

# Consequences of Teenage Childbearing in Peru

Is the Extended School-day Reform an Effective Policy  
Instrument to Prevent Teenage Pregnancy?

Alan Sánchez and Marta Favara



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ISBN 978-1-912485-22-2

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## About YMAPS



This paper was produced by Young Lives as part of the Young Marriage and Parenthood Study (YMAPS), a three-year programme of comparative research examining young marriage and parenthood.

YMAPS is a collaboration between Young Lives, a longitudinal study of childhood poverty following the lives of 12,000 children in Ethiopia, India, Peru and Vietnam over 15 years, and Child Frontiers, a consulting company that works in partnership to promote the care, well-being and protection of children.

YMAPS is funded by the International Development Research Centre (IDRC) in Canada.

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## Acknowledgements

We would like to thank the International Development Research Centre (IDRC) in Canada for providing funding for this research project as part of the Young Marriage and Parenthood Study (YMAPS), a programme of comparative research (2017-2020) examining young marriage and parenthood in collaboration with Young Lives. We are grateful to Andrea Cornejo and Alessandra Hidalgo for their excellent research assistance.

# Summary

In Peru, approximately 14 out of 100 female adolescents are mothers. Teenage childbearing is a major policy concern, as most studies point to a negative impact of early fertility on maternal outcomes and on the birth and future of the children.

This paper investigates the role of extended school-day programmes, primarily seen as a means of improving academic achievement, for teenage pregnancy prevention. It first reviews the literature on policy alternatives to reduce teenage pregnancy that have been evaluated in developing countries, including extended school-day programmes. Second, it describes the phenomenon of teenage pregnancy (and early marriage and cohabitation) in Peru. Third, it evaluates the impact of the Peruvian extended school-day reform (*Jornada Escolar Completa*, JEC) on several risk and protective factors predicting teenage pregnancy.

Our results are in line with previous assessments of similar programmes in the region. We find that, on average, being a student from a JEC school leads to an improvement in reading comprehension and maths. Our findings also suggest a possible impact of JEC on teenage pregnancy via an increase in educational aspirations and psychosocial competencies. Looking at potential heterogeneous effects by gender reveals that the programme has a larger impact on male students' school performance. It also has an impact on female's pride and sense of agency, which might promote safer sexual behaviour through affecting females' perceived barriers to the use of contraceptive methods and empowering them to handle situations in which they are asked to have unprotected sex. Finally, we find that JEC improves male students' knowledge about sexual and reproductive health. This impact might further promote more responsible behaviours and ultimately be one of the channels leading to a decrease in early fertility – together with an increase in performance, aspirations and socio-emotional competencies.

# 1. Introduction

During the last two decades, the situation of children and adolescents in Peru has improved substantially.<sup>1</sup> Notwithstanding the progress observed, substantial inequalities remain in nutritional and educational outcomes related to a child's background (Penny 2018; Cueto and Felipe 2018). Moreover, there are other areas in which progress has not been made. One area is teenage pregnancy, the prevalence of which in Peru has remained relatively unchanged over the last two decades (MCLCP 2016). According to our estimates using data from the Demographic and Health Survey 2017 (DHS 2017), in Peru 14.3 per cent of females aged between 15 and 19 years have had at least one child born alive, or are pregnant. Teenage childbearing is a major policy concern in the Peruvian context and in the Latin American and Caribbean region (which has the third highest teenage fertility rate in the world), as most studies point to a negative impact of early fertility on parents' (mainly mothers') outcomes and on the birth and future of the children.

Within this context, this paper has three main objectives. First, we investigate mechanisms through which policy interventions could be effective in preventing teenage pregnancy. More specifically, we present a non-systematic literature review of policy alternatives to reduce teenage pregnancy that have been evaluated in developing countries, including extended school-day programmes. Second, we describe the phenomenon of teenage pregnancy (and early marriage and cohabitation) in Peru. We report estimates of its prevalence (total and by geographical domain and area of residence), and document the evidence that looks at its risk factors and consequences. Third, we focus on the case of the Peruvian extended school-day reform (*Jornada Escolar Completa*, JEC), an educational policy that simultaneously increases the number of taught hours in secondary-level public schools, and implements a number of structural changes in the school, including pedagogical accompaniment (for students and teachers), improved school management, physical infrastructure, and IT support (MINEDU 2014, 2015).

The JEC programme has proved to be effective in increasing learning outcomes among primary and secondary school students (Agüero 2017); however, no evidence is available on the effect of this programme on other dimensions relevant to reducing teenage pregnancy. Nevertheless, encouraging evidence from other countries suggests that extended school-day programmes can reduce the prevalence of teen childbearing (for example, for Chile see Berthelon and Kruger 2011) through a number of mechanisms. Our hypothesis is that extended school-day programmes might reduce the prevalence of teenage pregnancy by increasing the number of hours under adult supervision (curtailing opportunities to engage in risky sexual behaviours) and by increasing the opportunity cost of early (unprotected) sexual intercourse (mainly, but not exclusively, through improvement in school performance, and increased educational aspirations and socio-emotional competencies).

For the empirical analysis, we use data from Demographic and Health Surveys (DHS) and Young Lives. Young Lives is a longitudinal study that since 2002 has tracked the livelihoods of two cohorts of children in Peru: a Younger Cohort (born in 2001-2) and an Older Cohort

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1 Chronic undernutrition for children under 5 years of age has reduced from 25.4 per cent to 12.9 per cent between 2000 and

(born in 1994-5). We use data from the Older Cohort to characterise the phenomenon of teenage pregnancy in Peru, and data from the Younger Cohort to evaluate the impact of the JEC programme. The availability of longitudinal data allows us to control for differences in the outcomes of interest pre-existing the implementation of JEC, and to take into account how conditions experienced early in life influence life-course trajectories.

The rest of the paper is in two parts. The first focuses on better understanding the phenomenon of teenage pregnancy (and early marriage and cohabitation) in Peru, including its prevalence, risk factors and consequences. We also reflect on a variety of policy interventions that have been tested in Peru and/or in similar contexts to prevent teenage pregnancy. In the second part, we review existing evidence on the effects of extended school-day programmes, and evaluate the impact of the JEC programme on several dimensions suggested by the existing literature that in turn might lead to a reduction in teenage pregnancy. These include learning outcomes, socio-emotional competencies, unprotected sex, and knowledge of health and sexual education.

# **Part I**

Teenage pregnancy, early marriage and cohabitation: existing evidence on risk factors, consequences and policy options in Peru



## 2. Teenage pregnancy in Peru

### 2.1. Trends of teenage pregnancy and early marriage/cohabitation

According to our estimates using data from DHS 2017, in Peru 14.3 per cent of adolescent females (aged between 15 and 19 years) have had at least one child born alive, or are pregnant.<sup>2</sup> The prevalence of teenage mothers has remained relatively stable in the last 20 years. By area of residence, the largest prevalence is observed in rural areas where approximately 1 out of 4 adolescents is a mother (23.7 per cent in rural areas, versus 11.8 per cent in urban areas). By geographical domain, the prevalence observed in the Amazonian Jungle is substantially above that in the Coast and Highlands (Table 1). At the departmental level, the largest rate (above 30 per cent) is observed in Loreto (Figure 1, part a), in the Amazonian Jungle. Three other regions have rates between 20 per cent and 30 per cent (Amazonas and Ucayali in the Amazonian Jungle, and Cajamarca in the Highlands) while the rate is close to 20 per cent in San Martín, Huánuco and Madre de Dios (all in the Amazonian Jungle).

