the academic year (including newly constructed schools, schools expanded or renovated, and schools that were underused or where part of its students could be easily transferred to a new school); and (iii) they had a total enrollment of at least 200 students. This last requirement was aimed at taking advantage of economies of scale and avoiding complications related to multi-grade schools at early stages of the program (Damaris, 2014b).[10]

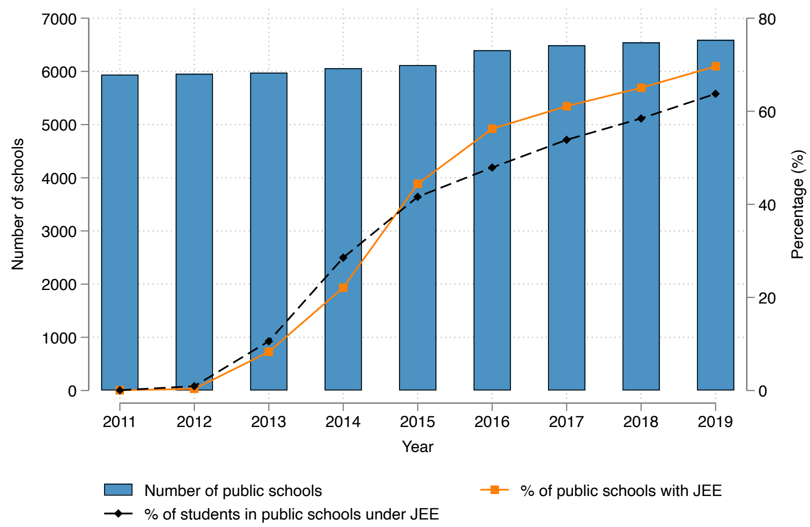
Naturally, due to logistic and infrastructure constraints, the implementation of the JEE was gradual (see Figure 2): in 2013, a bit less than 10 percent of public schools were operating under full-day schooling, and this share increased to about 70 percent in 2019. Similarly, about 10 percent of students in public schools attended a school with JEE in 2013, while the percentage increased to 64 in 2019.[11] Moreover, the percentage of students in public schools covered by the JEE (black dashed line) increased initially faster than the percentage of public schools under JEE (orange solid line), but this pattern was reversed after 2015, when the coverage of public schools starts growing faster than that of students. This is consistent with one of the criteria of the school selection process mentioned above: the JEE should be adopted by larger schools first.

The implementation of the JEE program was also variable across geographic areas. Figure 3 plots the percentage of students that attend public schools operating under extended school day in 2013, 2015, 2017 and 2019, for each municipality in the country. In 2013, the first year of implementation of the JEE, most municipalities fall into the lowest category, i.e. between 0 and 15 percent of their public schools enrollment was under

[10]The implementation of JEE in low enrollment schools was postponed for the following years.

[11]The number of public schools, however, increased only slightly over time, suggesting that most of the increase in JEE availability was driven by within-school expansions

Figure 2: Percentage of of public schools and public schools enrolment with JEE



Source: authors' own elaboration based on data from MINERD.
Note: The bars represent the number of public schools and the orange and black lines the percentage of public schools and students in public schools, respectively, under JEE.

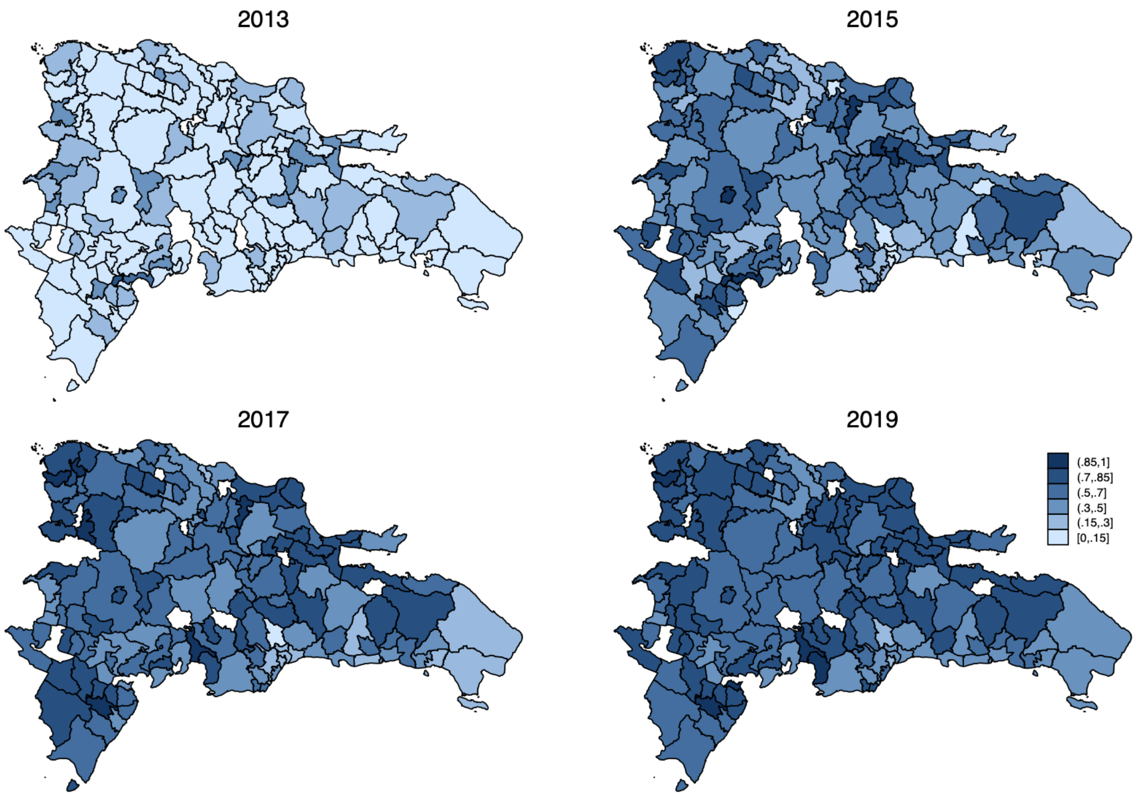
extended school day.[12] Naturally, in a large number of municipalities, the JEE had not entered yet. In 2015, there is already a substantial change: a considerable number of municipalities reaches a JEE coverage of 30 to 70 percent of the total enrollment in public schools. In 2017 and 2019, the intensity of this program continued increasing, but with some heterogeneity between municipalities. This variability over time and across municipalities, both in terms of adoption and intensity of implementation of the JEE, is what we exploit in this paper to identify the causal impact of the program on teenage pregnancy.

