

Extending the School Day in Latin America and the Caribbean

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Abstract

Countries throughout Latin America and the Caribbean are reforming their education systems to add more hours to the school day. This paper examines the evidence on the relationship between instructional time and student learning, reviewing 19 studies that measure the effects of longer school days in the region. It characterizes the differences in the implementation of extended school day programs and provides one detailed case study and cost-effectiveness exercise, from Uruguay. While the evidence suggests

some positive impacts across a range of outcome variables, including learning outcomes, adult labor force participation, and crime and teenage pregnancy reduction, there is considerable heterogeneity across studies. Even using the most optimistic impact estimates, a cost-effectiveness exercise suggests that there are likely many more cost-effective reforms to achieve similar learning effects. The paper concludes with a discussion of the implications for policymakers and practitioners considering an extension of the school day.

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EXTENDING THE SCHOOL DAY IN LATIN AMERICA AND THE CARIBBEAN

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1. INTRODUCTION

Governments throughout Latin America and the Caribbean (LAC) are embracing policies for extending the school day. The motivation is twofold. First, most countries in the region have achieved universal primary education: In 2012, the primary completion rate was 95 percent (World Bank Group, 2015). Given that, countries are now exploring options for improving the quality of education, and – rightly or wrongly – view more time in school as a critical input to learning. Second, keeping children in school into the afternoon has great political appeal, both because it provides child care for more of the day and because school lunch programs can serve as a social safety net. What is more, demographic shifts in many LAC countries facilitate this transition from partial school days to full-time school, as fewer primary school aged children mean less need for double-shift schools. Indeed, across the region, the student population age 4-18 is expected to drop 8 percent between 2010 and 2025 (Bruns & Luque, 2015).

To inform the policy dialogue regarding the extension of the school day, this paper brings together a diverse array of impact evaluation evidence on academic, labor, and social outcomes from 19 studies across six countries. It also uses examples from around the region to characterize heterogeneity in extended school day programs. Finally, it provides relative cost effectiveness estimates of extending the school day. Specifically, we seek to answer three main research questions:

1. What is the impact of extending the school day on student academic outcomes?
2. What is the impact of extending the school day on social and labor outcomes?
3. What is the relative cost effectiveness of extending the school day vis-à-vis other proven interventions?

Across studies, the effect on student learning has been the outcome most widely measured, both because it is the top policy priority for ministries of education and – endogenously – because many countries have the systems in place to quantify this impact relatively easily. Other effects on schooling variables, such as repetition and dropout rates, also feature prominently. Less frequently measured but still of interest is the increase in the labor market participation rate of parents (particularly mothers), as this increase in productivity is one of the justifications for adding hours of instruction to the school day. The same is true for the impact of extending the school day on

social outcomes such as the incidence of crime and violence, teenage pregnancy, and substance abuse.

Why would one expect extending the school day to affect student outcomes? For learning and other educational outcomes, schools may use additional hours of instructional time to better deliver the curriculum. Specifically, more time would allow teachers more opportunity to provide additional support to students struggling in specific subjects, either directly or with specialists. Using the extra time for extracurricular activities such as sports, music, and computers may increase interest and therefore demand for school, subsequently reducing dropout rates. The provision of school lunches could also increase demand, both among parents and students. Finally, additional hours in school may positively impact social outcomes because children spend more time in a supervised setting, with less potential exposure to crime and violence, substance abuse, or risky sex. Furthermore, parents may increase labor supply, resulting in higher household income and potentially improved complementary educational investments.

At the same time, extending the school day may not ultimately improve student learning outcomes. For example, if additional hours in school are used principally for non-academic subjects, then the effect on student learning could be neutral (or even negative, if additional non-academic school time displaces time that would have been spent on homework). Likewise, if teachers are not fully compensated for the additional labor, demoralization could lead average teaching effort to drop across all school hours, in turn leading to neutral or even detrimental impacts on learning. Alternatively, since all of these studies are quasi-experimental and many target low-performing schools, it is possible that neutral or negative impacts reflect inadequate controlling for pre-existing levels or trajectories of performance in the extended day schools relative to comparison schools. That said, many papers do seek to establish plausible counterfactuals. This paper examines the net measured effect across a range of studies and countries.

This review focuses on Latin American and the Caribbean to provide the locally relevant research, but a recent review of research in the United States found weak evidence that extending time (either by lengthening the school day or the school year) could improve outcomes for the poorest performing students (Patall, Cooper, & Batts Allen, 2010). Likewise, a review of evidence in developing countries by Glewwe et al. (2014) identified four studies of the impact of hours of

the school day, with eight impact estimates between them: Three-quarters of those were positive, and half were positive and statistically significant.

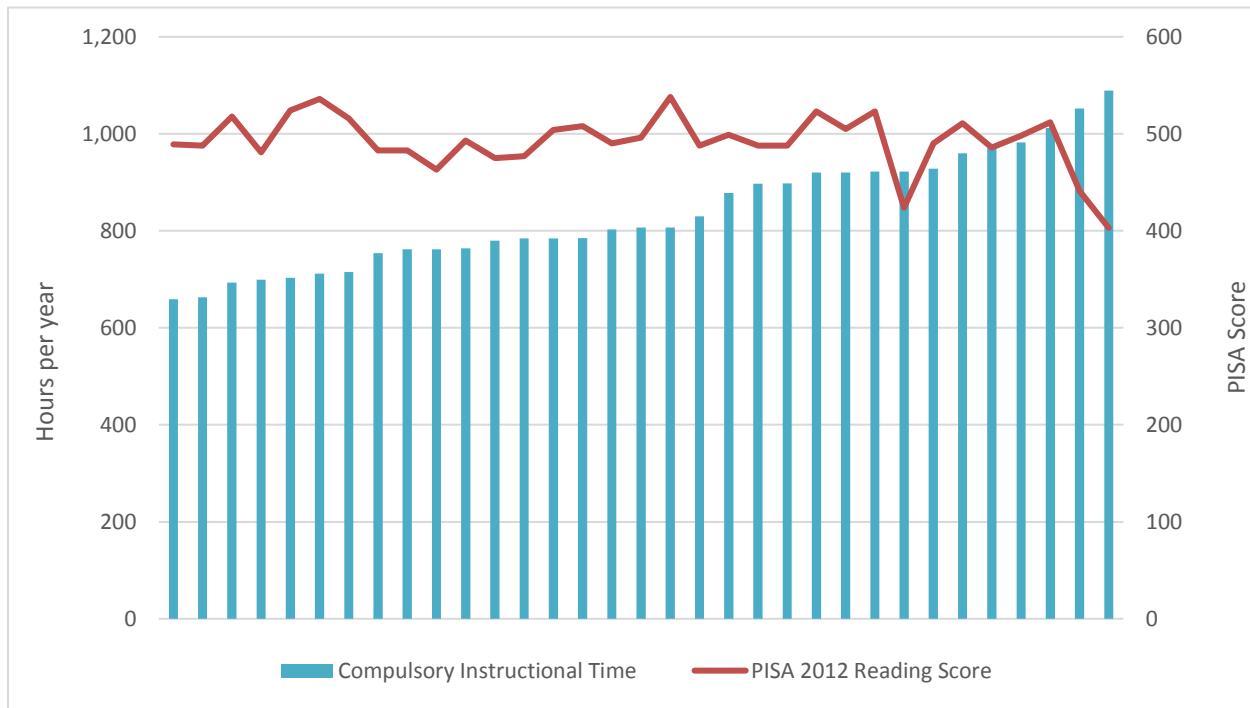
This paper proceeds as follows: Section 2 provides definitions for a range of terms associated with the extended school day and instructional time, together with a simple analysis of the relationship between instructional time and outcomes of interest. Section 3 characterizes experiences across Latin America, comparing seven country cases. Section 4 presents a review of existing evaluations, separated by outcome variable. Section 5 presents considerations for cost implications of extending the school day, based on a Uruguayan case. The last section concludes, with a discussion of implications for policy.

2. Relationship between Compulsory Instructional Time and Student Learning

Instructional time has many definitions. First, there is *compulsory instructional time* (also referred to as “allocated class time”), which is the minimum amount of time that is allocated to instruction. For example, this would not include time for lunch, but might include time for transitioning between classes. Second, there is *instructional time*, defined as the non-administrative time that teachers spend in the classroom. Third, within instructional time, there is the amount of time students spend engaged in learning-related tasks, known as *time on task* (or “academic learning time”). While total time on task is most likely to be associated with student learning (relative to compulsory instructional time or instructional time), these data are also the least readily available, since they require extensive classroom observations in order to obtain nationally representative samples. Alternatively, data for compulsory instructional time are most commonly accessible since they are often defined by legislation.

In order to assess whether a simple relationship exists between instructional time and student learning, we plot the reported compulsory instructional time from the national curricula against reading scores from the Program for International Student Assessment (PISA) in 2012 (see Figure 1). No trend emerges; as the hours of instructional time rise, reading scores rise and fall slightly but show no consistent pattern.