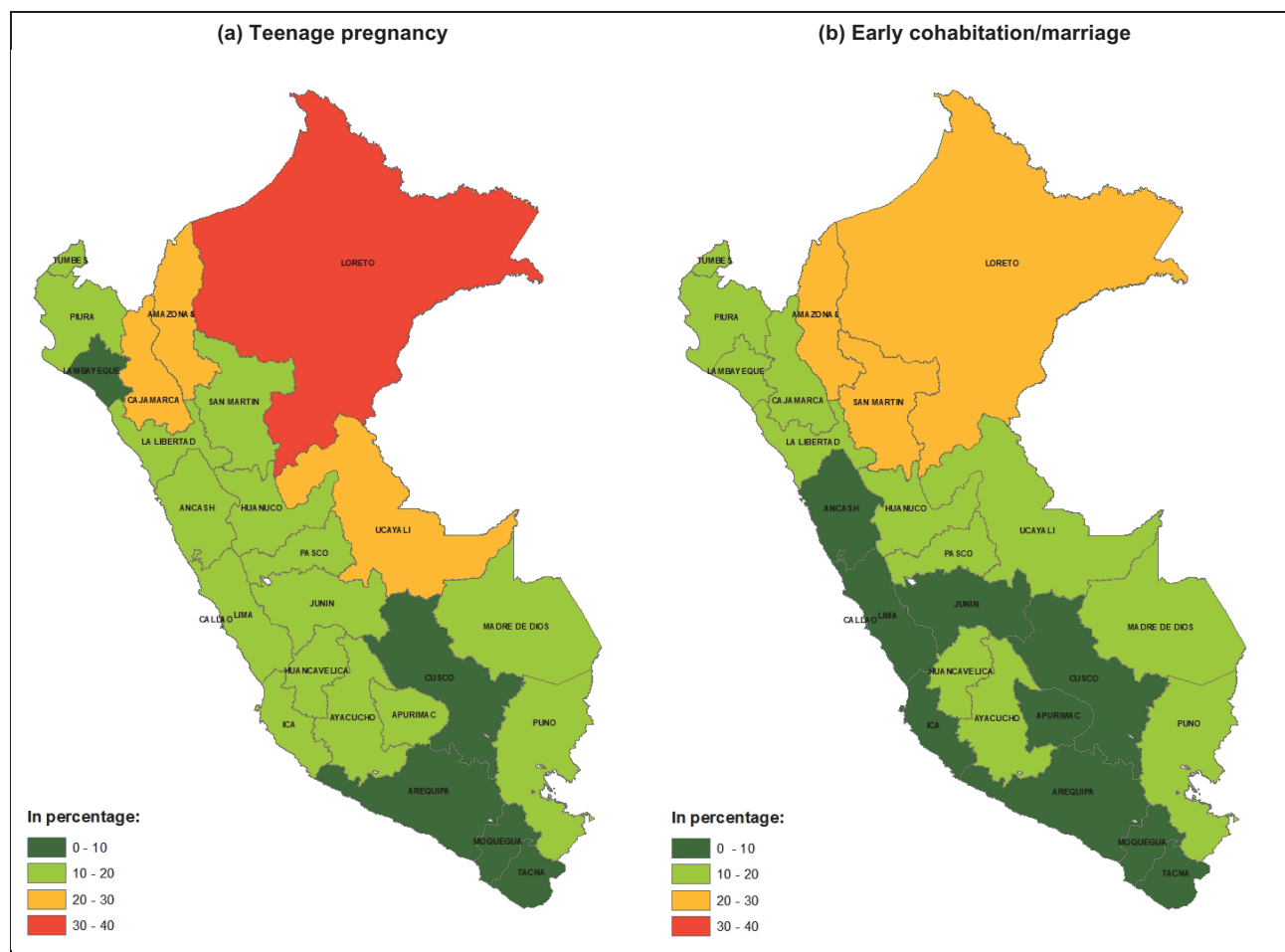
**Table 1.** *Prevalence of teenage pregnancy and early cohabitation/marriage (for females) in Peru, 2017*

Geographical division	Age 15 to 19		Age 15 to 17	
	Teenage pregnancy (%)	Cohabitation/marriage (%)	Teenage pregnancy (%)	Cohabitation/marriage (%)
<b>Total</b>	14.3	10.9	7.7	5.8
<b>Area of residence</b>				
Urban	11.8	8.2	6.1	3.9
Rural	23.7	20.7	12.7	11.5
<b>Geographical domain</b>				
Lima Metropolitana	11.7	7.0	5.3	2.9
Rest of coast	13.0	10.5	6.3	5.5
Highlands	13.6	11.3	6.9	5.3
Amazonian Jungle	23.5	19.6	15.5	12.9

Notes: Authors' estimates using data from DHS 2017. Data correspond to females between 15 and 19 years of age at the time of the interview.

<sup>2</sup> For the methodology on the calculation of teenage pregnancy rates using DHS data, see Sánchez (2018).

**Figure 1.** *Prevalence of teenage pregnancy and early cohabitation/marriage in Peru by department, 2017*



Note: Authors' estimates using data from DHS 2017.

Early cohabitation/marriage is another important aspect to consider in the Peruvian case. According to our estimates using DHS 2017 data, 10.9 per cent of females aged 15 to 19 are cohabitating and/or are married. Of these, 81.5 per cent are (teenage) mothers or are pregnant. Therefore, while these two phenomena are related, the relationship is not identical. Table 1 reports the prevalence of cohabitation/marriage by area of residence and geographical domain. A very similar pattern is observed as for teenage pregnancy, with the largest rates in rural areas (20.7 per cent, versus 8.2 per cent in urban areas) and in the Amazonian Jungle (19.6 per cent). At the departmental level (Figure 1, part b), the largest rates are observed in Loreto, Amazonas and San Martín (all in the Amazonian Jungle).

Table 1 also documents the prevalence of teenage mothers and early cohabitation/marriage among minors (under the age of 18). These rates are 7.7 per cent and 5.8 per cent, respectively. As before, the largest rates are observed in rural areas (12.7 per cent and 11.5 per cent, respectively) and in the Amazonian Jungle (15.5 per cent and 12.9 per cent, respectively). The rates of pregnancy and early marriage and cohabitation among younger adolescents might be the consequences of episodes of violence and sexual abuse.

The Young Lives study is another useful source of information to measure the prevalence of teenage pregnancy and early marriage/cohabitation. Although not representative at the national level, the Young Lives sample for Peru has been found to reflect the diversity of children and families in the country, excluding the wealthiest 5 per cent (more details of the sample design are reported in Section 5). The Older Cohort has data for individuals tracked since the age of 8. When this cohort was visited for the fourth time (Round 4) at the age of 18 to 19 years (635 individuals: 294 females and 341 males), 21 per cent of females were mothers and 22 per cent of females were cohabitating or married. This rate of teenage pregnancy is similar to that observed at the national level for females of comparable age (18 to 19 years) in the DHS data. In addition, 5 per cent of males were found to be fathers at the same age, and 5 per cent were married or cohabiting.

## **2.2. Consequences of teenage pregnancy and early marriage/cohabitation**

Several studies document the negative consequences of teenage pregnancy for maternal and child outcomes in developing countries (see Azevedo et al. 2012 for a comprehensive review). However, there is limited quantitative evidence of the consequences of teenage pregnancy and early cohabitation/marriage in Peru. Behind this lack of evidence is the challenge of identifying the causal effects of a phenomenon that is arguably more likely to occur among more vulnerable women. While acknowledging these limitations, some recent studies have used data from DHS and Young Lives to estimate the association between teenage pregnancy and early marriage/cohabitation on later outcomes in life (Favara, Lavado and Sánchez 2016; Favara and Sánchez 2018; Sánchez 2018; Briones and Porter 2019).