3 Data

In order to analyze the potential impact of the JEE on teenage fertility we use several sources of information. In the first place, we use two different administrative data from

[12]There were a few schools that adopted the extended school day in 2011-2012, as part of a pilot.

Figure 3: Percentage of students in public schools under JEE by municipality



Source: authors' own elaboration based on data from MINERD and ONE. Note: The boundaries correspond to municipalities.

the Dominican Ministry of Education (MINERD). The first one, which we refer to as the *schools data*, contains yearly school-level information about enrollment (disaggregated by level: pre-primary, primary, secondary, and adult education) and exact geographic location. This data comprises all schools in the country, including public, private and semi-official schools. The second one, that we call the *JEE data*, contains school-level information about the year of JEE adoption and the yearly total number of students covered by the JEE, for all public schools in the country.

We combine both administrative datasets using schools' names and the municipality and province where they are located, which allows us to measure the share of schools and students under JEE in each municipality by year. It is worth noting that the *JEE data* provides the school-level enrollment covered by JEE, but it does not distinguish educational levels, something necessary to obtain the percentage of secondary students covered by the JEE (the relevant measure of JEE exposure given the outcome of interest studied: teenage fertility). However, further inspection of the data shows that the JEE was generally adopted by all grades within a school, which relieves potential concerns about how to assign total school enrollment under JEE to each educational level. In the Appendix we explain in detail the steps followed to overcome this innocuous data restriction. From these two administrative data sources, we construct our main treatment variable: the share of secondary students that attend schools with extended school day, in a given municipality and year.[13]

In the second place, we use microdata from the *Encuesta Nacional de Fuerza de Trabajo* (ENFT) for the period 2009-2019. The ENFT, conducted by the Central Bank of Dominican Republic, is the main household survey in the country. It was conducted bi-annually (April and October) until 2016, and it then switched to a continuous scheme, with quarterly frequency. We use the waves corresponding to October for the years up to 2016, and the fourth quarter for years after 2016 in order to ensure comparability over time. The ENFT provides demographic and socioeconomic information for all household members, as well as the main characteristics of the dwelling. Of particular interest to our study, this survey reports the municipality of residence of the household, which enables us to exploit the gradual roll-out of the JEE over time and across geographic areas. Like most household surveys, the ENFT does not identify pregnant women nor the direct mother-child link for all household members; only the family relationship of each member with the household head is provided. Despite this data limitation, we use the available information of the survey (the respondents' age, gender and family relationship) to construct an indicator of teenage pregnancy, with a relative high precision.

Specifically, we construct a dummy variable that equals one for girls aged 15 to 19 who are mothers and zero if they are not. For this, we first tag all possible mother-child relationships between teenage women (15-19 years old) and children between 0 and 4 years old in each household. We consider that an adolescent woman is a mother if and only if there is a child living in the same household who could be her daughter or son according to the relationship with the household head declared by both the adolescent women and the

[13] Our data contains information about school hours (i.e., morning shift, night shift, extended school day, etc.) for public schools only. However, from conversations with experts from the MINERD, we learned that private schools operate mostly under single shifts.

child(ren). In order to minimize the inclusion error, we only keep in our sample teenage girls who can be unambiguously classified as mothers or, conversely, as childless.[14] [15]

Table 1 provides summary statistics of the 9,956 teenage women in our sample. They are 17 years old and have about 10 years of education on average. Also, 77 percent of them attend school and 10 percent are mothers of a child aged less than one year old. In terms of household characteristics, they live in household formed by 4.5 members and whose head is 43 years old and has 9 years of education on average. Almost 80 percent of the girls in our sample live in urban areas.

Table 1: Descriptive statistics of women in the sample (aged 15 to 19)

Variable	Mean	Std. Dev.
Age	16.96	1.40
=1 if attends school	0.77	0.42
Years of education	9.98	2.39
=1 if has a child aged <1	0.10	0.30
Age of the household head	43.48	11.00
=1 if household head is male	0.64	0.48
Years of education of the household head	9.03	4.60
Number of household members	4.48	1.60
=1 if urban	0.78	0.42
Observations	9,956	

Source: authors' own calculations based on ENFT 2009-2019.