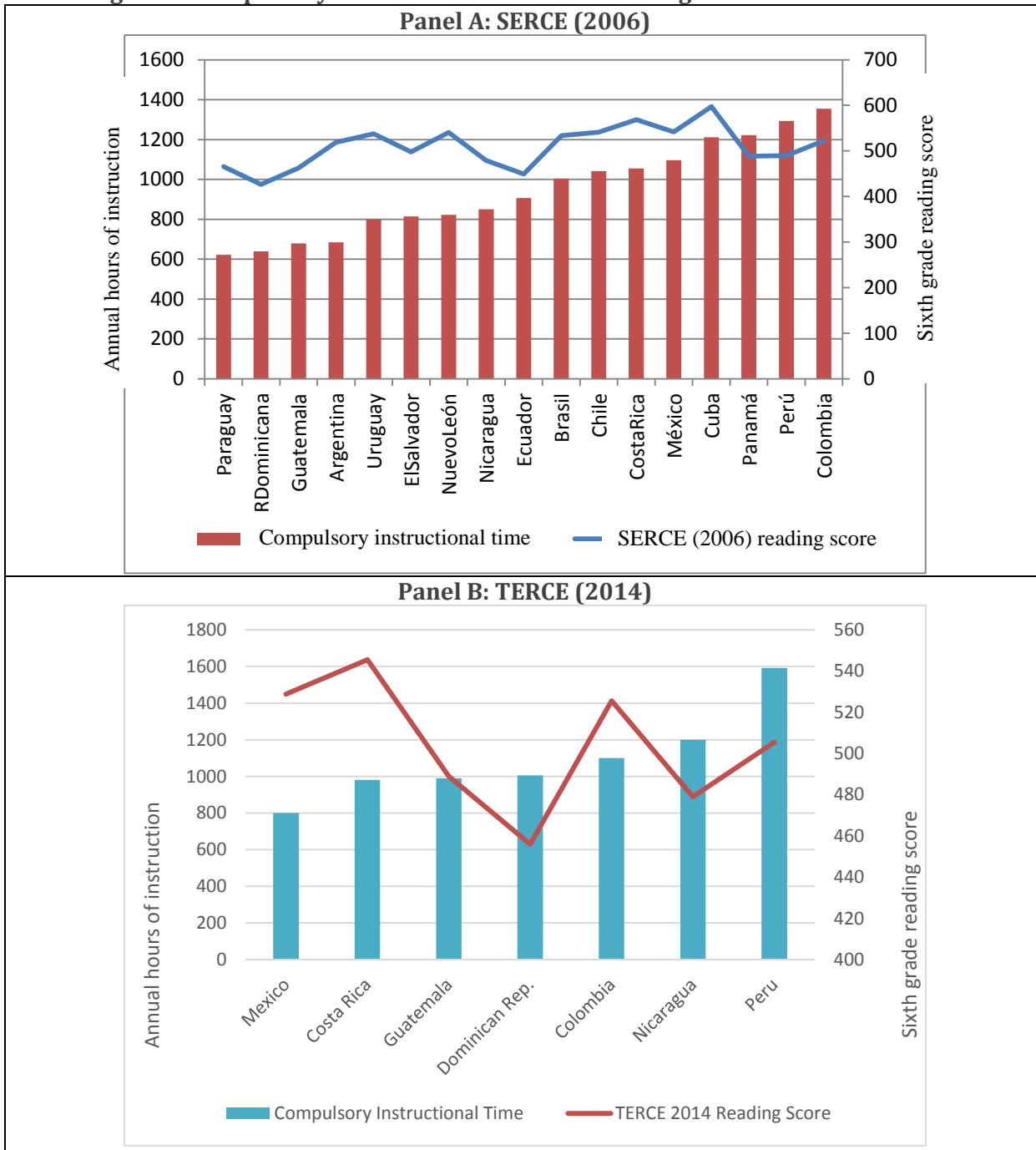
Figure 1: Compulsory Instructional Time and Reading Scores (PISA 2012)



Source: Authors' construction, using countries with OECD indicators for 2014 and PISA 2012 data, with compulsory instructional time per year calculated as total compulsory instruction time divided by duration of schooling (primary and lower secondary).

Similarly, when looking specifically at Latin America, the same story emerges. Whether using data from countries participating in the Second Regional Comparative and Exploratory Study (SERCE) or in the subsequent evaluation (TERCE), there is no clear relationship between reading scores and instructional time (Figures 2a and 2b). (The SERCE sample is older but has data available for more countries on instruction time.) For example, a decade ago Uruguay and Nuevo León (a state of Mexico) had considerably higher reading scores than Ecuador and Panama, although the latter offer more instructional time (Figure 2a). Today, Mexico and Costa Rica have higher scores but lower instructional time than Peru or Nicaragua (Figure 2b). In short, there is no simple relationship between instructional time and student learning. This lack of a correlation does not rule out a causal impact: Countries may select high hours to compensate for other poor characteristics of their education systems. Or increased hours may only be effective under certain enabling conditions (e.g., school directors and teachers have training to use the time effectively). The design and implementation of extended school day programs is heterogeneous, which may mask the impact of some programs.

Figure 2: Compulsory Instructional Time and Reading Scores in Latin America



Source: Authors' construction, with data from Second Regional Comparative & Exploratory Study (SERCE) in 2006 and TERCE in 2014.

3. Comparing Cases from Around Latin America and the Caribbean

This section compares select country cases in LAC that have rolled out extended school day reforms. We define the differing models for extending the school day and provide details on which countries have implemented which models. We then distill lessons from the cases.

From our review, country initiatives can broadly be classified into three models. First, there are education systems that have added a few hours to the school day but without making major changes to pedagogical approaches, curricula, or other elements of education delivery (“extended day”). Second, there are systems in which additional hours are added to some but not all days of the week (“partial extended day”). Brazil’s *Mais Educação* program has made financing available to school systems in the country that seek to follow that route. Finally, there are countries that have embarked on a reform that extends the school time together with a number of other initiatives such as a dramatic overhaul in the curriculum or pedagogy, new training programs for teachers and directors, and other changes (“full-time schools”).

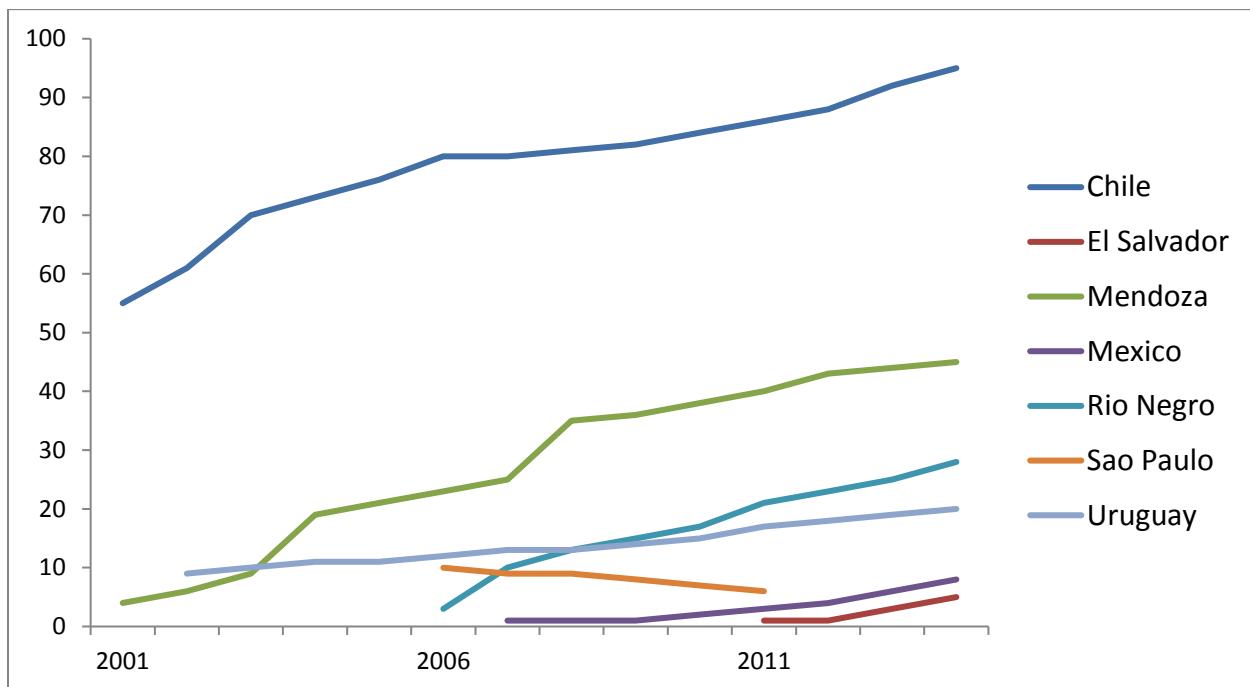
Table 1. Models of Extending the School Day

<i>Model</i>	<i>Description</i>	<i>Country examples</i>
Extended Day	Systems adding between 1-4 hours to the existing day	Chile, Dominican Republic
Partial Extended Day	Systems adding between 1-4 hours to the existing day on some weekdays.	Brazil’s <i>Mais Educação</i>
Full-time Schools	Systems moving from double (or triple) shift systems to single, full-day shifts, with new curriculum and school day structure.	El Salvador, Uruguay

In assembling seven cases where governments have extended the school day in LAC, we find there are four elements of interest: (i) roll-out and speed of implementation, (ii) variation in the number of hours added, (iii) activities in which the hours are invested, and (iv) targeting strategies used. With regard to the speed with which these programs roll out, there is great variation across extended day programs, with corresponding impacts on program coverage, capital and operational costs, and the requirements for teacher training. Figure 3 uses coverage as a proxy for the speed of the roll out. Programs are highly demanding not only in terms of financial resources,

but also in terms of logistics: They require securing the land for new schools (if needed), managing the construction projects, hiring and allocating trained teachers, etc. For the Chilean program, for instance, it took ten years to go from covering 5 percent of students to 80 percent of students. Therefore, if the program coverage goal is ambitious, it requires long-term commitment to ensure the sustained flow of financial resources and effective management. Otherwise, the roll-out speed will be negatively affected and will produce an immediate slowdown on essential indicators such as coverage.