Favara, Lavado and Sánchez (2016) use Young Lives data to examine the characteristics of young women who have been married, cohabited, or given birth (teen marriage, cohabitation, and parenthood, or TMCP) by age 19. They find that TMCP women are less likely to be enrolled in education and more likely to be overweight and obese than their peers at age 19. Briones and Porter (2019) use Young Lives data to examine a richer set of dimensions. For Peru, among other aspects, they find that TMCP women are less likely to be enrolled in formal education, are more likely to be NEET (not in education, employment or training), have lower agency, self-esteem and are less satisfied about the life they are conducting at age 22 than their peers. While this evidence is suggestive, the results are of a descriptive nature, as they do not control for child and household characteristics that might explain why women who have been married, cohabited, or given birth by age 19 would have worse outcomes than their peers had these events not occurred. In fact, Briones and Porter (2019) show that some of these differences were apparent even before marriage and/or pregnancy.

Sánchez (2018) uses data from DHS and a multivariate regression approach to look at the association of teenage pregnancy with educational outcomes, and labour market outcomes at ages 15 to 19 (in the short term) and 20 to 24 (medium term). Teenage pregnancy is found to predict an increase in the probability of dropping out from formal education in the short term (by 54 percentage points, p.p.), and a decrease in the probability of completing basic education and enrolling in higher education in the medium term (by 10 and 42 p.p.,

respectively).<sup>3</sup> Sánchez also finds that the association of teenage pregnancy with labour market participation varies over the life course. Being a teenage mother leads to an increase in labour market participation in the short term and to a decrease in participation in the medium term. The author highlights that the increase in labour market participation in the short term might be associated with financial pressures related to motherhood and a lack of a network of support.<sup>4</sup>

Favara and Sánchez (2018) use data from Young Lives and a multivariate regression approach to look at the life-course predictors of enrolment in higher education, access to formal jobs and being NEET at age of 22. They find that TMCP females are less likely to be enrolled or have completed higher education, less likely to have a formal job, and more likely to be NEET at age 22 than their peers. Briones and Porter (2019) find similar evidence, also using Young Lives data and a multivariate regression approach (see also Franco and Ñopo 2018; Balarín et al. 2017). Furthermore, the authors use a “difference in difference” approach and find that TMCP females have lower levels of agency than their peers.<sup>5</sup>

Overall, while the number of studies is small, the evidence consistently shows that teenage pregnancy is associated with worse outcomes in terms of educational achievement, access to the labour market, and socio-emotional competencies.

### 2.3. Risk factors of teenage pregnancy and early marriage/cohabitation

In order to prevent teenage pregnancy and early cohabitation it is important to understand the risk factors associated with these phenomena in Peru. Two studies that tackle this aspect are Azevedo et al. (2012), and Favara, Lavado and Sánchez (2016). Azevedo et al. (2012) use DHS data on adolescent girls aged 15 to 19 from a number of countries in the Latin American and the Caribbean region, including Peru, Bolivia, Colombia, Dominican Republic, Haiti and Honduras. Using a multivariate regression, the authors look at the predictive role of socio-demographic characteristics, age of first sexual relationship, and use of contraceptive methods. They find that one of the key risk factors of teenage pregnancy in the Peruvian context is the length of the period of sexual activity of the girl: the earlier sexual initiation, the more likely teenage pregnancy is. The authors identify two other risk factors: being married or cohabitating (which increases the likelihood of teenage pregnancy by 18 p.p.), and using contraceptive methods (which reduces its probability by between 10 and 22 p.p., depending on whether the adolescent girl uses traditional or modern contraceptive methods).

Favara, Lavado and Sánchez (2016) use Young Lives data to look at the risk factors of teenage pregnancy and early cohabitation/marriage from a longitudinal, multi-dimensional, perspective. As in the previous study a multivariate regression approach is used. They test

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<sup>3</sup> The decrease in the probability of completing basic education due to teenage pregnancy is larger (in absolute terms) in rural areas (18 p.p., versus 6 p.p. in urban areas), whereas the decrease in the probability of accessing higher education is larger (in absolute terms) in urban areas (42 p.p., versus 24 p.p. in rural areas). These heterogeneous “effects” of teenage pregnancy might be linked to the fact that in rural areas the key educational milestone is to complete basic education, whereas in urban areas it is to access higher education.

<sup>4</sup> When a distinction is made between women that live with and without a partner, and also according to whether pregnancy was planned, the association of teenage pregnancy with labour market participation is found to be positive only for mothers that do not live with their partners, and for those mothers that did not plan pregnancy.

<sup>5</sup> The difference-in-difference approach takes into account systematic differences between those girls who married, cohabited, or became mothers by age 19 and their peers prior to childbearing/marriage/cohabitation.

the following risk factors: household socio-demographic characteristics measured when the child is aged 8 years (household wealth, household size, and number of siblings) or that are constant over time (maternal education, native tongue); school attendance at age 15, and performance in test scores at age 12; socio-emotional competencies and aspirations measured at age 12; parental expectations for the child; age of first sexual relationship, and knowledge of sexual and reproductive health at age 15. In an additional estimate, the authors also explore the role of changes in socio-economic status, schooling achievement, and socio-emotional dimensions on teenage pregnancy and early cohabitation/marriage. This analysis identifies five risk factors for teenage pregnancy. At the household level, teenage pregnancy is more likely to occur among poorer families and among families where one parent (typically the father) abandoned the family. At the child level, school attendance and better school performance reduce risk, whereas a reduction in aspiration for higher education and a reduction in the girls' self-efficacy between late childhood and adolescence increases risk. Finally, early sexual initiation increases risk. The authors perform a similar analysis to look at the risk factors of early cohabitation/marriage. Not surprisingly, the risk factors are very similar given the strong interlinkage between early fertility and cohabitation/marriage.

### 3. Review of effective policies to reduce teenage pregnancy

Azevedo et al. (2012) discuss the evidence around the effectiveness of different policy options available to reduce teenage pregnancy in developing countries, including school-based sexual education programmes, as well as programmes that have the potential to reduce teenage pregnancy by increasing its opportunity cost (extended school-day programmes; conditional cash transfer programmes and youth training programmes). Here we discuss some of this evidence, focusing on developing countries.

Looking at school-based programmes on sexual education, Cabezón et al. (2005) show that delivering abstinence messages for teenagers is effective in reducing teenage pregnancy rates in Chile. Similarly, two studies in Bangladesh and Zambia show evidence that sexual and reproductive health information delivered to students through peers (who also act as role models) can contribute to improved attitudes towards the use of contraceptive methods (Bhuiya et al. 2004; Agha 2002). However, not all the interventions that focus purely on information are shown to be effective. For instance, one study in Kenya (Duflo et al. 2011) shows that sexual and reproductive health information provided by teachers alone is not sufficient to reduce teenage pregnancy and sexually transmitted diseases.