[14]For instance, if there is a girl aged 15 to 19 who is either a household head or spouse, and there is a son or daughter of the household head aged 0 to 4, then that girl is identified as a mother. Another more frequent example is the following: girls who report being daughters of the household head are considered to be mothers if and only if there is also a grandchild of the household head aged 0 to 4, and the girl is the only daughter in the household. In those cases where there are two or more daughters, we cannot know exactly who is the mother of the young child, and hence we exclude them from the relevant sample. For those women identified as mothers we can also obtain the child's year of birth (and the age of the teenage mother at that moment) from combining the current ages of mother and child.

[15]We check the robustness of our estimations using ancillary data from Vital Statistics (see Section 5 for more details). This data have the advantage of reporting all births in the country, including information about the year and place of birth and the mother's age at birth. However, in order to use these data, we take a different approach in measuring the outcome: we construct a dummy variable that equals one for babies born to mothers aged 15 to 19, and zero for babies born to mothers aged 20 and above. Results are robust to the use of this alternative data source.

4 Empirical strategy and main results

Estimating the effect of a higher exposure to extended school days on girls' probability of being mothers remains a complicated task. A simple comparison between municipalities that implemented the JEE and those who did not, or municipalities that did it earlier versus those that did it later, is potentially misleading if selection into JEE is not random. For instance, richer municipalities, with better access to financial and human resources, might have adopted the JEE earlier. At the same time, these municipalities may have a lower prevalence of teenage pregnancy, and therefore a simple comparison of early and late adopters would be confounding the effect of the JEE with other factors that have nothing to do with the JEE implementation, introducing a bias in the estimation. In this section, we present the empirical approach followed to deal with potential endogeneity and estimate the causal effect of interest, and present the main results of the paper.

4.1 Within-municipality analysis

We analyze whether the probability of being a mother for an adolescent woman is affected by the exposure to the extended secondary school-day in the municipality where she resides. To do so, we take advantage of the fact that the JEE was gradually implemented in schools across the country, and exploit the within-municipality variation in the JEE incidence over time. Our benchmark specification is the following:

$$B_{i,m,t} = \beta JEE_{m,t} + X_{i,m,t} + M_{m,t} + \lambda_m + \lambda_t + \lambda_{r,t} + \nu_{i,m,t} \quad (1)$$

The outcome of interest, $B_{i,m,t}$, is a dummy variable that equals one if adolescent woman i (15-19 years old), living in municipality m, gave birth in year t, and zero otherwise. Our main independent variable $JEE_{m,t}$ represents the incidence of the JEE in the municipality. Specifically, it refers to the share of all secondary school students in municipality m that attend schools operating under the JEE scheme in year t. The focus on secondary school students implies that our analysis refers to the contemporaneous probability of early pregnancy. We include a set of individual and household-level characteristics, $X_{i,m,t}$, that may affect the probability of an adolescent girl having a child: her age and the age of the household head, the household head's gender and educational level, the number of household members, the decile of the household's per capita income, and a dummy indicating urban or rural residence.

In order to capture any time-invariant municipality characteristics that may correlate with the adoption of the JEE, we include municipality fixed effects λ_m. Calendar-year fixed effects λ_t aim at controlling for underlying time trends that may affect teenage fertility and are not attributable to the JEE (for instance, Figure 1c already depicted a -rather slow- decreasing trend in fertility). $\lambda_{r,t}$ are a set of regional time trends that control for trends in teenage fertility at the regional level. Finally, we also include a set of time-varying characteristics at the municipality level $M_{m,t}$ that are likely correlated with adolescent fertility. In particular, we control for the number of per capita SIUBEN beneficiaries in municipality m and year t, as a proxy measure of poverty.[16] We also include a measure of public services provision in the municipality, proxied by the number of per capita health centers.[17]

Under the assumption that teenage fertility in municipalities with large changes in the share of JEE would have evolved similarly to teenage fertility in municipalities with small changes in the share of JEE, had the implementation of JEE been similar in both, β reflects the causal impact of a higher exposure to the JEE program on teenage fertility. A possible threat to our identification strategy would arise if, for instance, the variation in the implementation of the JEE across municipalities and over time was correlated with other municipality characteristics that may as well impact teenage fertility. We provide support for the validity of our identification assumption in Table 2, where we report the results from a regression of time-varying characteristics of municipalities on the JEE incidence. In particular, we explore the number of social assistance beneficiaries per capita and the number of health centers per capita, to proxy for poverty and public service provision in the municipality, respectively. As we can see, after controlling for municipality and year fixed effects (which are also controlled for in our main equation), none of the two variables show a significant correlation with the evolution of the JEE incidence.

Additionally, we check whether the program´s roll-out was correlated with the dynamics of other determinants of teen pregnancies. To do this, we look at the pre-intervention trends

[16]SIUBEN is the acronym for *Sistema Único de Beneficiarios*, an institution within the government that identifies and tracks families that are eligible to receive benefits of different social programs. Our data, provided by the Oficina Nacional de Estadística (ONE), contains the date of entry (and eventually exit) of each household into each social program. Using official poverty maps, only available for 2010, we find a correlation coefficient of 0.48 between poverty rate and the number of per capita SIUBEN beneficiaries in each municipality in 2010, supporting the use of this measure, available yearly, as a proxy for municipality-level poverty.