Figure 3. Coverage of Extended Day Programs in LAC, 2001-2014 (% net enrollment)



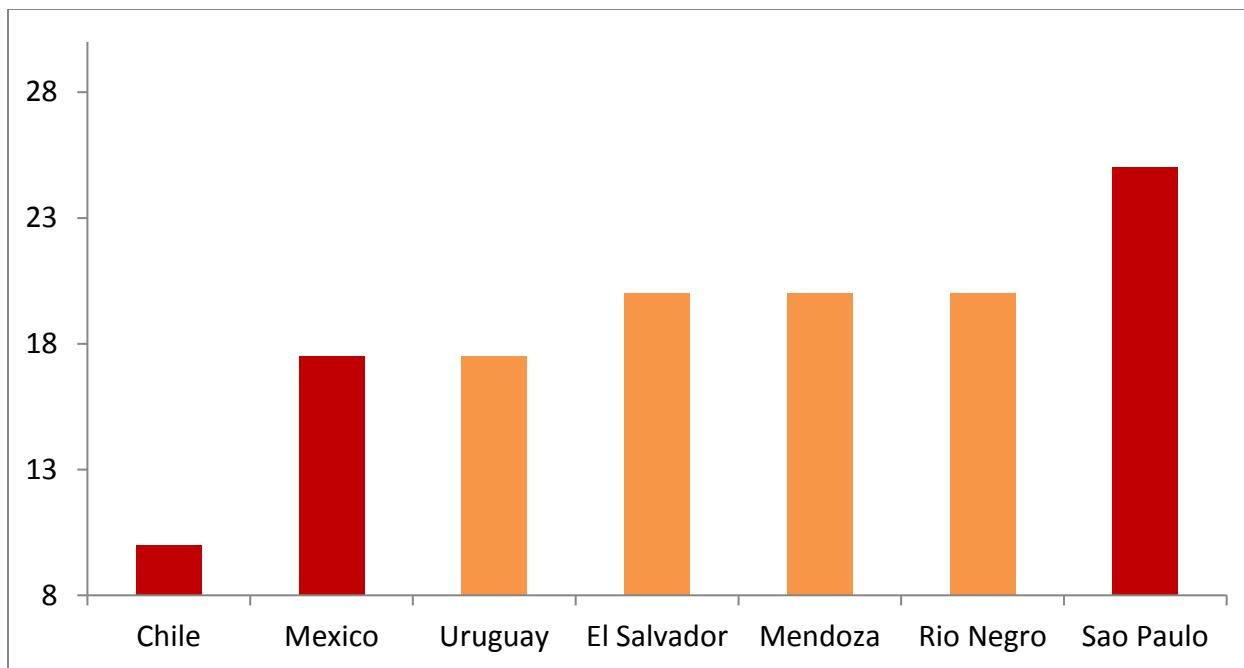
Source: Authors' construction, with data from Alfaro & Holland (2012).

Second, there is great variety in the number of hours that systems choose to add. Figure 4 shows the seven cases reviewed, ranging from a low of 10 hours per week (Chile) to a high of 25 hours (São Paulo). Coincidentally, those programs in the mid-range (orange bars in Figure 4) that add around 18 or 20 hours per week are those we would consider Full-time School programs.

In terms of curricular design, the cases are all similar: morning activities tend to remain mostly unchanged, and the additional hours are invested in a mix of curricular and extracurricular activities. Additional activities are usually distinctive in terms of either content or format. For example, activities can remain focused on the core curriculum while experimenting with novel

pedagogical formats, such as “math experiences” in São Paulo, wherein students apply already learned math concepts to practical activities (Alfaro and Holland 2012). But activities emphasizing innovative content tend not to directly address the traditional core curriculum and are frequently delivered as short-term workshops rather than recurring sessions, such as the case of information technology in Rio Negro (Argentina). Mendoza (Argentina) is the only case where the amount of extended time devoted to the core curriculum – at least 60 percent – is mandated.

Figure 4. Variance of additional hours per week



Note: Red bands are extended or partial extended school day programs. Orange bands are full-time school programs.

With regard to targeting, most of the programs have some targeting criteria favoring schools located in poorer or more disadvantaged areas. The two exceptions to this are Chile, where the program has been rolled out nearly universally, and São Paulo, where the rollout tended to be more opportunistic, going to those schools where teachers were more experienced, and therefore more likely to make better use of the extra time.

4. Review of Evaluations

This section reviews evidence on the relationship between instructional time and four classes of outcome variables: (i) student learning, (ii) other schooling outcomes, (iii) parental

participation in the labor force, and (iv) social outcomes. Student learning outcomes are measured using scores on standardized tests (math and language), and other schooling outcomes include repetition and dropout rates, and time-on-task. Parental participation in the labor force tends to focus on the degree to which mothers are increasingly participating in the labor market. For the social variables, most data are on crime, violence, and teenage pregnancy. The results summarize 19 studies from 6 countries in Latin America and the Caribbean on extending the school day.

The studies were identified through searches conducted in academic databases, using Google Scholar, and adding in studies identified by or referred to the authors. The databases include both academic journals and working paper series: Educational Resources Information Center (ERIC), JSTOR, ProQuest, and the World Bank's working papers, among others. Google Scholar was helpful in finding unpublished manuscripts, as well as PhD and Masters theses. Search terms were combinations of key phrases and a vector of Latin American countries, restricting the results to the region of interest. Phrases included "instructional time", "school day", "full-time school", "extended time", "school meal" and minor variations in English, Spanish and Portuguese.¹ The selected articles meet the following criteria: (1) are written in English, Spanish or Portuguese, (2) assess the impact of an extended school day on our outcomes of interests, (3) use experimental or quasi-experimental quantitative methods, (4) evaluate an intervention in Latin America, and (5) are written after the year 2000, in order to limit to analysis of school systems most relevant to today's reforms.

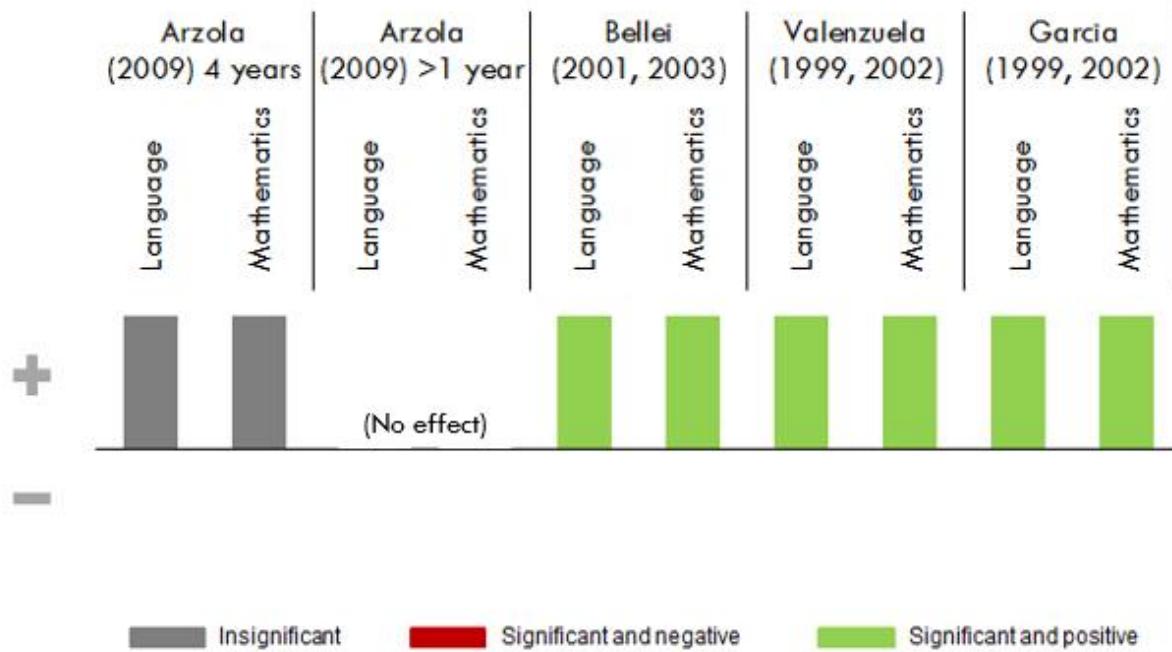
We organize the results into four sections, according to outcome variables of interest. Section 4.1 reviews the studies that estimate impacts on student learning, followed by impacts on other schooling outcomes (section 4.2). Section 4.3 discusses the impact on parental labor market participation. Section 4.4 summarizes the effects found on social outcomes. In each of these sections, we compare the effects found in each study, using our theory of change. Where possible, we discuss longitudinal effects and differential effects for subgroups in the study sample.