The role of other social policies to reduce teenage pregnancy has also been evaluated. Conditional cash transfer (CCT) programmes are one alternative. Azevedo et al. (2012) discuss the evidence available at that time from CCTs in Latin America, from *Familias en Acción* in Colombia, *Juntos* in Peru, *Bolsa Familia* in Peru, and *Subsidio Educativo* in Colombia. All of these programmes offer cash incentives to families to enrol their children in school and to secure an attendance rate above 80 per cent during the school year. In addition, *Subsidio Educativo* also has a performance requirement for children. Azevedo et al. (2012) conclude that CCTs have the potential to reduce teenage pregnancy, though the effects are small in some cases, while the costs are high. Outside the Latin American region,

an important case study is the *Zomba* cash transfer programme in Zomba, Malawi. The programme targeted adolescent girls in order to make them stay in school or go back to school. Both a conditional and an unconditional version of the cash transfer programme (CCT and UCT, respectively) were tested. Baird et al. (2011) show that the programme was effective in improving school enrolment and learning. In addition, Baird et al. (2010) find that being assigned to the CCT reduced early marriage and teenage pregnancy by 40 per cent and 30 per cent, respectively. The effect found was explained entirely by the impact of the CCT on girls that were not attending school at baseline. A related study shows that the UCT version of Zomba can also reduce teenage pregnancy among girls that were not attending school at baseline (Baird et al. 2011). More recently, Bataglia et al. (2016) analyse the evidence available worldwide and found support for the proposition that CCTs can be an effective way to reduce pregnancy and to delay marriage among adult women.

Extended school-day programmes are also considered to be an alternative to reduce teenage pregnancy. Although these programmes are not designed with this purpose in mind, some characteristics are likely to have both a direct and an indirect impact on teenage pregnancy. Evidence of such relationship has been found in Chile (Berthelon and Kruger 2011), where an increase in the coverage of extended-day schools at the municipality level by 20 per cent led to a reduction of teenage pregnancy by 3 per cent (see also Pires and Urzúa 2015). Evidence from developed countries leads to a similar conclusion (Black et al. 2008; Westermaier 2016). We discuss this evidence in the following section.

# Part 2

## Impact evaluation of *Jornada Escolar Completa*

Here, we explore the pathways through which extended school-day programmes can have an impact on teenage pregnancy and test their impact in Peru. First, we review the extended school-day programmes in the developing world, focusing on the Latin American region (Section 4); second, we describe the programme in Peru (Section 5); third, we investigate the main effects of this programme on a number of risk factors associated with teenage fertility, according to the proposed theory of change and existing evidence on the early predictors of teenage fertility (Sections 6-9).

## 4. Effectiveness of extended school-day programmes

Increasingly, Latin American countries are embracing policies for extending the school day primarily as a way – rightly or wrongly – of improving learning outcomes (Elías et al. 2016). Extended school-day programmes are primarily seen as a means of improving academic achievement. Compared to other after-school programmes, extended school-day programmes typically take place inside the school building, are usually run by regular school-day teachers and are directly related to and aligned with what happens during the day.

These efforts appear in a context in which, for most countries in Latin America, the priority has shifted from securing universal access to basic education (which has been achieved at the primary level) to improving education quality. In order to maximise school enrolment without imposing too much pressure on the government budget (school infrastructure and teacher salaries), many countries accommodated the inflow of new school students by reducing the length of the school day to allow multiple shifts per school. It is thought that this reduction in instruction time might have hurt educational achievement. For instance, Lavy (2015) uses data from 50 countries (Programme for International Student Assessment, PISA) to show that one additional instructional hour in a given domain (mathematics, science or language) improves test scores by 0.06 SD of the test score distribution in that domain. The effect reduces to 0.025 SD for developing countries (see also Rivkin and Schiman 2015). Within this context, some countries have started implementing programmes in order to gradually return to full-school days. Two questions have been at the core of the debate: are these programmes effective? And are they cost-effective? The cost-effectiveness analysis is a key consideration since these programmes are particularly expensive.

A distinction can be made between programmes that extend the school day only, and programmes that, in addition to expanding the length of the school day, introduce reforms in the curriculum. The Chilean case is an example of a programme in which the total instructional time increased by 27 per cent (from 955 to 1216 annual hours) with no further changes in the curriculum (each school decided how to allocate the additional time) (Bellei 2009). The programme started in 1997 and took approximately ten years to be completed. In turn, the Uruguayan case is an example of an extension of the school day that was accompanied with substantial reforms. The reform (as implemented since 1996) involved an increase in instruction time from 3.5 to 7 hours per day, a reduction of the recommended class size, introduction of new classroom activities, constitution of a teacher committee, provision of nutritional and health care support, increased parental participation, provision of teaching material, and (since 1999), teacher training (Cerdán-Infantes and Vermeersch 2007).

The impact of extended school-day programmes in Latin America has been investigated in several case studies (see Alfaro, Evans and Holland 2015). Focusing on high-quality studies (defined as those that use a double-difference strategy, a matching strategy and/or a regression discontinuity design),<sup>6</sup> the evidence points to a positive impact of extended-day

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<sup>6</sup> To our knowledge, there is no evidence from randomised control trials for these types of programmes.



programmes on mathematics and language test scores in Chile (Bellei 2009), Uruguay (Cerdán-Infantes and Vermeersch 2007), Colombia (Hincapie 2016) and Peru (Agüero 2017). An exception is Brazil, for which a negative impact in maths test scores is observed due to an increase in the length of school day alone (Almeida et al. 2016). In addition, the introduction of longer school days in half the primary schools in the city of Buenos Aires did not have any impact on learning outcomes, but significantly increased the probability of secondary school completion for the beneficiaries by 21 per cent, the results being driven by those students coming from economically disadvantaged families (Llanch et al. 2009).

Extended day programmes/reforms can also have an impact on schooling attainment (including the likelihood of high-school graduation). Such evidence has been found for Chile (Pires and Urzúa 2015) and Argentina (Llach et al. 2009). Moreover, while improving students' opportunities to learn is the primary objective of such programmes, keeping children at school into the afternoon has been increasingly found to have positive spillover effects on a number of aspects beyond students' performance, including engagement in risky behaviours and adolescent fertility. Evidence of such a relationship has been observed in Chile by Krueger and Berthelon (2009). They find that an increase of 20 per cent accessibility to the extended school-day programme has a positive effect on reducing teenage fertility on average by 3 per cent, with a stronger effect among poor families and in urban areas. They estimate that the extended school-day programme could have accounted for one-eighth of the decline in teen motherhood since the reform was implemented. Furthermore, they suggest that longer school days reduce the amount of time students spend without adult supervision. As a result, they argue, the reform reduced youth crime in those districts where the extended school-day programme was more diffuse (Berthelon and Krueger 2011). Their results are confirmed by Pires and Urzua (2015), who found that the extended school-day programme reduced criminal activities and the rate of adolescent motherhood. Similar evidence has also been observed in the US and Norway (Black et al. 2008) and in Germany (Westermaier 2016).

## 5. Characteristics of the *Jornada Escolar Completa* in Peru

*Jornada Escolar Completa* (JEC) is an educational policy introduced by the Minister of Education in Peru in 2015, created by law R.M. 451-2014. Its aim is to increase the quality of education at the secondary level through improving the learning opportunities for students from public secondary schools (MINEDU 2014). A key characteristic of JEC schools is the increase in the number of pedagogical hours from 35 to 45 per week, which equates to an increase from 5.25 to 6.75 hours per day. In addition to extending the school day, JEC schools benefit from: (i) a pedagogical component, which includes accompaniment for teachers and students, teaching of English for students, and education for work for students; (ii) improved school management (more and better organised school personnel); (iv) improved physical infrastructure; and, (v) improved IT support (MINEDU 2014, 2015). Table 2 provides a detailed description of the improved characteristics of JEC schools.