[17]The data about health centers was obtained from the *Servicio Nacional de Salud*, and the municipality-level population numbers come from the *Oficina Nacional de Estadística* (ONE).

Table 2: Municipality-level determinants of JEE adoption

	Dependent variable: JEE incidence	
Social assistance beneficiaries (% of population)	3.197***	0.629
	(0.613)	(1.111)
Health centers (% of population)	138.6	568.3
	(125.1)	(410.0)
Municipality and year fixed effects	No	Yes
Observations	1,641	1,641
R2	0.144	0.818

Source: Data about social assistance beneficiaries comes from the SIUBEN program. Municipality-level population corresponds to projections from the Ministry of Economy and facilitated by the ONE. Data about health centers comes from the *Servicio Nacional de Salud* (SNS).
Note: Results correspond to a linear probability model, with standard errors clustered at the municipality level.

of different characteristics for municipalities that adopted the JEE early and those that did it later. A municipality is considered an early adopter if the JEE incidence in 2013 (the first year of official JEE implementation) in the municipality was above the national average in that year. Panel (a) of Figure A1 in the Appendix plots the pre-intervention trends in teen pregnancies for both groups of municipalities. As we can see, early JEE adopters had lower rates of teen motherhood than late adopters on average, which is probably related to the fact that the school selection criteria were conditional on the presence of adequate school infrastructure, something more likely in richer municipalities. However, beyond this difference in levels, there is no evidence that early and late JEE adopters were undergoing different trends of teen motherhood prior to the JEE implementation. Additionally, we also plot some observable characteristics and find no systematic differences in the trends for years of education (panel b) and poverty rates (panel c) between municipalities adopting the JEE early and those doing it later.

The main results exploiting the (exogenous) within-municipality variation are presented in Table 3. The coefficients correspond to the estimation of β in Equation 1. We find that a higher exposure to extended school day in the municipality reduces the likelihood that teenage girls become mothers. Specifically, when no control variables are included (column 1), the coefficient is negative but (marginally) not significant. When we control for individual and household characteristics (column 2) the coefficient yields a (slightly smaller) negative and significant effect. Results remain similar when adding time-varying characteristics and regional time trends (columns 3 and 4). The preferred specification (column 4) yields a coefficient of -0.041, significant at the 10% level. This magnitude suggests that an increase in the JEE enrollment coverage of 10 percentage points reduces the teenage motherhood rate by 0.4 percentage points, which represents a 3 percent relative to the average teenage pregnancy rate before the JEE implementation of 12.1 percent. The size of the effect found is economically relevant: compared to the study by (Berthelon and Kruger (2011)), that evaluates the impact of a similar program on teenage fertility in Chile, our estimate is more than twice. Yet, it is worth taking into account that the adolescent fertility rate in Chile is less than half the one registered in Dominican Republic,[18] and that the magnitude of the school-day extension was smaller.

An interesting question is whether the effect starts showing up after the JEE reached a minimum percentage of students in the municipality. This could be possible because of the gradual implementation of the JEE, as well as the potential existence of peer effects, given the influence that peers have on girls´fertility choices. To evaluate this possibility, we explore the existence of threshold effects, that is, whether the impact of exposure to the JEE on teenage fertility shows up more strongly after reaching a given percentage of secondary students in the municipality or , on the contrary, it is more homogeneous. Table 4 presents the results of a model similar to Equation 1 but where the $JEE_{m,t}$ variable is interacted with a dummy variable that equals one if $JEE_{m,t}$ is above a given percentage, with each column representing a different threshold.

The results indicate that the effect of the JEE on teenage fertility shows up when the JEE coverage reaches the 50% threshold. Specifically, the effect is small and not significant with thresholds of 30% and 40%. However, when the JEE reaches 50% and 60% of secondary schools enrollment, the magnitude of the effect increases and becomes significant. Notably, the impact becomes virtually null after passing a 60% threshold, suggesting that the strongest impact of the JEE incidence in the municipality on individual fertility takes place when about half of students attend schools operating extended school days.

[18] According to data from the World Development Indicators, in 2019 Chile had 39 mothers per 1,000 girls aged 15-19, while the number was 92 per 1,000 in the Dominican Republic. Taking the average for the period 2010-2019, it was 47 per 1,000 in Chile compared to 96 per 1,000 in Dominican Republic.

Table 3: Effect of JEE exposure on teenage motherhood

	Dependent variable: =1 if girl aged 15-19 gave birth			
	(1)	(2)	(3)	(4)
JEE incidence in municipality	-0.0480	-0.0431**	-0.0390*	-0.0412*
	(0.0314)	(0.0203)	(0.0201)	(0.0203)
Municipality and year fixed effects	Yes	Yes	Yes	Yes
Individual and household characteristics	No	Yes	Yes	Yes
Municipalities' (time-varying) characteristics	No	No	Yes	Yes
Region-specific linear time trends	No	No	No	Yes
Observations	9,960	9,956	9,956	9,956
Mean dep. variable before JEE	0.121	0.121	0.121	0.121

Source: authors' own calculations based on data from the ENFT and MINERD.
Note: The results correspond to the estimation of the β coefficient in Equation 1 using a linear probability model with standard errors clustered at the municipality level. Individual and household characteristics include: age and the age of the household head, the household head's gender and educational level, the number of household members, household's per capita income deciles, and a dummy indicating urban or rural residence. Municipalities characteristics include the number of social assistance beneficiaries per capita and the number of health centers per capita.

