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Extending the School Day in Latin America and the Caribbean

Peter Holland
Pablo Alfaro
David K. Evans

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Abstract

Countries throughout Latin America and the Caribbean are reforming their education systems with the view of adding more hours to the school day. This paper examines the existing evidence on the relationship between instructional time and student learning, and reviews 15 studies measuring the effects of longer school days. It draws on examples throughout the region to characterize differences in the implementation of extended school day programs, and provides one detailed case study and cost-effectiveness exercise (for Uruguay). While the evidence suggests positive impacts across a range of outcome variables, including gains in student learning, reductions in repetition and dropout, and reductions in teenage pregnancy, there is considerable heterogeneity across programs and 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 effects. The paper concludes with a discussion of the implications for policy makers and practitioners considering an extension of the school day.

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EXTENDING THE SCHOOL DAY IN LATIN AMERICA AND THE CARIBBEAN

Peter Holland	Pablo Alfaro	David K. Evans
World Bank	Ministry of Education, Chile	World Bank

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Corresponding authors: Holland (pholland@worldbank.org) and Evans (devans2@worldbank.org).

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 serve as a social safety net. Another element of the political appeal is the strong support from teachers' unions for the additional hours of paid instruction that extended school days represent. 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 15 studies across 5 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 team displaces time that would have been spent on homework). Likewise, if teachers are not fully compensated for the additional labor and teaching effort drops across all school hours, especially in the context of high labor market rigidities due to strong teachers' unions, the impacts could be neutral or even detrimental. Alternatively, since all of these studies are quasi-experimental and many are targeted to 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. 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.

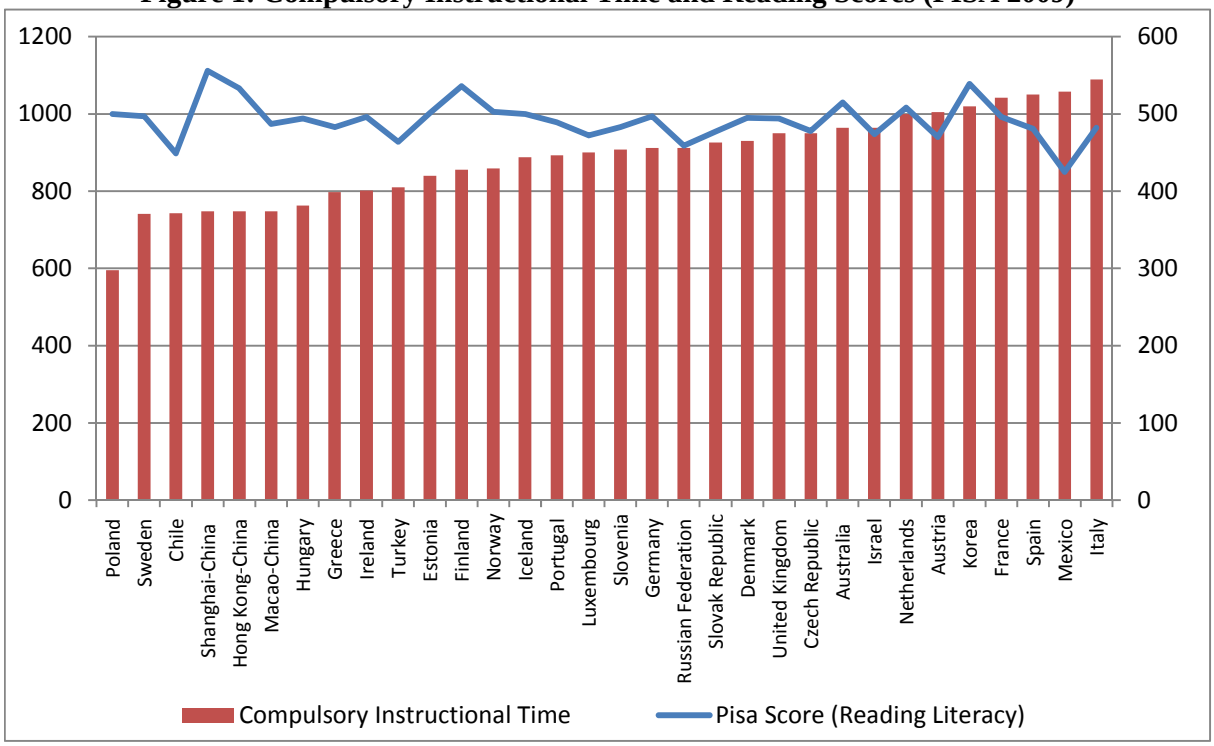
This paper proceeds as follows: Section 2 of the paper provides definitions for a range of terms associated with the extended school day and instructional time, together with a simple analysis of the relationship between instructional time and outcomes of interest. Section 3 characterizes experiences across Latin America, comparing 7 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), data for compulsory instructional time are most readily available, since the former requires extensive classroom observations in order to obtain nationally representative samples.