¹ The phrases were connected to the vector of Latin American countries using an <and> Boolean operator. The vector included 21 countries connected using the <or> Boolean operator.

4.1. Extended School Days and Student Learning

This section reviews findings related to the evidence on the impact of extended school day programs in Latin America on student learning, measured in terms of test scores. Overall, we find mostly positive outcomes in Chile and Colombia and both positive and negative outcomes in Uruguay and Brazil, depending on the study. Annex Table 1 presents the studies by country, author, methodology, and impact. The findings are also summarized in Figures 5, 6, and 7.

Figure 5. Evidence of Impact on Learning Outcomes in Chile



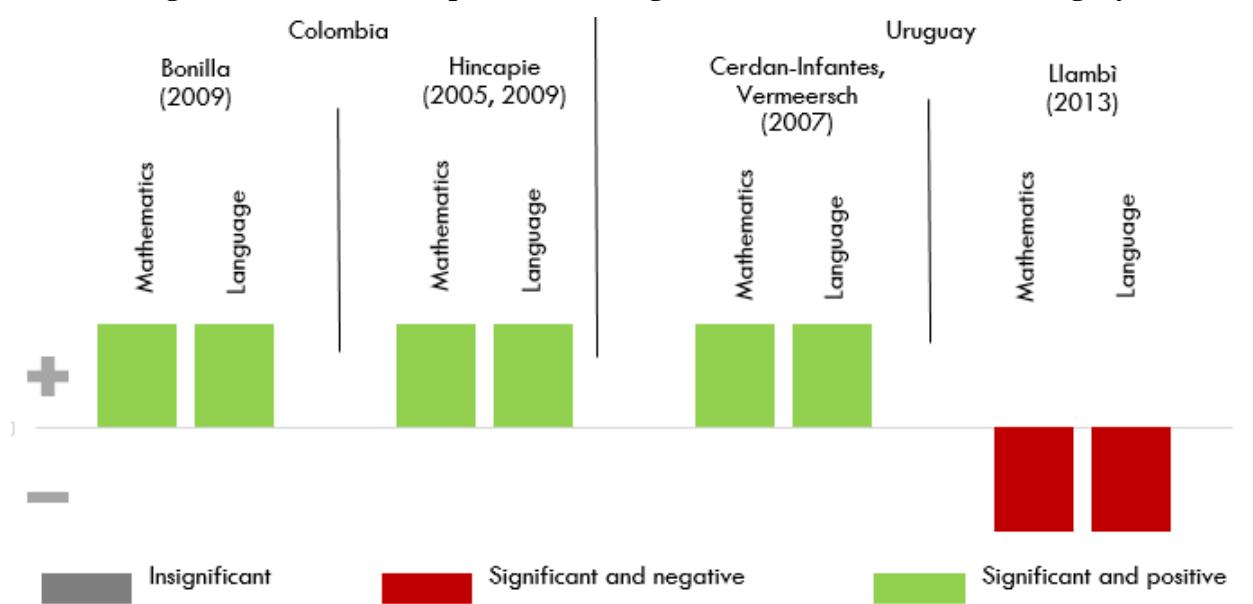
Note: Dates refer to cohorts tested, not study publication date. Details on the individual studies are available in the Annex.

The country experience that has been most evaluated is Chile (Figure 5). Overall, the impacts on language (Spanish) and mathematics are generally positive and significant. Bellei (2009), for instance, examines the change in 10th grade national standardized test scores between 2001 and 2003, using a difference-in-differences strategy with a group of students who entered the full school day program in 2002. Since the Ministry of Education decided which schools entered the program each year, from the students' perspective the decision was arbitrary and exogenous in the short run. (Of course, the schools to enter the program were not randomly selected, and so school characteristics and student performance may still be correlated.) The author finds a small but statistically significant and positive effect on language of 0.05-0.07 standard deviations, and a

statistically significant, positive effect on mathematics of 0.00-0.12 standard deviations, sensitive to different specifications, with 0.07 being the most convincing estimate (Bellei, 2009). A subsequent study, also using a difference-in-differences strategy but focusing on a later cohort, found that students with at least one year had no average effect on test scores, whereas students with four years of exposure did have a positive but not statistically significant change in test scores (Arzola González, 2010).

Two other studies examining Chile's program use propensity score matching estimates and both find positive and significant impacts (Valenzuela, 2005; García Marín, 2006). Valenzuela (2005) finds positive and significant impacts for both public and voucher schools and significant impacts for math in voucher schools only. García Marín (2006) finds positive and significant impacts in both language and math.

Figure 6. Evidence of Impact on Learning Outcomes in Colombia and Uruguay



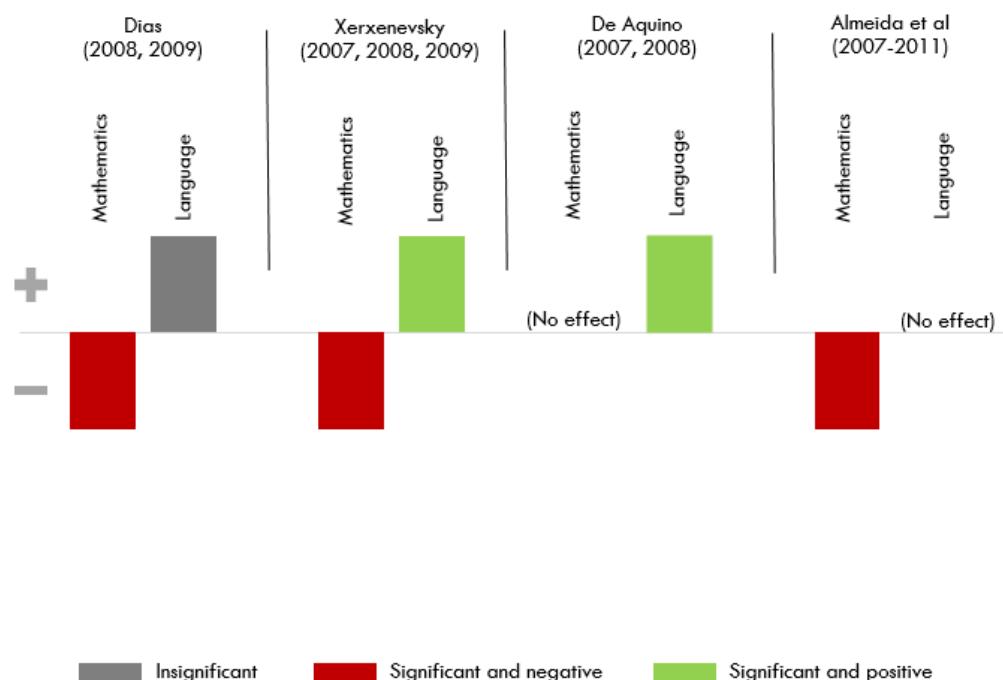
Note: Dates refer to cohorts tested, not study publication date. Details on the individual studies are available in the Annex.

Positive outcomes are also found in Colombia (Figure 6). Hincapié (2016) uses school-level fixed effects estimates of cohorts of students in schools before and after converting to “*jornada completa*”. She finds positive, significant impacts for math scores (0.08) and positive, insignificant scores (0.04) for language for 5th grade, and stronger significant effects for 9th grade – 0.11 and 0.14 standard deviations for language and math, respectively (Hincapié 2016).

Similarly, Bonilla (2011), using instrumental variables, compares students in *jornada completa* schools with students attending morning shift schools and students attending afternoon shift schools. He finds positive, significant effects of 0.70 and 1.58 standard deviations over students in the morning shift in language and math, respectively, and 1.22 and 2.48 standard deviations over students in the afternoon shift.

In Uruguay, results are more mixed. Cerdan-Infantes and Vermeersch (2007) evaluated the full-time school program. They examine the change in 6th grade national standardized test scores between 1996 and 2002, based on a treatment variable defined as exposure per student according to the year that his or her school entered the program. The program targeted poor urban schools, but there was not a clear targeting mechanism. In order to build a comparison group for participating schools, the authors use a propensity score matching methodology, trying different specifications, and find a statistically significant positive effect on language of 0.04 standard deviations per year of exposure, and a statistically significant positive effect on mathematics of 0.06 standard deviations per year of exposure. However, Llambí (2013) also uses a propensity score matching model in Uruguay and finds negative, significant impacts on student scores in science (-0.29), math (-0.27), and language (-0.24).

Figure 7. Evidence of Impact on Learning Outcomes in Brazil



Note: Dates refer to cohorts tested, not study publication date. Details on the individual studies are available in the Annex.

Negative impacts are also found in Brazil (Figure 7). Almeida et al. (2016) combine propensity score matching with difference-in-differences to evaluate the impact of *Mais Educação*, Brazil's national program supporting states in extending the school day. They find negative and significant impacts on math, and no impact on language. Xerxenevsky (2012) uses similar methods to evaluate the program in the state of Rio Grande do Sul. She finds significant positive effects in Portuguese but significant negative effects for mathematics in fourth grade. In eighth grade, she finds no effects at all. De Aquino (2011) uses difference-in-differences to evaluate a longer school day program in São Paulo and finds no impact on mathematics but a small, significant effect for language. Likewise, Dias Mendes (2011) finds a significant (small) negative impact on math scores using a propensity score matching method in both fourth and eighth grade.

Although we have insufficient data to explain precisely why one might find this range of positive, negative, and insignificant effects, they demonstrate that while there may be a tendency toward positive academic outcomes, this is certainly not guaranteed.