4.2 Event study

The previous results suggest that the JEE had a negative and significant effect on teenage fertility, that shows up particularly when at least 50 percent of secondary enrollment is under this extended school day program. Yet, these results remain silent about the dynamics of this effect. We study whether the impact of the extended school day on teenage fertility varies as more time has elapsed since the inception of the JEE in each municipality. We do so by exploiting the gradual roll-out of the program in an an event study framework.

A necessary step in the implementation of an event study is the definition of an "event", that allows to study the change in the outcome before and after the event date. In our case, given that exposure to JEE is a continuous measure, it is not clear how to define an event (and event date for each municipality). Nevertheless, as suggested by Table 4, there appears to be a non-linear impact of exposure to JEE in the municipality on adolescents' likelihood of being mothers. Specifically, the effect starts showing up more strongly at

Table 4: Effect of JEE exposure on teenage motherhood at different thresholds of exposure

	Dependent variable: =1 if girl aged 15-19 gave birth					
	30%	40%	50%	60%	70%	80%
JEE incidence in municipality (if >X%)	0.0311	-0.0193	-0.0334*	-0.0415**	0.0023	-0.0026
	(0.0578)	(0.0344)	(0.0181)	(0.0195)	(0.0168)	(0.0210)
Municipality and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Individual and household characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Municipalities' (time-varying) characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Region-specific linear time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,956	9,956	9,956	9,956	9,956	9,956

Source: authors' own calculations based on data from the ENFT and MINERD.
Note: The results correspond to the estimation of an interaction between the β coefficient in Equation 1 and a dummy that equals one if the JEE incidence is at least X% (depending on the column). The coefficients are estimated using a linear probability model with standard errors clustered at the municipality level. All columns include the same set of controls as column (4) in Table 3.

the 50% threshold, so we define the event date as the year in which at least 50 percent of students in secondary schools within municipalities were covered by the JEE. After aligning all municipalities at the event date, we analyze the change in teenage pregnancy before and after the switching date. We estimate the following standard event study specification:

$$B_{i,m,t} = \sum_{j=-4}^{4} \gamma_j D^j_{m,t} + X_{i,m,t} + M_{m,t} + \mu_m + \mu_t + \mu_{r,t} + \epsilon_{i,m,t} \qquad (2)$$

The outcome of interest is the same as before. The main independent variables of interest are $D^j_{m,t} = \mathbb{1}\{t = e_m + j\}$, a set of j dummy variables indicating the event happening j years away of the event date in the municipality m, time period t (e_m refers to the event date in municipality m, and $j = 0$ for the initial year of adoption). A negative (positive) j refers to the pre-JEE (post-JEE) years before (after) the event. For instance, for a municipality where the JEE reached 50 percent of secondary students in 2015, $D^1_{m,t} = \mathbb{1}\{t = 2015 + 1\}$ equals 1 in 2016 and 0 otherwise, and $D^{-2}_{m,t} = \mathbb{1}\{t = 2015 - 2\}$ equals 1 in 2013 and 0 otherwise. All these coefficients γ_j are measured relative to $j = -1$ (the last year before JEE implementation in each municipality m) and their estimation captures the treatment effects relative to the year before the event.[19] The set of individual and household-level variables $X_{i,m,t}$, and municipality-level variables $M_{m,t}$ are the same as before. Finally, μ_m, μ_t, and $\lambda_{r,t}$ represent municipality fixed effects, year fixed effects and regional time trends, respectively.

The results from the event study estimation with the preferred specification are summarized in Figure 4. The regression includes the fullest set of controls, as in column 4 of Table 3 (we report the point estimates for the event time coefficients (γ_j) for other specifications in Table A1 in the Appendix). A first thing to note is that the trajectory of teenage pregnancy is flat before the event, as the coefficients are not statistically significant before $j = 0$. This absence of pre-trends provides support to the identification assumption that municipalities' selection into treatment is not driving the observed effects. This trend breaks after the JEE exposure has reached 50 percent in the municipality: relative to the year before the event, the proportion of teenage mothers decreases, and this impact becomes stronger as more time elapses from the event date. In particular, the first year the effect is small and not significant, which is reasonably taking into account the gestational period. After that, it reaches almost 6 percentage points decrease in the second year and stabilizes at around 9 percentage points fall in subsequent periods. Notably, the effects are very similar from other alternative specifications with less controls (see Table A1).