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 2009 (see figure 1). No trend emerges. Mexico, the lowest ranked country on reading skills in this sample, is second only to Italy (also well below the reading skill mean) in compulsory instructional time.

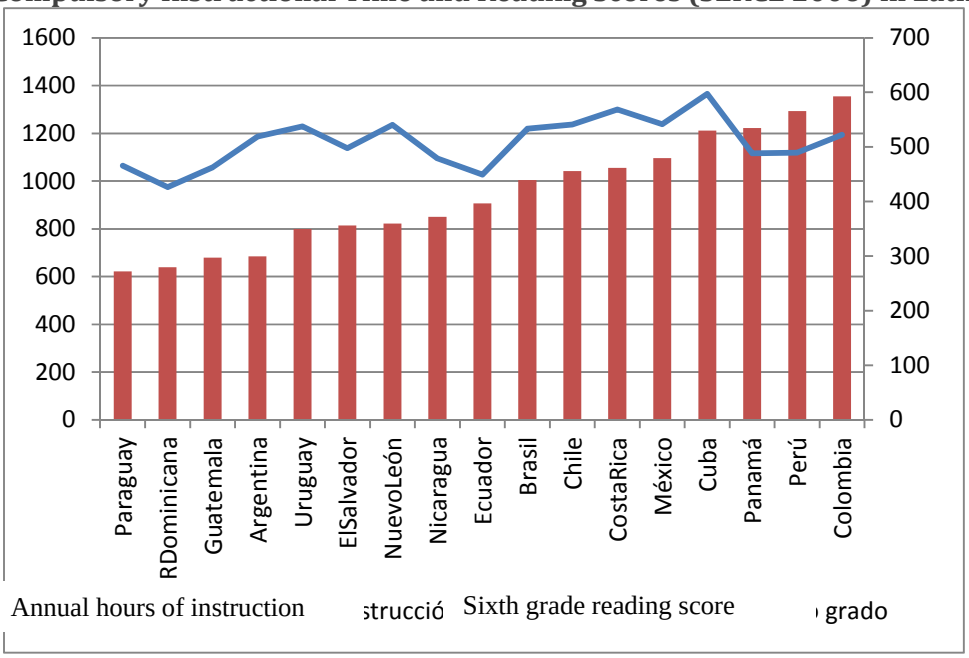
Figure 1: Compulsory Instructional Time and Reading Scores (PISA 2009)



Source: Authors' construction, 2009 PISA data.

Similarly, when looking specifically at Latin America, the same story appears. Using data from those participating in the Second Regional Comparative and Exploratory Study (SERCE), carried out by UNESCO, Figure 2 shows that, for instance, Uruguay and Nuevo Leon (a state of Mexico) have considerably higher reading scores than Ecuador and Panama, although the latter offer more instructional time.

Figure 2: Compulsory Instructional Time and Reading Scores (SERCE 2006) in Latin America



Source: Authors' construction, with data from Second Regional Comparative & Exploratory Study (SERCE), 2006

In short, there is no simple relationship between instructional time and student learning. This lack of a correlation does not of course 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.

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 pedagogic 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

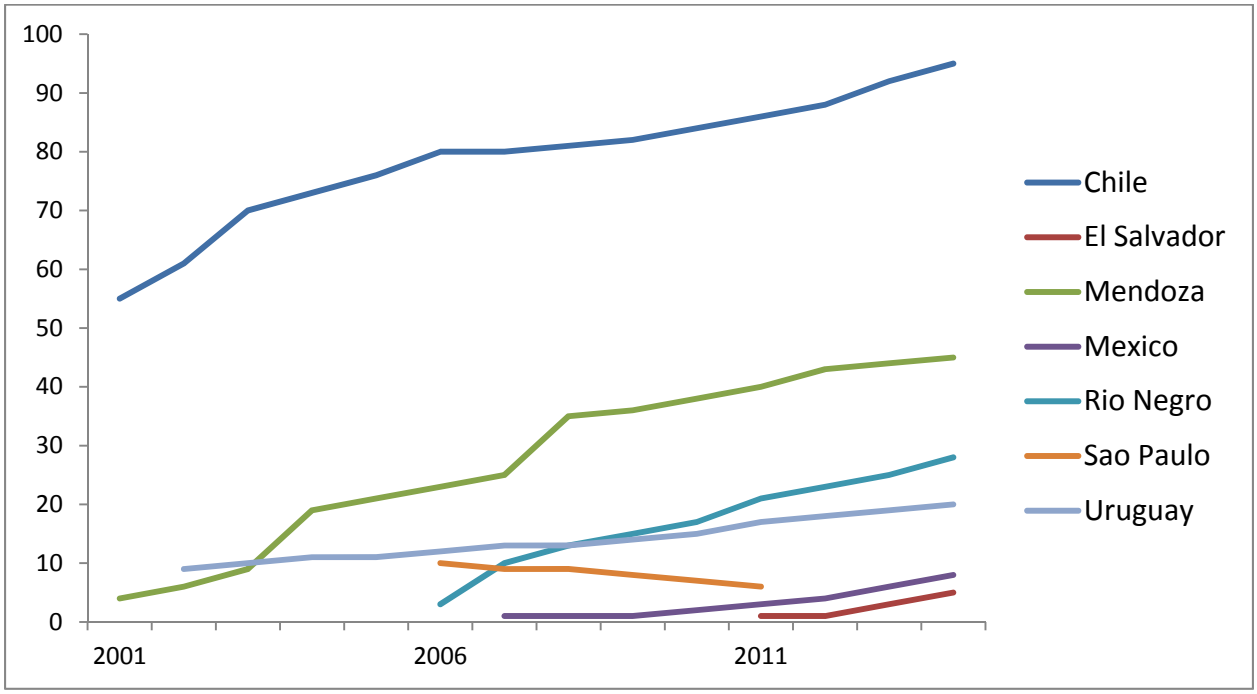
embarked on a reform that extends the school time together with a number of other initiatives such as a dramatic overhaul in the curriculum or pedagogy, new training programs for teachers and directors, and other changes ("full-time schools").