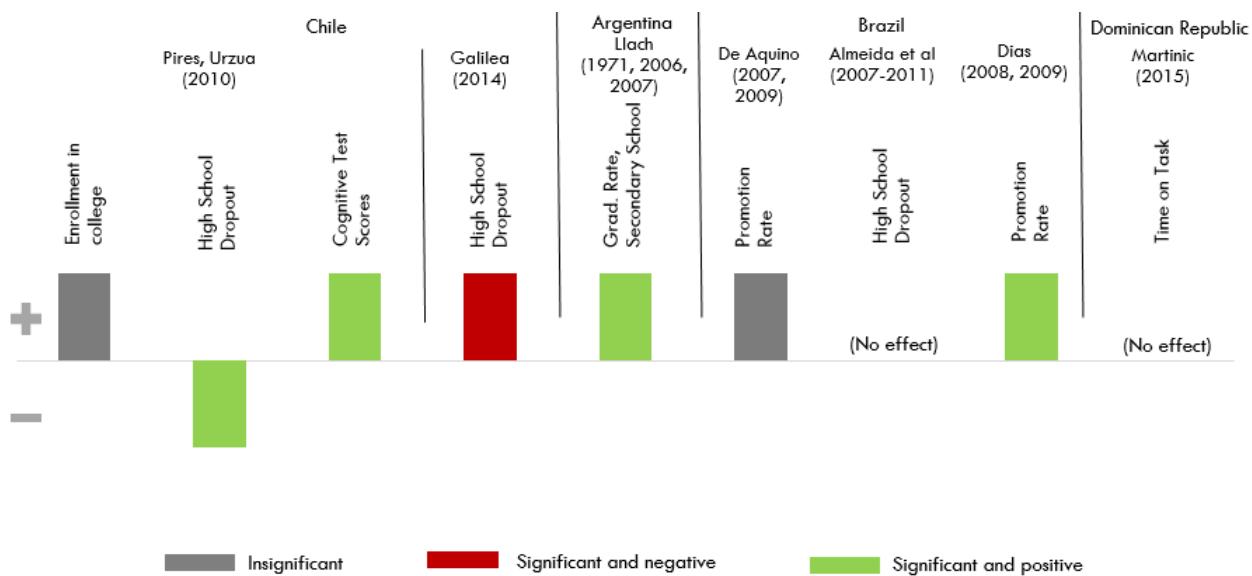
4.2. Extended School Days and Other Schooling Outcomes

The evidence of the impact on other schooling outcomes shows generally positive effects (Figure 8). Many of the effects move in desirable directions (fewer dropouts, higher promotion rates). Of nine estimates, four are positive and significant and two are positive but statistically insignificant. Alternatively, Galilea (2014) finds that the extension of the school day is associated with an increase in dropouts among rural youth in Chile, and Almeida et al (2016) who finds no impact on dropouts in Brazil. Annex Table 2 characterizes the studies in more detail.

The only study that examines how time is used in the classroom comes from the Dominican Republic (Martinic, 2015). Using the Stallings classroom observation tool, the study looked at a random sample of 40 schools (stratified by school size) that had implemented the extended day model. These were then matched with comparable schools that had not participated in the reform, and therefore only had a half-day schedule. The study finds that classroom instruction in extended day schools is not different from instruction in extended day schools, with both spending about 68 percent of classroom time on academic activities (Martinic, 2015).

Another study – unique on a different dimension – interviews students 30 years after their exposure to longer school days in Argentina, taking advantage of a staggered roll-out that was, as the authors characterize it, “probably at random” (Llach, Adrogué, & Gigaglia, 2009). The authors find a positive impact on the likelihood of completing secondary school. In Chile, using propensity score matching, researchers examine the impact of a switch from half-day to full-day schooling in the late 1990s for individuals interviewed about 10 years later (Pires & Urzua, 2015). They find that movement to full-day schooling reduced adolescent motherhood and high school dropout rates, and it increased cognitive skills. Interestingly, they find that the gains are concentrated among students who would otherwise have been in an afternoon shift school (as opposed to a morning shift). In Brazil, the same study that found negative impacts on test scores found positive impacts of promotion of students from one grade to the next (Dias Mendes, 2011), which may in part explain the drop in test scores, as more students that would otherwise dropout of school are remaining in the system. However, difference-in-difference estimates from Almeida et al. (2016) did not corroborate this.

Figure 8. Evidence of Impact on Schooling Outcomes



Note: Dates refer to cohorts tested, not study publication date. Details on the individual studies are available in the Annex.

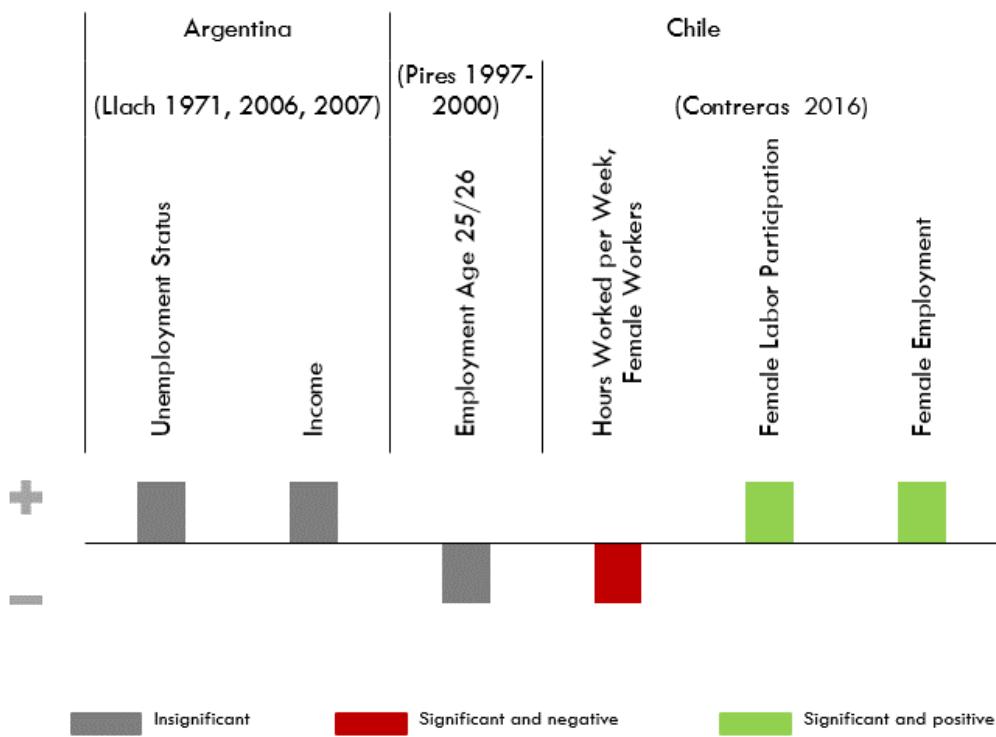
4.3. Extended School Days and Labor Market Outcomes

The extended school day has two potential impacts on labor market outcomes. One is the impact on the students themselves, both during and after they have completed school. The second is the impact on parental labor market outcomes. Two studies offer evidence on impacts for children (Figure 9). Annex Table 3 describes the studies in more detail. Llach, Adrogué, and Gigaglia (2009) shows positive but insignificant impacts on labor market outcomes some 30 years after children were exposed to longer school days in Argentina. Likewise, Pires and Urzua (2015) find no impacts on labor market outcomes (either employment or wages) 10 years after students were exposed to an extended school day in Chile.

One study in Chile, Contreras and Sepúlveda (2016) provides evidence on the impact for the female caregivers of students. They find positive and significant impacts on female labor market participation, but negative and significant impacts on the number of hours worked per week. The authors surmise that this surprising combination of findings may be because new women entering the labor market may be selecting part-time work, thus lowering the average hours worked for those in the market; or it may be because it decreases child care costs for women in the market, pushing them to fewer hours via the income effect.

The limited available evidence suggests that providing an extended school day does indeed enable increased female labor force participation, but the direct and indirect impacts on the students themselves are not sufficiently great to translate into improved labor market outcomes one to three decades later.