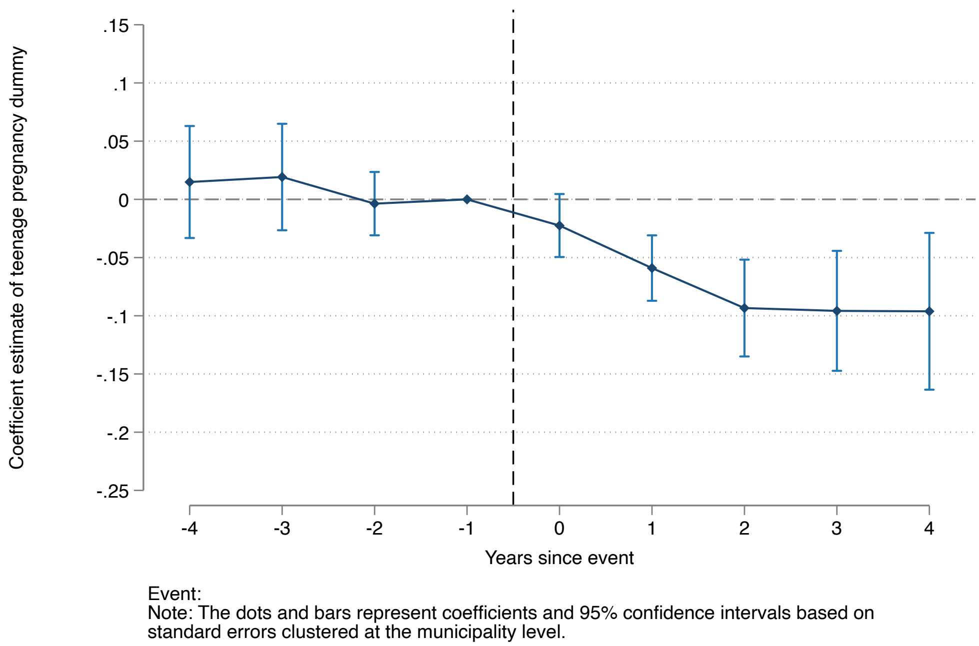
5 Robustness checks

5.1 Placebo test

Under the assumption that our main treatment indicator $JEE_{m,t}$ is uncorrelated with the error term $\nu_{i,m,t}$, then β identifies the effect of the school-day extension on teenage motherhood. We have shown in Table 2 that, after controlling for municipality and year fixed effects, the evolution of the JEE implementation within municipalities was not correlated with other observable characteristics that proxied for poverty rate and public services provision in the municipality. Yet, if there were unobserved trends in fertility that municipality and calendar-year fixed effects are not able to control for, then β would be biased.

[19] We set a baseline event window of nine years, from four years prior to the JEE adoption to four years after, which means that, in our sample, j runs from -4 to 4.

Figure 4: Effect of a 50% exposure of JEE on adolescent fertility



Source: authors' own calculations based on data from the ENFT and MINERD.
Note: The dots and bars represent coefficients and 95% confidence intervals of each of the years-since-event treatment dummies, where the event is defined as reaching at least 50% of secondary enrollment under JEE. The regression includes controls as in column (4) of Table 3, and standard errors are clustered at the municipality level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

In order to address this potential concern, we conduct a placebo exercise and estimate the same model on a group of women for whom we should not expect any impact of the JEE. In particular, we consider women aged 23-27, who are still young but, as they completed secondary education before the inception of the JEE in the country, they are old enough not to have been affected by the program. If we were to found a significant impact for this group of women, it would be suggestive that our estimations are capturing the impact of other factors and not necessarily the JEE incidence in the municipality. On the contrary, the absence of impact would provide additional support to our identification assumption.

A caveat of using such a comparison group is that the outcome is not exactly the same. Due to data restrictions, we are not able to know whether these women were teenage mothers or not. Instead, we look at the contemporaneous likelihood of being mothers, i.e., the probability that a woman gives birth at ages 23 to 27. Results are displayed in Table 5. We find that a higher incidence of the JEE in the municipality does not significantly affect the probability that older women give birth. The coefficient is very close to zero and not significant. Moreover, including individual and household-level controls, as well as controlling for municipal time-varying characteristics and regional time trends does not affect the estimations. This placebo exercise reassures that our main estimates are indeed capturing the effect of the school-day extension on teenage motherhood.

5.2 Potential measurement error of mother-child links

In order to measure teenage motherhood, we use data from the ENFT, the main household survey in the country, that provides demographic and socioeconomic information of all members of the household. However, a caveat with this survey is that it does not provide mother-child(ren) links for all household members.

Although we follow a careful approach in order to predict these mother-child links and construct our indicator of teenage motherhood (see Section 3 for more details), we conduct a robustness check to address the potential measurement error in our outcome of interest. For this, we use data from Vital Statistics that records all registered births in the country -and hence it does not suffer from measurement error-, together with the place of birth and age of the mother at birth. Given that the sample corresponds to all births (instead of all teenage women), and that we do not have any other socioeconomic information of the mother nor the household, we redefine our outcome of interest as the share of total births that correspond to teenage mothers (aged 15-19) in a given municipality and year. Under

Table 5: Effect of JEE exposure on the probability of giving birth, women aged 23-27

	Dependent variable: =1 if woman aged 23-27 gave birth			
	(1)	(2)	(3)	(4)
JEE incidence in municipality	0.0099	-0.0149	-0.0140	-0.0027
	(0.0705)	(0.0501)	(0.0501)	(0.0499)
Municipality and year fixed effects	Yes	Yes	Yes	Yes
Individual and household characteristics	No	Yes	Yes	Yes
Municipalities' (time-varying) characteristics	No	No	Yes	Yes
Region-specific linear time trends	No	No	No	Yes
Observations	9,004	9,001	9,001	9,001
Mean dep. variable before JEE	0.315	0.315	0.315	0.315

Source: authors' own calculations based on data from the ENFT and MINERD.
Note: The results correspond to the estimation of the β coefficient in Equation 1 using a linear probability model with standard errors clustered at the municipality level, for the group of women aged 23 to 27 years old. Individual and household characteristics include age and the age of the household head, the household head's gender and educational level, the number of household members, household's per capita income deciles, and a dummy indicating urban or rural residence. Municipalities characteristics include the number of social assistance beneficiaries per capita and the number of health centers per capita.

the assumption that the age composition of the population did not change significantly over time during the period analyzed, then an increase in the likelihood that an adolescent woman gives birth would be mirrored by an increase in the proportion of babies born to adolescent women. We therefore estimate a model similar to Equation 1 but now the outcome variable is defined at the municipality-year level: the proportion of total births in municipality m and year t whose mothers are aged 15 to 19 years old.