The JEC policy started in 2015, reaching 1,000 schools across the country. In order to be eligible for JEC, a school had to fulfil certain requirements: (a) to be a public school; (b) to offer secondary education in the morning shift; (c) to operate in the morning shift only; (d) to have eight classrooms (called sections in Peru) or more in total; and (e) to have enough space to install the number of classrooms required by the improved pedagogical model. A total of 1,360 schools were selected from all the secondary public schools in the country in 2014, which consisted of 8,433 institutions (information available when the selection was made). In addition, 52 'emblematic schools' were included, making a total of 1,412 schools pre-selected.<sup>7</sup> After this first selection stage, the list was validated by regional coordinators who were allowed to remove schools and add new ones. This led to a consolidated list of 1,343 schools. It would seem that the Ministry of Education then chose the first 1,000 schools out of the consolidated list of 1,343 schools, though this last step is not entirely clear based on the scarce information available on the selection process. In 2016, 602 new schools were added to JEC. According to CNE (2016), in 2015 the Ministry of Education invested 631 million soles in the programme and reached 343,000 students. This represents an investment of approximately US\$540 per student (considering the 2015 exchange rate).

Qualitative evidence suggests some schools struggled to implement the changes demanded by the JEC reform (CNE 2016) in terms of hiring new teachers, and providing access to computers and the internet, among others. In order to increase the probability that the JEC schools used for our impact evaluation had time to adequately implement the JEC reform, we focus on the JEC schools selected in 2015 only. Although there were different criteria for a school to be considered eligible for the programme, a key criteria is that schools must have at least eight sections. Following Agüero (2017), we rely on this feature of the eligibility rule to identify the impact of the programme.

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7 'Emblematic schools' are a group of schools of which most were funded between 1940 and 1950. They are very large schools with a long tradition and prestige. In 2009, the Peruvian Government created this denomination to secure additional investment for these schools.

**Table 2.** *Characteristics of the JEC reform*

<b>Pedagogical component</b>	<p>Students' accompaniment</p> <ul style="list-style-type: none"> <li>• Tutorial support, to prevent low academic achievement, desertion, lag-behind. Content of tutorials includes promotion of health lifestyles to reduce teenage pregnancy and risk behaviours, and development of socio-emotional competencies.</li> <li>• Pedagogical reinforcement strategy with a personalised approach to students according to their level of academic progress.</li> </ul> <p>Pedagogical support for teachers</p> <ul style="list-style-type: none"> <li>• Pedagogical tools to develop competencies.</li> <li>• Introduction/learning of a virtual platform.</li> <li>• Integration of technology in the learning process.</li> </ul> <p>Education for work/competencies for employability; this includes technical skills (especially digital skills) and socio-emotional skills.</p> <p>Teaching of English.</p>
<b>Management component</b>	<ul style="list-style-type: none"> <li>• Introduction of a head teachers' board (formed by the head teacher and deputy-head teachers).</li> <li>• Introduction of a pedagogical board (formed by pedagogical coordinators and support personnel).</li> <li>• Introduction of pedagogical support process board (formed by an administrative coordinator).</li> <li>• Introduction of a participation board.</li> </ul>
<b>Infrastructure and other support components</b>	<ul style="list-style-type: none"> <li>• Strengthening the capabilities of programme participants, including formation programmes for teachers and head teachers implemented in parallel to JEC.</li> <li>• Infrastructure, school equipment and office equipment for learning.</li> <li>• IT support for learning, including access to internet.</li> </ul>

## 6. Theory of change: pathways through which JEC might reduce teenage pregnancy

Identifying the main risk factors associated with teenage pregnancy is important to understand what can be done for prevention. In Part I, Section 2 we summarised evidence on the risk factors in the Peruvian context. In this section we discuss some of the mechanisms through which JEC might have a positive effect in reducing the prevalence of teenage pregnancy.

The main change introduced by the JEC reform is the extension of the school day. School attendance has emerged as a protective factor against teenage pregnancy. An extension of the number of school hours students must attend per day has also been found to have a similar effect in a number of studies, as discussed in Section 4. We argue that this impact is likely to take place through a number of channels. First, school attendance and increased school hours increase the time adolescents are supervised by responsible adults. Second, it might improve skills and learning and ultimately school performance. Better-performing students would have a higher perceived return on education in the labour market and thereby

a higher opportunity cost to engage in unprotected sex and get pregnant during adolescence. Third, longer teaching hours would improve students' access to better information (e.g. sexual and reproductive health education), access to better health services (e.g. access to contraceptive methods) and possibly reduce their engagement in risky sexual behaviours. Furthermore, better-educated students would be likely to be more efficient at obtaining and interpreting this information. Fourth, an improvement in school performance, as a result of additional teaching hours, is likely to improve child socio-emotional competencies, including sense of agency, which is likely both to reduce the probability of engaging in health-risk behaviours, including unprotected sex, and to improve their aspirations. Students with higher educational aspirations would associate a higher opportunity cost to getting pregnant at a young age.

These are only some of the mechanisms which might lie behind the potential positive effect of JEC in reducing teen pregnancy. Figure 2 depicts the possible effects of the JEC components on several (measurable) dimensions that in turn might lead to a reduction in teenage pregnancy. These include: school performance (or test scores), perceived return to education, educational aspirations, socio-emotional competencies (self-esteem and self-efficacy), knowledge of health and sexual education and ultimately risky sexual behaviours (contraceptive use, unprotected sex, and sexual initiation). All these factors have been found to be predictive of early fertility (see Section 2).

**Figure 2.** *Theory of change*



## 7. Empirical strategy

A key aspect to tackle in estimating the causal impact of JEC is how to deal with differences between JEC and non-JEC schools that are not attributable to the reform. Public schools that operate as JEC might have provided better services to students prior to the implementation of the programme and/or might have been better at attracting good students. Therefore, a simple comparison between JEC and non-JEC students might be misleading.

In order to evaluate this reform, we exploit the longitudinal nature of Young Lives data which allows controlling for differences between JEC and non-JEC students' outcomes prior to the programme. The effect of JEC is computed by discounting the differences in the outcome variables of interests prior to the programmes between JEC and non-JEC students. This is known as the value-added approach. In performing this analysis, we also control for a number of individual characteristics (child's age and sex), household level characteristics measured in 2002 (during the first visit to households) and some additional characteristics which are fixed over time, including maternal level of education, maternal native tongue, household socio-economic status, and area of residence (urban or rural).

Following Agüero (2017), we also exploit a specific aspect of the eligibility rule, which is that in addition to certain general requisites, a school had to have at least eight sections in the secondary level to be eligible for the programme. This rule was added purely for budgetary reasons. The arbitrary nature of the government decision to implement JEC in schools with at least eight sections allows the identification of the impact of the programme by comparing schools that are marginally above the threshold with those that are marginally below. Since this is only one of the criteria for selection, having eight sections or more does not perfectly predict eligibility. This empirical strategy is also known as a parametric fuzzy regression discontinuity approach.

In summary, we estimate value-added models and fuzzy regression discontinuity models for a set of selected outcomes. Finally, we investigate whether the effect of JEC differs across gender, by comparing the effects of the programme on female and male students.<sup>8</sup>

## 8. Data and descriptive statistics

Over a period of 15 years, Young Lives has tracked the livelihoods of 12,000 children in India, Ethiopia, Peru and Vietnam: a Younger Cohort born in 2001-2, and an Older Cohort born in 1994-5. In Peru, 20 districts were randomly selected from the total number of districts in the country, excluding the wealthiest 5 per cent. For the Younger Cohort, approximately 100 children were selected in each district.<sup>9</sup> The original sample comprised 2,052 children. The Younger Cohort was surveyed at ages 1, 5, 8, 12 and 15, in 2001, 2006, 2009, 2013 and 2016 (respectively), with an attrition rate of 8.1 per cent during the last survey round. Table 3

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8 A companion paper by Agüero et al. (2019) describes the empirical strategy in more detail and provides more robustness check and insights on the mechanisms behind the effect of JEC on the outcome variables described in the next section.