Figure 9. Evidence of Impact on Labor Market Outcomes

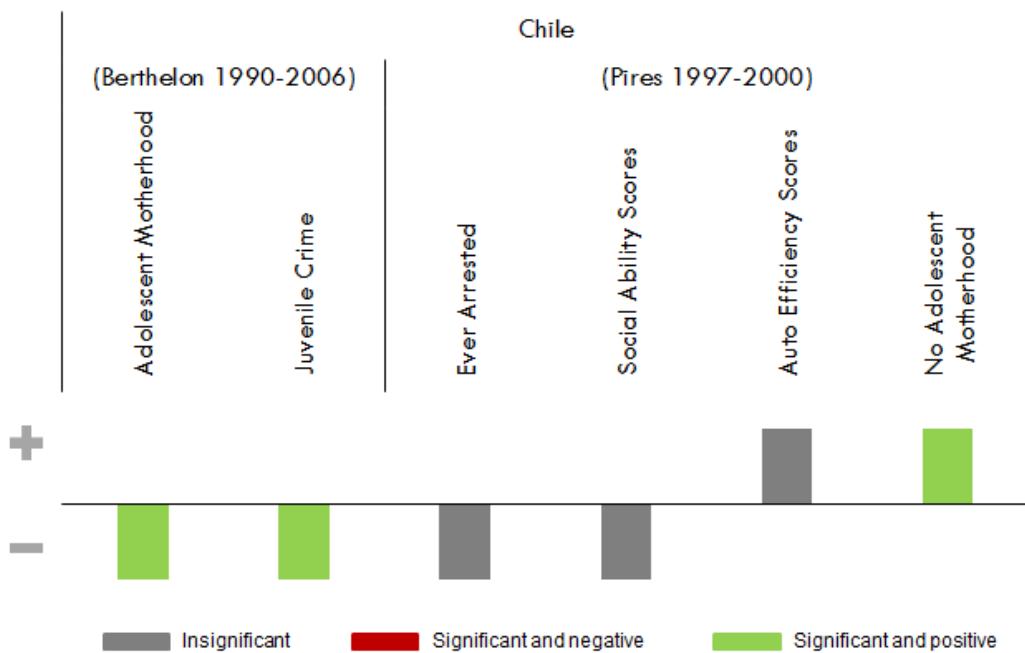


Note: Dates refer to cohorts tested, not study publication date. Details on the individual studies are available in the Annex.

4.4. Extended School Days and Social Outcomes

The evidence on social impacts, which stems exclusively from studies examining the Chilean model, is more consistent (Figure 10). Annex Table 4 describes the studies in more detail. Berthelon and Kruger (2011) use fixed effects estimation and find negative, significant impacts on adolescent motherhood among poor families and in urban areas, as well as on juvenile crime rates in the affected municipalities. Pires and Urzua (2015) find that the move to full-day schooling significantly reduces adolescent motherhood but has no significant impact on the likelihood of having been arrested, nor on social ability or longer term cognitive development. Thus, there does seem to be a displacement effect – having the youth in school does make them less likely to get engaged in crime or risky behaviors during that period of their lives.

Figure 10. Evidence of Impact on Social Outcomes



Note: Dates refer to cohorts tested, not study publication date. Details on the individual studies are available in the Annex.

4.5. Methodological Considerations and Limitations

In reviewing the literature, some limitations of our review and in the methods used by the various studies arise, given the diversity of the programs and research designs. The first limitation is the broad spectrum of actions covered by the programs. Extended school programs frequently include other interventions besides lengthening the school day, such as teacher training or curricular improvements, which are impossible to disentangle. Second, the diversity in design of programs, as well as in the application of models, means that one runs the risk of comparing very different interventions. Even within countries, the implementation can vary significantly. That said, what all of the interventions reviewed here have in common is the extension of the school day, and the associated interventions reflect the true associated interventions that are commonly implemented jointly with extended school day programs.

Each individual study reviewed also has limitations. None of the studies is truly and completely exogenous, although each study seeks to overcome selection bias in its way. Furthermore, the definition of program exposure varies, and sometimes there is no information regarding the specific number of years that each student was exposed to a full-time schooling

program. Some researchers define the exposure at the school level (Bellei 2009; Cerdan-Infantes and Vermeersch 2007), while others rely on self-reported measures of exposure (Llambí 2013). As a consequence, these evaluations measure the intent to treat rather than actual treatment. This makes it difficult to have precise estimates for effects per year, as well as for multiple-year effects. The exception to this is panel studies, such as the one conducted by Arzola González (2010). Another consideration is that different evaluations consider different grades. Given the program designs and the availability of data, some evaluations focus on primary education (Llambí 2013; Cerdan-Infantes and Vermeersch 2007) while others focus on secondary education (Bellei 2009) or a mix of both levels (Arzola González, 2010). Primary and secondary education levels strongly differ in terms of pedagogical approaches, so there is no reason to think that effects across grades would necessarily be similar. These limitations should be kept in mind when reviewing the evidence presented here, and remembered as caveats when overall conclusions are drawn.

5. Costing Considerations: The Case of Uruguay

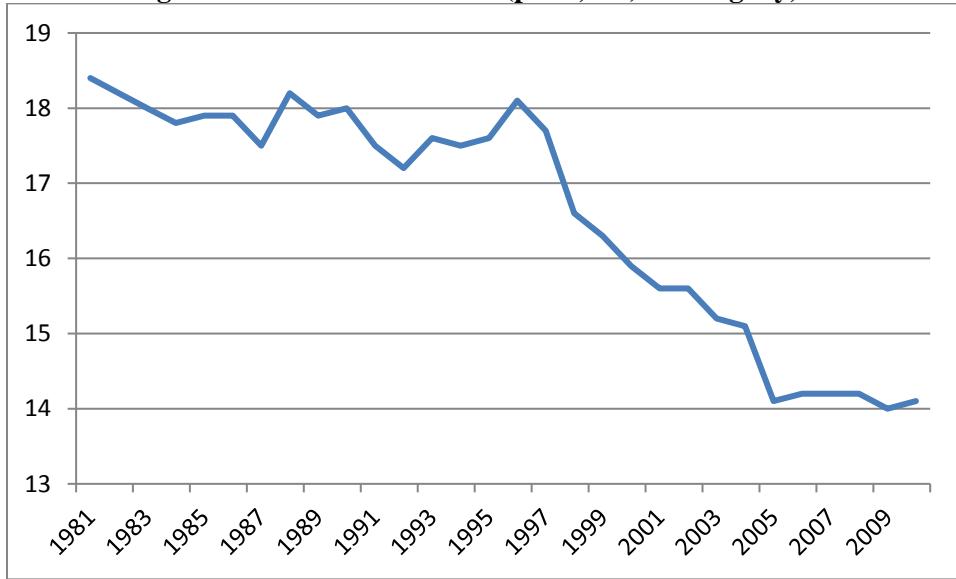
The evaluation evidence provides limited evidence that extending the school day may be effective for improving learning (among other desired outcomes); however, is it *cost* effective? This section provides a framework for assessing the cost of extending the school day, through the case of Uruguay. The Uruguayan case was selected for the following reasons: (i) there are more than 15 years of implementation history to learn from, (ii) the country adapted its policy mid-course due to cost considerations, and (iii) good data were available on a topic where data scarcity prevails. Indeed, education studies in development often report little to no cost data (McEwan, 2015). This section is organized as follows: first, we present the contextual background and evolution of Uruguay's full-time schooling policy. Second, we present the cost information along three dimensions: staffing costs, infrastructure and materials, and food. Third, we consider cost-effectiveness, using some assumptions on the returns to full-time schooling.

5.1 Addressing Equity in the Context of a Demographic Transition

Two factors helped usher in the policy reforms that brought about the extended school day model in Uruguay. First, results from the 1996 National Learning Assessment revealed dramatic differences in income quintiles in student performance. More than 85.4 percent of students from the most advantaged backgrounds scored satisfactorily or better on the test, as compared to only

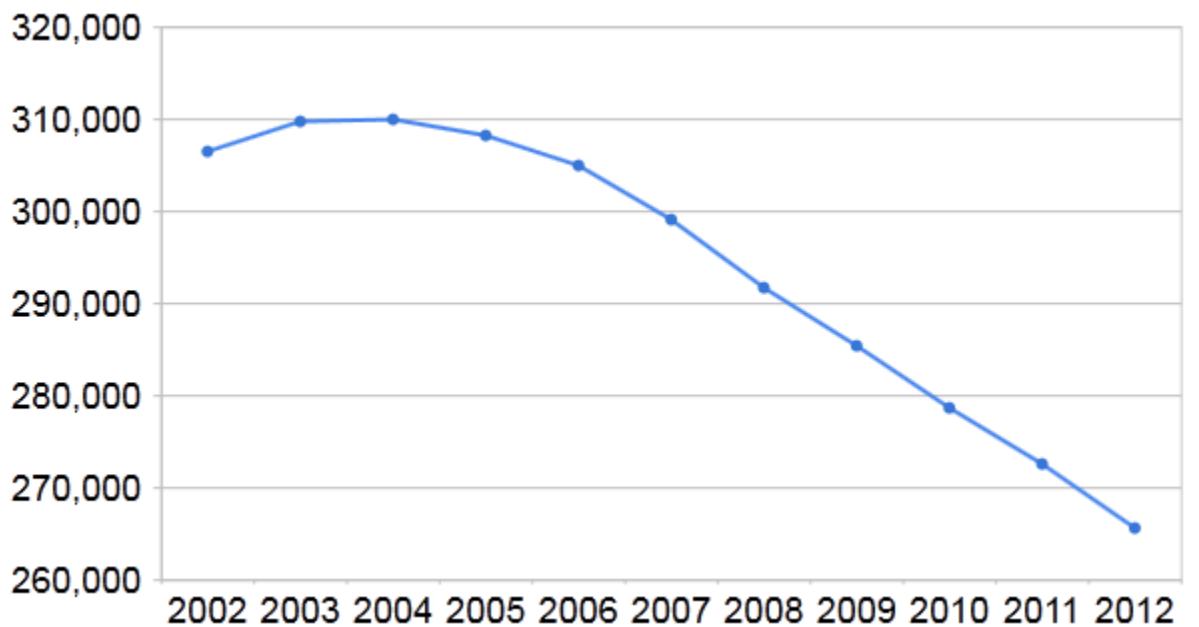
37 percent of students from the most disadvantaged areas. Second, 1996 marked the beginning of an important demographic transition: while annual birthrates held more or less constant through the 1980s and early 1990s, the country witnessed a fairly rapid decline from 18.1 per 1,000 in 1996 to 13.8 by 2011 (Figure 11). A corresponding decline in primary enrollment rates began when that cohort entered primary school in 2002-2003 (Figure 12).