The results, presented in Table 6 are remarkably similar to our main results, and stable across specifications. According to this estimation, a 10 percentage point increase in the JEE incidence in secondary schools in the municipality is associated with a decrease in the proportion of newborns that correspond to teenage mothers of 0.6 percentage points. This represents a 3.9 percent decrease from the average share of mothers who were teenagers before the inception of the JEE. The fact that we find very similar results using a completely different dataset that accurately measures teenage pregnancy suggests that our results are not driven by measurement error in mother-child links from the ENFT.

Table 6: Effect of JEE exposure on the proportion of newborns from adolescent mothers

	Dep. variable: Share of newborns from mothers aged 15-19		
	(1)	(2)	(3)
JEE incidence in municipality	-0.0576**	-0.0540**	-0.0643**
	(0.0260)	(0.0243)	(0.0317)
Municipality and year fixed effects	Yes	Yes	Yes
Municipalities' (time-varying) characteristics	No	Yes	Yes
Region-specific linear time trends	No	No	Yes
Observations	1,504	1,504	1,504
Mean dep. variable before JEE	0.167	0.167	0.167

Source: authors' own calculations based on data from Vital Statistics and MINERD.
Note: The outcome variable is the share of births in a given municipality and year that correspond to mothers aged 15-19. The coefficient is obtained from a linear probability model with standard errors clustered at the municipality level. Municipalities characteristics include the number of social assistance beneficiaries per capita and the number of health centers per capita.

6 Conclusion

Early pregnancy is a major obstacle to educational and labor market opportunities of women. Understanding how alternative policy options can help tackle this issue is crucial to improve girls well-being and contribute to reduce gender gaps. In this paper, we assess the impact of the *Jornada Escolar Extendida* (JEE), a flagship educational program that extended the school day from 4 to 8 hours, on teenage fertility in Dominican Republic. We exploit the gradual implementation of the JEE, that induced time and geographic variations in the exposure to the program, and estimate its causal effect on teenage fertility using a model with municipality and year fixed effects.

Our results shows that teenage women are less likely to give birth in municipalities with a higher exposure to extended school days. Specifically, a 10 percentage points increase in the JEE share of total secondary enrollment reduces the probability that a teenage girl is a mother by 0.4 percentage points, which represents about 3 percent of the adolescent motherhood rate before the introduction of the JEE. This result is economically relevant and is robust to other different specifications and alternative sources of data. Moreover, we also show that the effect shows up more strongly after the JEE has reached at least 50%

of secondary enrollment, and that teenage fertility decreases continuously during the first three years after municipalities reach this threshold.

This paper contributes to a large literature that studies the effects of education on adolescent fertility and, particularly, the incipient literature which focuses on the effect of longer school days on early pregnancy. Although further research is necessary to better understand the channels through which this effect operates, our results indicate that the extended school day contributed to a reduction in teenage pregnancy in the Dominican Republic. These findings suggest that policies that extend school days, aimed at improving educational outcomes, may have spillover effects regarding teenager's fertility decisions. This is reassuring given the large and increasing amount of resources devoted in the region to extended school day policies.

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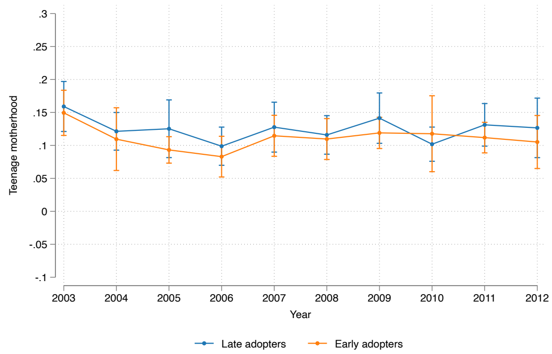
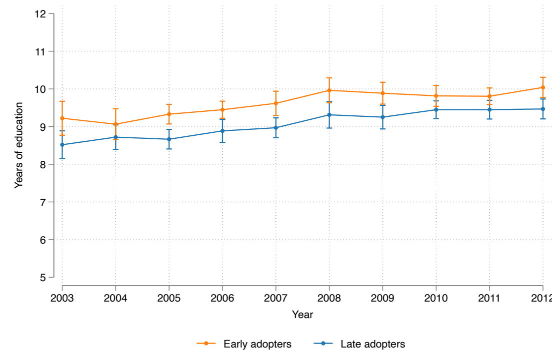
A Appendix

Figure A1: Prevalence of adolescent fertility (15 to 19 years old)

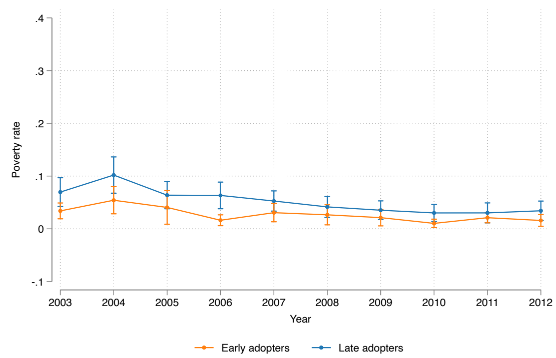
(a) Teenage motherhood



(b) Years of education



(c) Poverty rate



Note: Each panel plots the estimated coefficient and the corresponding 95% confidence interval for the interaction between an indicator of early adopting municipality and a dummy for each year.