9 See Escobal and Flores (2008) for more details on the sampling procedure.

reports descriptive statistics for the Young Lives sample in Peru (Column I).<sup>10</sup> The sample is balanced between boys and girls, with an average age of 14.5 years. Consistent with what is observed in official statistics, children are predominantly from urban areas (69 per cent), from households where the native tongue is Spanish (70 per cent) and where a substantial proportion of mothers have a secondary level of education (complete or incomplete).

**Table 3.** *Descriptive statistics of the Young Lives sample*

Sample characteristics	Balanced panel (I)	JEC (II)	Non-JEC (III)	Treated group (IV)	Control group (V)
Female (%)	50	47	52	44	52***
Age in years	14.5	14.4	14.5	14.4	14.5
<b>Maternal education level</b>					
Primary incomplete or less (%)	27	38	23***	42	28***
Complete primary or secondary (%)	61	52	65***	49	65***
Higher education (%)	12	9	13*	8	7
<b>Wealth index</b>					
Tercile 1 (%)	32	44	27***	45	33***
Tercile 2 (%)	34	39	31***	41	34**
Tercile 3 (%)	35	16	42***	14	32***
Maternal tongue is not Spanish (%)	30	38	27***	44	31***
Household located in urban area (%)	69	59	73***	55	66***
Observations	1558	439	1119	326	843

Notes: A t-test for differences in means is reported in column (III) for the comparison between columns (II) and (III), and column (V) for the comparison between columns (IV) and (V). \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

For the purpose of this analysis, we consider as the treatment group those children attending schools that were eligible for JEC since 2015 (326 children).<sup>11</sup> For the control group we focus on those children attending regular public schools (*Jornada Escolar Regular* or JER) (843 children). A comparison of both groups (columns IV and V in Table 3, respectively) shows that students attending JEC 2015 schools come from a worse socio-economic background compared to their counterparts in JER public schools. This reinforces the importance of using impact evaluation methodologies that take into account these differences.

Following our theory of change, we consider four sets of outcomes that might be affected by JEC: learning outcomes; socio-emotional competencies; educational aspirations; and aspects related to sexual health and reproductive knowledge and sexual behaviours. For learning outcomes, we look at the three outcomes measured by Young Lives: the Peabody Picture Vocabulary Test (PPVT), designed to measure vocabulary knowledge<sup>12</sup>; reading

10 We look at the balanced panel of children tracked between Rounds 1 to 5 who were attending school during the last visit.

11 Schools that were eligible for the JEC reform since 2016 are excluded from the analysis. Anecdotal evidence suggests that the transition to becoming a JEC school takes time. Moreover, the time elapsed between reform implementation and the follow-up is very short for the JEC 2016 cohort.

12 The test comprises up to 125 items (in Spanish, adapted for Latin America (Cueto and Leon 2012; Dunn et al. 1986)). For each item, the interviewer says a word to the child and from four pictures she must select the one that best represents the word heard. This instrument has been administered since Round 2.

comprehension test scores; and maths test scores.<sup>13</sup> In all cases, raw test scores are standardised by age in years for analysis. For socio-emotional outcomes, the focus is on measurements of self-esteem and self-efficacy: pride and agency are indicators developed and administered by Young Lives, since Round 3, to measure sub-dimensions of these two concepts (respectively) using items that reflect child circumstances in developing countries. In addition, since Round 4, Young Lives also administers standard tests to measure self-esteem and self-efficacy (Ogando and Yorke 2018).<sup>14</sup> All seven instruments were piloted and validated prior to data collection. Furthermore, a question that measures educational aspirations is used to obtain estimates of aspirations for higher education and university.<sup>15</sup>

The final set of outcomes considered is related to sexual health and reproductive (SHR) knowledge and sexual behaviours. In Round 5, Young Lives introduced a self-administered questionnaire to measure this and other aspects. Two outcomes that are of particular interest given the theory of change proposed are knowledge of and use of contraceptive methods. For the first concept, an indicator is obtained as the average of the adolescent's answers to four items that measure knowledge on sexual and reproductive health, whereas for the second concept a binary variable that takes the value of 1 if the adolescent had unprotected sex (did not use condom), 0 otherwise, is used.

## 9. Results

Figure 3 reports the effects of JEC estimated through the value-added approach which controls for pre-existing differences in the outcome of interest, child and household characteristics and cluster fixed effects, as discussed in Section 7. Overall, suggestive evidence of a positive impact of the JEC reform on academic achievement and socio-emotional competencies is found. All the effects estimates are in the expected direction, but they are not always statistically significant.

First, in relation to impacts on test scores, being a student from a JEC school translates into improvements in maths and reading comprehension scores by 0.10 and 0.08 standard deviations, respectively, whereas the impact on vocabulary knowledge (PPVT scores) is not statistically different from zero. Second, being a student from a JEC school translates into improvements in self-esteem by 0.10 standard deviations. No impact is detected on self-efficacy, pride, agency, and aspirations. Finally, point estimates suggest students from JEC schools have improved SHR knowledge and a lower probability of having unprotected sex;

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13 The reading comprehension and maths achievement test scores were developed by Young Lives to measure children and adolescents' achievement according to aspects they should know given their age and grade, and have been administered since Round 3. Outcomes measure the total number of correct answers.

14 These traits are assessed on the basis of respondents' degree of agreement or disagreement with a number of statements contained in face-to-face questionnaires, measured on 4/5-point Likert scales. During administration, the options were represented with sad or happy faces, in order to make the test friendlier for children. For analysis, each item is standardised, and each indicator is measured as the average score of each child (average of all the standardised items).

15 Educational aspirations are defined on the basis of the following question, asked to the index child when she was 12 years old: 'Imagine you had no constraints and could study for as long as you liked, or go back to school if you have already left. What level of formal education would you like to complete?' For the empirical analysis, we define two dummies: the first is a dummy variable equal to 1 for children who aspire to complete higher education (including any post-secondary education), and 0 otherwise. The second is a dummy variable equal to 1 for children who aspire to go to university, and 0 otherwise.

however, these coefficients are not statistically significant. It is important to highlight that the prevalence of unprotected sex is very low in the sample (4 per cent), which makes it very difficult to identify programme effects for this variable.

Figure 4 presents analogous results using the regression discontinuity design strategy. This is our preferred strategy as it directly deals with the endogenous nature of the JEC assignment. Using this methodology, similar results are obtained. Being a student from a JEC school leads to an improvement in maths and reading comprehension tests scores by 0.13 and 0.19 standard deviations. In addition, being a student from a JEC school leads to an improvement in self-efficacy and self-esteem by 0.09 and 0.12 standard deviations, respectively. Furthermore, we find that attending a JEC school increases students' aspirations to complete university education by 7.3 percentage points. Finally, as in the previous case, we do not detect an impact either on SHR knowledge or on the probability of having unprotected sex, which might be due to the small sample, and low prevalence of unprotected sex. Although we do not detect an impact on these two outcomes, we argue that JEC students might face a higher opportunity cost to engage in these activities as a consequence of the positive effect that the JEC programme has on their academic performance, and similarly on their socio-emotional competencies and aspirations.