Figure 11: Annual Birthrates (per 1,000) in Uruguay, 1981-2011



Source: *República Oriental del Uruguay. Instituto Nacional de Estadística. Estadísticas Vitales.*

Figure 12: Total Enrollments in Public Primary Schools, 2002-2012



Source: *Administración Nacional de Educación Pública.*

In the wake of the 1996 learning assessment results, Uruguay launched an education reform in order to improve equity in the system, both in terms of access to services and the quality of services received. One of the main policy instruments was the introduction of Full-Time Schools, or *Escuelas de Tiempo Completo* (ETC), targeted primarily to urban areas classified as socio-economically “disadvantaged” or “very disadvantaged”. In the beginning, ETC consisted simply of adding 3.5 hours to the school day (from 4 to 7.5) and providing school lunches and a snack, without a corresponding change in curriculum or infrastructure. With support from a World Bank project (World Bank Group, 1998), a comprehensive ETC model was introduced in 1998 that featured a new pedagogical approach (“*propuesta pedagógica*”) whereby bilingual education was introduced, teachers received supplemental training on how to more effectively reach disadvantaged students, and teachers were paid 2.5 hours per week to discuss, plan, and evaluate their work with other teachers. This model also had a substantial infrastructure component, and ETC schools received special educational materials.

By 2010, 168 full-time schools had been built (or converted) after 15 years of implementation of the policy. A new Government adopted extending school hours as the central plank to its five-point platform, effectively making ETC a national policy. However, recognizing that the fiscally-cautious approach had resulted in slow scale-up, the administration also introduced an alternative model to add pedagogical hours to the school day. This new extended-day model, known as Extended Time Schools (*Escuelas de Tiempo Extendido*, or ETE), consists of 3 additional hours per day, spent largely in activities such as physical education, music, arts and crafts, and the introduction of a second language. The model is rolled out such that selected schools do not require additional infrastructure. Lunch is provided.

5.2. Cost Implications of Extending the School Day

The fiscal implications of extending the school day are far-reaching. Two types of expenditures are considered: investment costs, and operational costs. Investment costs are one-time expenditures, limited to infrastructure and equipment such as furniture. Operational costs are recurrent costs such as wages and school meals. Tables 2 and 3 summarize the investment and operating costs respectively across three types of models in Uruguay: regular schools, full-time schools (ETC), and extended-day schools (ETE).

Table 2: Comparative Investment Costs by School Model, USD (2011)

Expenditure	Regular Schools (20 hours a week)	Full-time Schools (37.5 hours a week)	Extended-day Schools (35 hours a weeks)
Investment			
- New construction	0	1,700,000	0
- Refurbishing	0	1,100,000	120,000
- Equipment/Library	0	107,000	12,200
- Training	0	5,315	5,315
Total cost (low-case)	0	1,212,315	137,515

Note: Total cost assume a low-case scenario of refurbishing rather than new constructions for the ETC schools.

Table 3: Comparative Annual Operating Costs by School Model, USD (2011)

Expenditure	Regular Schools (20 hours a week)	Full-time Schools (37.5 hours a week)	Extended-day Schools (35 hours a weeks)
Wages	220,532	391,331	340,797
- Director	25,559	35,404	35,404
- Secretary	16,054	29,188	29,188
- Teachers (20 hrs)	128,434		64,217
- Teachers (40 hrs)		233,503	116,752
- Phys Ed	16,054	16,054	16,054
- Other workshops	12,418	16,054	24,837
- English teachers		12,418	12,418
- Hardship Incentives	5,037		
- Other staff	16,974	48,709	41,928
School meals/snacks	20,854	49,652	39,721
Other direct costs	25,917	30,582	30,582
Annual cost/student	1,371	2,418	2,108
Total cost	267,302	471,565	411,100

The tables show that the ETC model is approximately 76 percent more costly to operate per student per year over the regular program, and 15 percent higher than the ETE model. On the investment side, the ETC model is nearly eight times more expensive, using a low-case scenario of refurbishing (US\$1.1 M) rather than new constructions (US\$1.7M).

5.3. Cost-Effectiveness Estimates

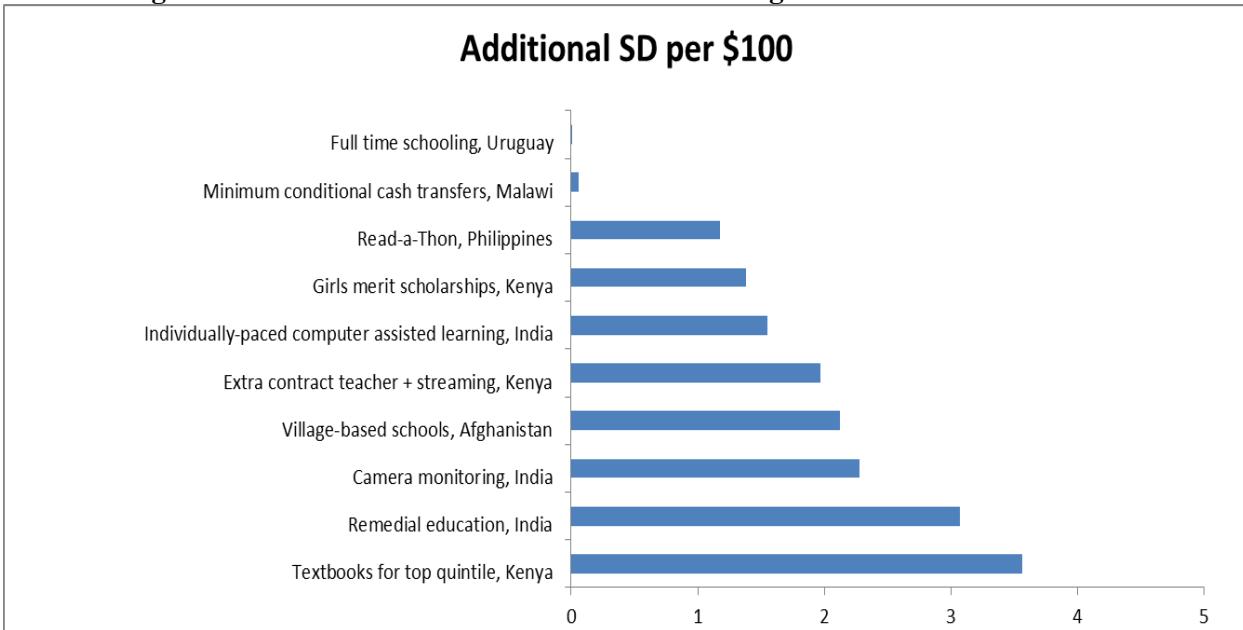
As seen in the quasi-experimental evaluation cited in the previous section (Cerdan-Infantes & Vermeersch, 2007), it is estimated that the impact for extending the school day in Uruguay for a child who spends one year of primary school in an ETC would be 0.04 standard deviations for

Spanish, and 0.06 standard deviations for Mathematics. Aside from these quality improvements, the ETC pedagogic model aims to improve efficiency in the education system: reductions in repetition rates at the primary and secondary levels, and reductions in student dropout in secondary. As discussed previously, there are also expected social benefits that may be reaped. While these benefits are clearly an important part of the rationale for investing in ETC, this analysis considers only the benefits gained in terms of standard deviations in learning outcomes.

To compare the cost effectiveness of this intervention to other similar interventions for which data is available, we use the framework put forth by Dhaliwal et al. (2013) and place the Uruguay full-time schooling model alongside a range of other educational interventions for which cost effectiveness has been estimated (Figure 12). We use the Mathematics impact, which is the higher of the two. As such, this may be viewed as an upper bound of the cost effectiveness of the intervention. As is clear from Figure 13, full-time schooling is much less cost effective than other educational interventions. In fact, it is roughly one-tenth as cost effective as the next intervention (conditional cash transfers in Malawi). If the cost effectiveness numbers are adjusted for purchasing power parity (and there are reasons in favor and against doing this, as discussed in Dhaliwal et al. 2013), full-time schooling in Uruguay is one-fifth as cost effective as the next intervention, and still the least cost effective on the list. If one imagined finding a much larger learning impact of 0.4 standard deviations – the largest learning outcome we observe (Valenzuela 2005)² – and kept the costs the same, full-time schooling would be roughly as cost effective as cash transfers and far less cost effective than any of the other educational interventions listed. Of course, one is ignoring the non-educational impacts, but the same could be said of any of the other interventions. Purely from an education perspective, this is not very promising.

² This draws from those studies that report outcomes in standard deviations. However, even among studies that do not, the magnitude is not substantively different.

Figure 13: Cost Effectiveness of Full-Time Schooling versus Other Interventions



Notes: This graph demonstrates additional standard deviations in student learning per \$100.

Source: Authors' calculations for full-time schooling in Uruguay. The rest of the figure is adapted from Evans and Popova (2016), using data from J-PAL (2014).

Of course, this is only one country, and more work is needed to understand whether the cost-effectiveness would be similar in other settings. However, the estimates of impact are not consistently positive, nor are they particularly large relative to other educational interventions. This suggests that, at least in the way that extended school day programs are being rolled out, the academic gains are limited at best, so low cost-effectiveness should come as no surprise.