Table A1: Effect of a 50% exposure of JEE on adolescent fertility

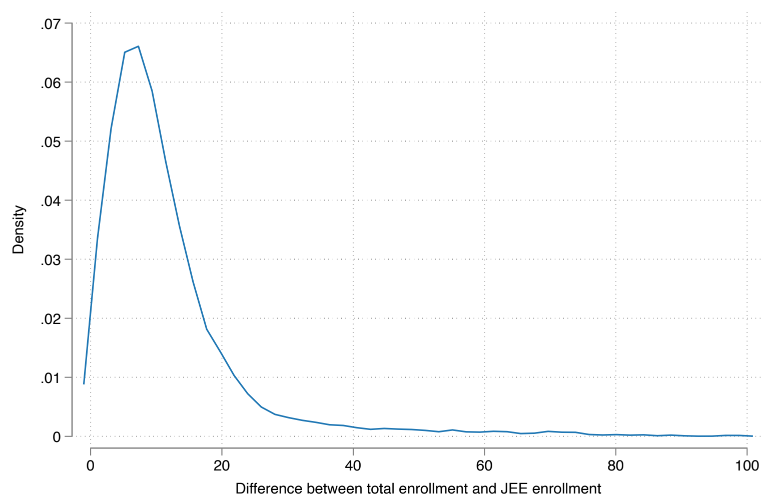
	Dependent variable: dummy =1 if girl aged 15-19 gave birth			
	(1)	(2)	(3)	(4)
4 years before event	-0.0068	0.0071	0.0064	0.0149
	(0.0353)	(0.0220)	(0.0227)	(0.0243)
3 years before event	-0.0134	0.0136	0.0133	0.0192
	(0.0296)	(0.0221)	(0.0224)	(0.0231)
2 years before event	-0.0040	-0.0067	-0.0069	-0.0037
	(0.0242)	(0.0129)	(0.0131)	(0.0138)
1 year before event (omitted)	-	-	-	-
Year of event	-0.0303**	-0.0187	-0.0179	-0.0225
	(0.0143)	(0.0133)	(0.0133)	(0.0137)
1 year after event	-0.0472**	-0.0501***	-0.0490***	-0.0590***
	(0.0212)	(0.0125)	(0.0133)	(0.0142)
2 years after event	-0.0964***	-0.0797***	-0.0780***	-0.0934***
	(0.0254)	(0.0193)	(0.0200)	(0.0210)
3 years after event	-0.0841**	-0.0745***	-0.0724***	-0.0958***
	(0.0326)	(0.0241)	(0.0250)	(0.0260)
4 years after event	-0.0810**	-0.0637**	-0.0606*	-0.0962***
	(0.0381)	(0.0297)	(0.0317)	(0.0340)
Municipality and year fixed effects	Yes	Yes	Yes	Yes
Individual and HH characteristics	No	Yes	Yes	Yes
Municipalities' (time-varying) characteristics	No	No	Yes	Yes
Region-specific linear time trends	No	No	No	Yes
Observations	9,432	9,432	9,432	9,432

Source: authors' own calculations based on data from the ENFT and MINERD.
Note: The table reports the coefficients of each of the years-since-event treatment dummies from Equation 2, and the event is defined as reaching at least 50% of secondary enrollment under JEE. Standard errors clustered at the municipality level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

B Appendix: Matching of *schools data* and *JEE data*

Both the *schools data* and the *JEE data* contain information about enrollment the school level. However, the former also contains a disaggregation by educational levels, while the latter does not. In order to construct our relevant measure of exposure, the share of secondary students under JEE in each municipality, we need to assign total students under JEE to different educational levels.

Figure B1: Difference between total enrollment and JEE enrollment



Source: MINERD.

To do so, we proceed in the following way. We first keep schools that offer secondary education (either exclusively secondary education or together with other levels), which we know from the *schools data*, and calculate the proportion of total enrollment by level. Then, we take the total enrollment under JEE (from the *JEE* data) and assign it to each educational level proportionally to the within-school distribution of students across levels.[20] Naturally, this is trivial for schools that offer only secondary education, which corresponds to 31 percent of public schools with secondary education. For the remaining schools that also offer other levels on top of secondary level, there could be a potential measurement

[20]For instance, if a school has 500 students in total, distributed 100 in preschool (one fifth), 200 in primary (two fifths), and 200 in secondary (two fifths), and there are 250 covered by the JEE, we assign those 250 students under JEE to each level following the one-fifth, two-fifths, two-fifths distribution.

error. However, Figure B1 shows the distribution of the differences in total enrollment from the *schools data* and JEE enrollment from the *JEE data*. As we can see, most of the differences are small; indeed, in over 55 percent of cases the difference is below 10 percent. This suggests that the JEE was generally adopted by all grades within a school at the same time, and makes innocuous our way of assigning JEE enrollment to different levels.