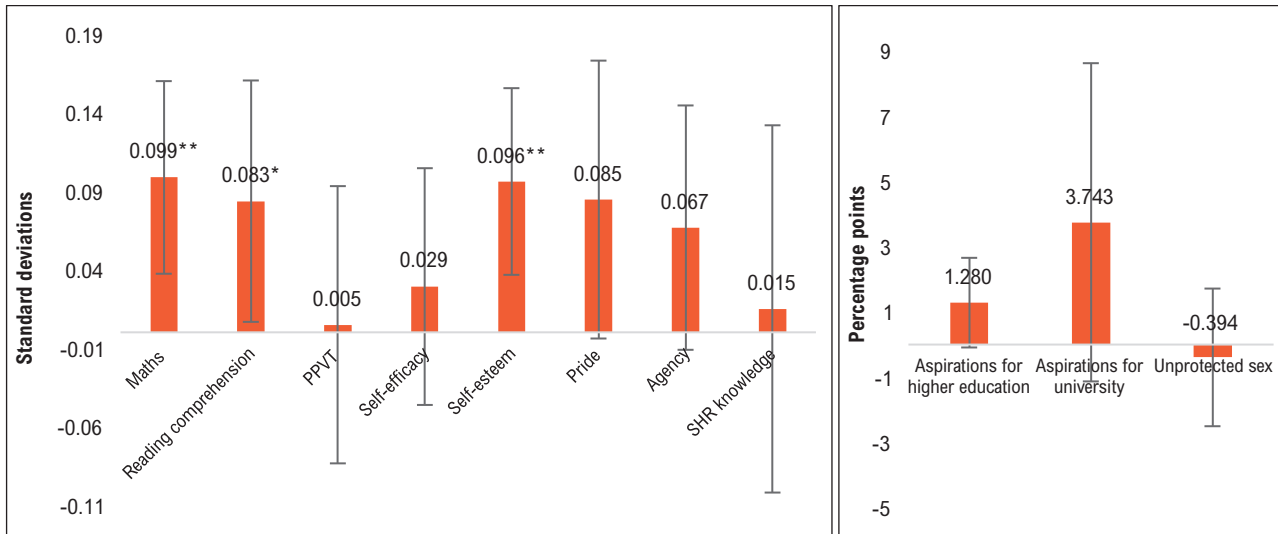
Up to this point we have been looking at the overall impact of the JEC programme independently of the gender of the child. However, whether the programme has differential effects by gender is important in order to understand its potential impact on teenage pregnancy. Figure 5 reports the impact of the JEC programme separately for males and females (estimated using regression discontinuity design strategy, our preferred model). We find that the JEC programme equally affects males' and females' performance in the maths test. In addition, similar effects by gender are observed for self-esteem and self-efficacy.<sup>16</sup> We found three dimensions in which results differ by gender. First, attending a JEC school has a larger impact on reading comprehension and vocabulary (PPVT) test scores for males. In fact, the impact on vocabulary is virtually zero for females. Second, evidence suggests that the programme has an impact on pride and agency for females. An increased sense of agency is especially important for females, as this might empower them to better handle situations in which they are asked to have unprotected sex. Third, JEC is found to improve males' SHR knowledge (by 0.36 standard deviations) compared to virtually zero effect for females. Improved knowledge might plausibly lead to more responsible behaviours and ultimately to a decrease in early fertility.

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<sup>16</sup> The heterogeneous analysis by gender is conducted by fully interacting our regression discontinuity models by gender.

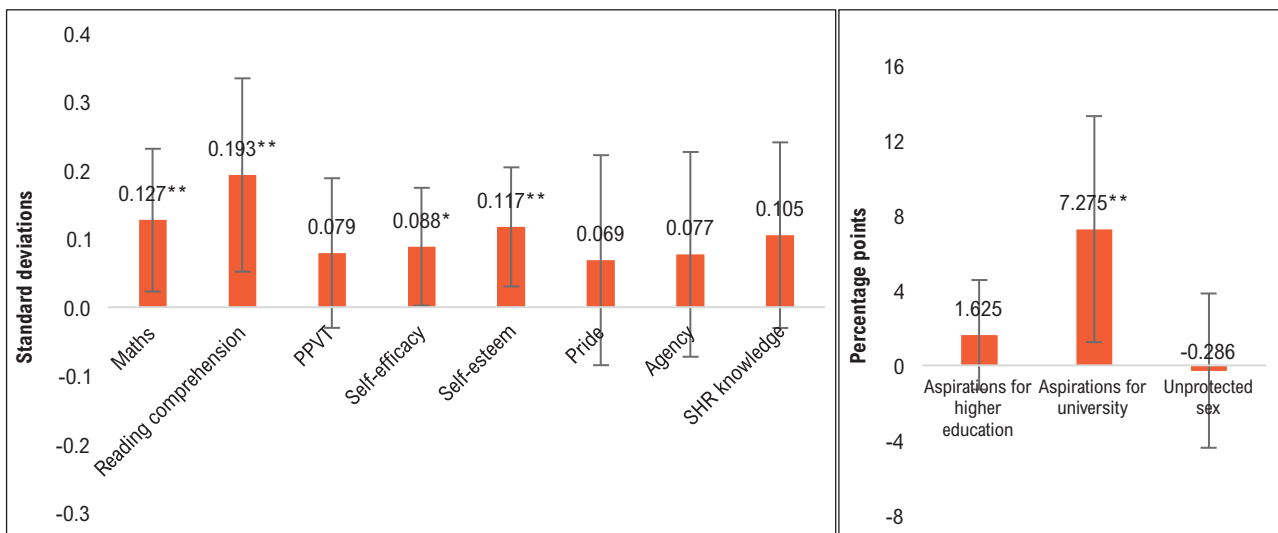


**Figure 3.** *Impact of the JEC reform, estimates using value-added specification*



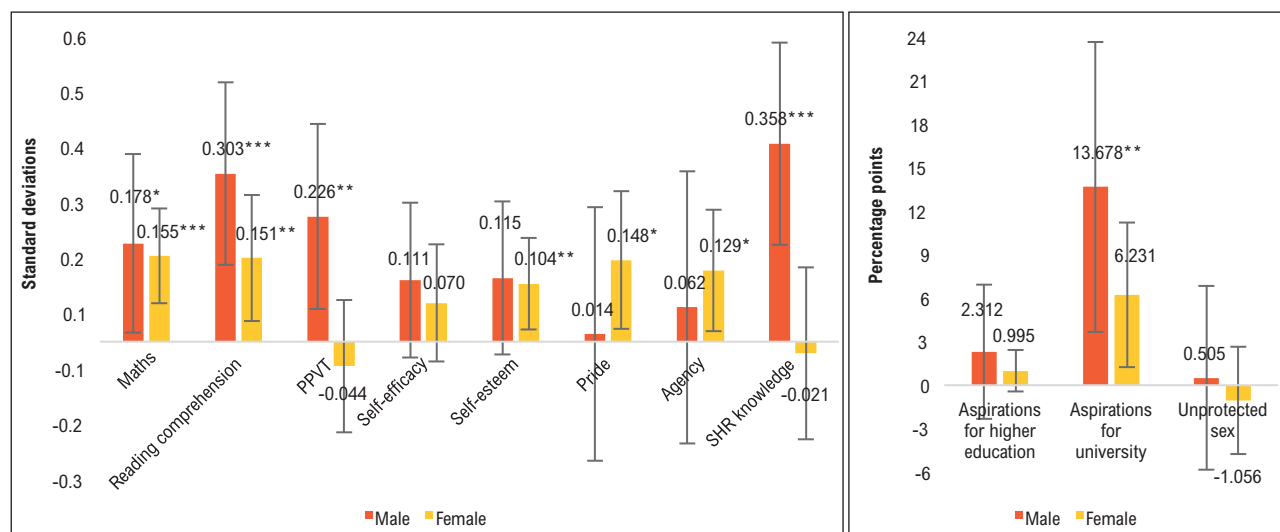
Notes: The estimated effect of JEC for each outcome is reported. The model controls for the lagged outcome (pre-JEC) (except for SHR knowledge and unprotected sex), sex, maternal level of education, maternal native tongue, household socio-economic status and area of residence (urban or rural) measured in 2002, and total number of sections in the school. It also includes cluster fixed effects.