6. CONCLUSIONS AND IMPLICATIONS FOR POLICY

Overall, the evidence from Latin America and the Caribbean on interventions to extend the school day tend to show positive results, although the evidence is decidedly mixed, often statistically insignificant, and sometimes even negative. That said, there is also a pattern of positive results – again, not in all cases – on social and labor market outcomes. Extending the school day may also have a strong equity dimension, as impacts may be higher among more disadvantaged schools, and poorer students (Berthelon & Kruger, 2011). When compared to other interventions seeking to improve educational outcomes specifically, this policy does not seem likely to be cost effective.

Caveats to this conclusion are necessary. First, the cost-effectiveness estimates from Uruguay may not apply in other countries (Evans and Popova 2016). For example, in countries

with extremely short school days, the returns to extending them may be higher than in Uruguay. Still, none of the studies we review identify particularly large learning impacts.

Also, cost-effectiveness calculations are based on only academic benefits to students. If policymakers place a high value on reductions in adolescent motherhood and juvenile crime rates or increases in female labor force participation, the argument for extending the school day may be stronger. However, other interventions might achieve those social impacts more cost-effectively too. For example, after-school programs that provide recreational activities or simple study time could have positive social impacts by reducing unsupervised time and permit parents to participate in the labor market at lower cost because of less need for trained teachers.

If policymakers do decide that now is the time to extend the school day universally, the ambiguity of the results seen here suggest that they should seize the opportunity to introduce more extensive reforms that go beyond the school schedule in order to maximize the probability of positive impacts. More hours may help, but hours better-spent will likely help much more—and at a lower cost. To better inform future program rollout and scaling up of existing programs, subsequent research should strive to better track how additional hours are used, and to isolate the impact of contributing factors, whether time on core curriculum, time in extracurricular, teacher training, or even school lunches. One element that may be of particular importance in extended day schooling models is the role of the school director or principal, and her ability to make optimal use of the additional hours offered, consistent with the latest evidence on the potential importance of school management (Bloom, Lemos, Sadun, & Van Reenan, 2015). This could include tailoring school time to provide extra support to students struggling with elements of the core curriculum, invest in peer learning among teachers, or have project-based learning activities for students, to cite some examples.

Other possible next generation questions to inform policy relate to the sequencing of reforms, and prioritizing of activities within the model. For sequencing, this could include beginning with an expansion of schooling hours at the secondary level, especially if social benefits (relating to reducing adolescent motherhood and lowering crime and violence) are higher at this level. Prioritization of activities would involve testing for the optimal balance between additional extra-curricular activities and remedial training.

If the objective is to improve educational or social outcomes among the worst performers, then interventions like remedial tutoring for those most in need may be more effective, as has been

effective in India (Banerjee, Cole, Duflo, & Linden, 2007). Alternatively, a way to use longer school days cost-effectively would be to target them to communities with high concentrations of low learning outcomes. Extending the school day – in and of itself – is unlikely to deliver the best return on investment for ministries of education.

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8. Annexes

Annex Table 1: Evidence of Extended Day Schooling on Subject Test Scores

All results are reported in standard deviations of learning unless otherwise indicated.

Title	Authors	Country	Outcomes, Effects, Significance	Methodology
Assessing the impacts of Mais Educação on educational outcomes: evidence between 2007 and 2011	Almeida et al (2016)	Brazil	Negative impact on math; no impact on Language. Math: 2% decrease (5 th grade)	Propensity Score Matching
O Impacto do Programa Mais Educação no Desempenho dos Alunos da Rede Pública Brasileira	Dias Mendes (2011)	Brazil	Negative impact. Math: -0.03 (4 th grade); Math: -0.06 (8 th grade)	Propensity Score Matching
Programa Mais Educação: Avaliação Do Impacto Da Educação Integral No Desempenho de Alunos No Rio Grande Do Sul	Xerxenevsky (2012)	Brazil	Insignificant impact. Math: 0.06 (8 th grade); Language: 0.05 (8 th grade)	Propensity Score Matching

Uma ampliação da jornada escolar melhora o desempenho acadêmico dos estudantes?	De Aquino (2011)	Brazil	No impact on proficiency, grade advancement, or math. Small effect on language (significant)	Propensity Score Matching
Does lengthening the school day increase students' academic achievement? Results from a natural experiment in Chile	Bellei (2009)	Chile	Positive impact. Math: 0.07 (secondary school-level); Language: 0.05-0.07 (secondary school-level)	Natural experiment/diff in diff
Partial Evaluation of a Big Reform in the Chilean Education System: From a Half Day to a Full Day Schooling	Valenzuela (2005)	Chile	Positive impact. Language: 0.1-0.2 (public schools); Language: 0.4 (voucher schools)	Propensity Score Matching
Evaluación del Impacto de la Jornada Escolar Completa	Garcia (2006)	Chile	Positive impact. Language: 0.07 (urban public schools with copayment); Language: 0.14 (urban voucher schools)	Propensity Score Matching
Impacto de la Jornada Escolar Completa en el Desempeño de los Alumnos, medido con la Evolución en sus Pruebas Simce	Arzola (2010)	Chile	Insignificant positive impact for those having four years (2005-2009). Math: 1 point increase (secondary school-level); Language: 1 point increase (secondary school-level). No effect for those having at least one year.	Panel, difference-in-differences

Do Longer School Days Improve Student Achievement? Evidence from Colombia	Hincapié (2016)	Colombia	Positive impact. Math: 0.08 (9 th grade); Language: 0.11 (9 th grade)	Fixed Effects
Doble jornada escolar y calidad de la educación en Colombia	Bonilla (2011)	Colombia	Positive impact over morning shift. Math: 1.58 test points; Language 0.70 test points. Positive impact over afternoon shift. Math: 2.48 test points; Language 1.22 test points.	Instrumental variables
El efecto causal de la política de tiempo completo sobre los resultados educativos en la enseñanza media	Llambí (2013)	Uruguay	Negative impact. Math: -0.27 (secondary school-level); Language: -0.24 (secondary school-level); Science: -0.29 (secondary school-level)	Propensity Score Matching
More Time is Better	Cerdan-Infantes and Vermeersch (2007)	Uruguay	Positive impact. Math: 0.07 (3 rd grade); Language: 0.04 (3 rd grade)	Propensity Score Matching

Annex Table 2: Evidence of Extended Day Schooling on Other Educational Outcomes

Title	Authors	Country	Outcomes, Effects, Significance	Methodology
Do Longer School Days Have Enduring Educational, Occupational, or Income Effects?	Llach, Androgué, & Gigaglia (2009)	Argentina	Mixed impact. Higher likelihood of completing secondary school; No impact on labor market outcomes	Randomized Control Trial
Uma Ampliação Da Jornada Escolar Melhora O Desempenho Acadêmico Dos Estudantes? Uma Avaliação Do Programa Escola de Tempo Integral Da Rede Pública Do Estado de São Paulo	De Aquino (2011)	Sao Paulo, Brazil	Insignificant impact. Promotion rate: 1.1% (not significant)	Propensity Score Matching
O Impacto do Programa Mais Educação no Desempenho dos Alunos da Rede Pública Brasileira	Dias (2011)	Brazil	Positive impact. Promotion rate: 1.1% increase	Propensity Score Matching
Assessing the impacts of Mais Educação on educational outcomes: evidence between 2007 and 2011	Almeida et al (2016)	Brazil	No impact on dropouts	Propensity Score Matching

Longer School Days, Better Outcomes?	Pires & Urzua (2011)	Chile	Positive impact. High School dropout: -3% reduction; Cognitive test results: 10% increase	Propensity Score Matching
¿Màs Tiempo en el Colegio Siempre es Mejor?: Efectos de un Aumento en la Duraciòn de la Jornada Escolar Sobre la Deserciòn	Galilea (2014)	Chile	Negative impact. High School dropout: 1.8% increase (rural areas)	Panel
Uso del tiempo en centros educativos de jornada extendida y media jornada en Repùblica Dominicana	Martinic (2015)	Dominican Republic	No impact on time use in classroom	Stallings method

Annex Table 3: Evidence of Extended Day Schooling on Labor Market Outcomes

Title	Authors	Country	Outcomes, Effects, Significance	Methodology
Longer School Days, Better Outcomes?	Pires & Urzua (2011)	Chile	No impact. Labor market outcomes; employment; wages; social ability; metacognitive scores.	Propensity Score Matching
The effects of lengthening the school day on female labor supply: evidence from a quasi-experiment in Chile	Contreras, Sepúlveda, & Cabrera (2010)	Chile	Mixed impact. Labor participation and female employment: positive; Number of hours worked: negative.	Fixed Effects

Annex Table 4: Evidence of Extended Day Schooling on Social Outcomes

Title	Authors	Country	Outcomes, Effects, Significance	Methodology
Longer School Days, Better Outcomes?	Pires & Urzua (2011)	Chile	No impact. Social ability; metacognitive scores.	Propensity Score Matching
Risky behavior among youth: Incapacitation effects of school on adolescent motherhood and crime in Chile	Berthelon & Kruger (2009)	Chile	Positive impact. Reduces the probability of becoming an adolescent mother among poor families and in urban areas; reduced youth crime	Fixed Effects