**Figure 4.** *Impact of the JEC reform, estimates using a regression discontinuity design*



Notes: The estimated effect of JEC for each outcome is reported. The model is a fuzzy regression discontinuity design where the running variable is the total number of sections, the threshold is eight sections or more, and a polynomial of degree 2 is used. It also controls for the lagged outcome (pre-JEC) (except for SHR knowledge and unprotected sex), sex, maternal level of education, maternal native tongue, household socio-economic status and area of residence (urban or rural) measured in 2002. It also includes cluster fixed effects.

**Figure 5.** *Impact of the JEC reform by gender, estimates using a regression discontinuity design*



Notes: The estimated effect of JEC for each outcome is reported by gender. The model is a fuzzy regression discontinuity design where the running variable is the total number of sections, the threshold is eight sections or more, and a polynomial of degree 2 is used. The model is fully interacted by gender and the total effect for males and females reported in the figure. It also controls for the lagged outcome (pre-JEC) (except for SHR knowledge and unprotected sex), sex, maternal level of education, maternal native tongue, household socio-economic status and area of residence (urban or rural) measured in 2002. It also includes cluster fixed effects.

## 10. Conclusions

The prevalence of teenage pregnancy in Peru has remained relatively unchanged over the last two decades, despite significant poverty reduction and improvements in education and nutrition. Teenage childbearing is a major policy concern in the Peruvian context, as most studies point to a negative impact of early fertility on maternal outcomes and on the birth and future of the children. In this paper we investigate the role of extended school-day programmes, primarily seen as a means of improving academic achievement, for teenage pregnancy prevention.

Most existing evidence points to a positive impact of extended school-day programmes on mathematics and language test scores (as in the cases of Chile, Uruguay, Colombia and Peru), on the probability of secondary school completion (as in the case of Buenos Aires), and only in the case of Brazil is a negative impact on maths test scores observed. Although most existing evidence focuses on the effect on students' performance, as improving students' opportunities to learn is the primary objective of such programmes, few studies found that these programmes have a positive effect on reducing teenage fertility.

After providing a rich review of similar programmes implemented in the region, we assess the effectiveness of the *Jornada Escolar Completa*, a secondary-level educational policy introduced by the Minister of Education in Peru in 2015. The programme has four main components (pedagogical accompaniment for students and teachers, improved school management, physical infrastructure, and IT support), alongside an increase in the school hours per week for the assigned public schools. Our hypothesis is that by increasing the

number of hours spent in school, the reforms reduce the risk of teen pregnancy by: (i) increasing the opportunity cost of early (unprotected) sexual intercourse (via an improvement in school performance and educational aspirations); (ii) improving children's socio-emotional competencies and; (iii) improving their knowledge of sexual and reproductive health.

To deal with the endogenous nature of the JEC assignment, we implement a parametric fuzzy regression discontinuity design model by exploiting one of the JEC eligibility rules, that only public schools with at least eight sections were eligible. This is a fundamental aspect of our identification strategy. Furthermore, we exploit the longitudinal nature of the Young Lives data to control for differences in the outcome of interest prior to the reform. Our results are in line with previous assessments of similar extended school hours programmes in the region. In our most conservative and preferred strategy, we found that, on average, being a student from a JEC school leads to an improvement in school performance (reading comprehension and maths). Our results are also suggestive of a possible impact of JEC on teenage pregnancy via an increase in educational aspirations and psychosocial competencies (self-efficacy and self-esteem). Interestingly, no impact on sexual and reproductive health knowledge and on the probability of having unprotected sex is found when considering female and male students together. The latter is in part explained by the fact that the prevalence of unprotected sex in the sample is very low.

An analysis of potential heterogeneous effects of JEC by gender reveals that the programme has a larger impact on male students' school performance (specifically in reading comprehension and vocabulary). It also has an impact on pride and sense of agency for females. Furthermore, JEC improves male students' SRH knowledge compared to a virtually zero effect for girls. We argue that better SRH knowledge might promote more responsible behaviours and ultimately be one of the channels leading to a decrease of early fertility, together with an increase in academic performance, aspirations and socio-emotional competencies.

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# Consequences of Teenage Childbearing in Peru: Is the Extended School-day Reform an Effective Policy Instrument to Prevent Teenage Pregnancy?

In Peru, approximately 14 out of 100 female adolescents are mothers. Teenage childbearing is a major policy concern, as most studies point to a negative impact of early fertility on maternal outcomes and on the birth and future of the children.

This paper investigates the role of extended school-day programmes, primarily seen as a means of improving academic achievement, for teenage pregnancy prevention. It first reviews the literature on policy alternatives to reduce teenage pregnancy that have been evaluated in developing countries, including extended school-day programmes. Second, it describes the phenomenon of teenage pregnancy (and early marriage and cohabitation) in Peru. Third, it evaluates the impact of the Peruvian extended school-day reform (*Jornada Escolar Completa*, JEC) on several risk and protective factors predicting teenage pregnancy.

Our results are in line with previous assessments of similar programmes in the region. We find that, on average, being a student from a JEC school leads to an improvement in reading comprehension and maths. Our findings also suggest a possible impact of JEC on teenage pregnancy via an increase in educational aspirations and psychosocial competencies. Looking at potential heterogeneous effects by gender reveals that the programme has a larger impact on male students' school performance. It also has an impact on female's pride and sense of agency, which might promote safer sexual behaviour through affecting females' perceived barriers to the use of contraceptive methods and empowering them to handle situations in which they are asked to have unprotected sex. Finally, we find that JEC improves male students' knowledge about sexual and reproductive health. This impact might further promote more responsible behaviours and ultimately be one of the channels leading to a decrease of early fertility – together with an increase in performance, aspirations and socio-emotional competencies.



An International Study of Childhood Poverty

## About Young Lives

Young Lives is an international study of childhood poverty, involving 12,000 children in four countries over 15 years. It is led by a team in the Department of International Development at the University of Oxford in association with research and policy partners in the four study countries: Ethiopia, India, Peru and Vietnam.

Through researching different aspects of children's lives, we seek to improve policies and programmes for children.

## Young Lives Partners

Young Lives is coordinated by a small team based at the University of Oxford, led by Professor Jo Boyden.

- Ethiopian Development Research Institute, Ethiopia
- Pankhurst Development Research and Consulting plc, Ethiopia
- Centre for Economic and Social Studies, Hyderabad, India
- Save the Children India
- Sri Padmavathi Mahila Visvavidyalayam (Women's University), Andhra Pradesh, India
- Grupo de Análisis para el Desarrollo (GRADE), Peru
- Instituto de Investigación Nutricional, Peru
- Centre for Analysis and Forecasting, Vietnamese Academy of Social Sciences, Vietnam
- General Statistics Office, Vietnam
- Oxford Department of International Development, University of Oxford, UK

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