Table 1. Models of Extending the School Day

Model	*Description*	*Country examples*
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 *Mais Educação*
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 regards 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 55% 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)

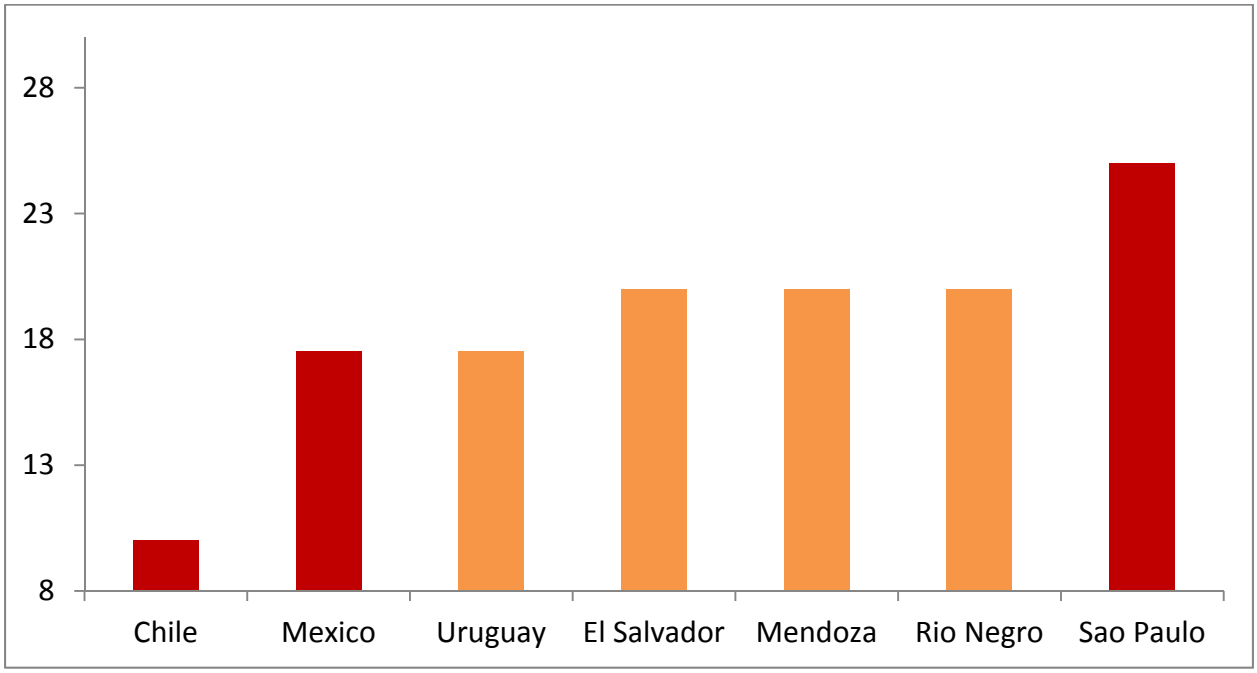


Source: Authors' construction, with data from Alfaro & Holland (2012).

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 in the afternoon. Activities are expected to be distinctive in terms of either content or format. Activities can use an innovative format while remaining focused on the traditional core curriculum, such as Reading and Math experiences in São Paulo. But activities emphasizing innovative content tend to not directly address the traditional core curriculum and are frequently delivered as workshops, 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 is mandated (at least 60 percent to core curriculum).

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 regards 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. 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 15 studies from 5 countries in Latin America and the Caribbean on extending the school day.

The studies were identified through searches conducted in academic databases and using Google Scholar. The databases searched both academic journals and working paper series: Educational Resources Information Center (ERIC), JSTOR, ProQuest, and the World Bank's Impact Evaluation Series. Google Scholar was helpful in finding unpublished manuscripts, as well as PhD and Masters dissertations. 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.

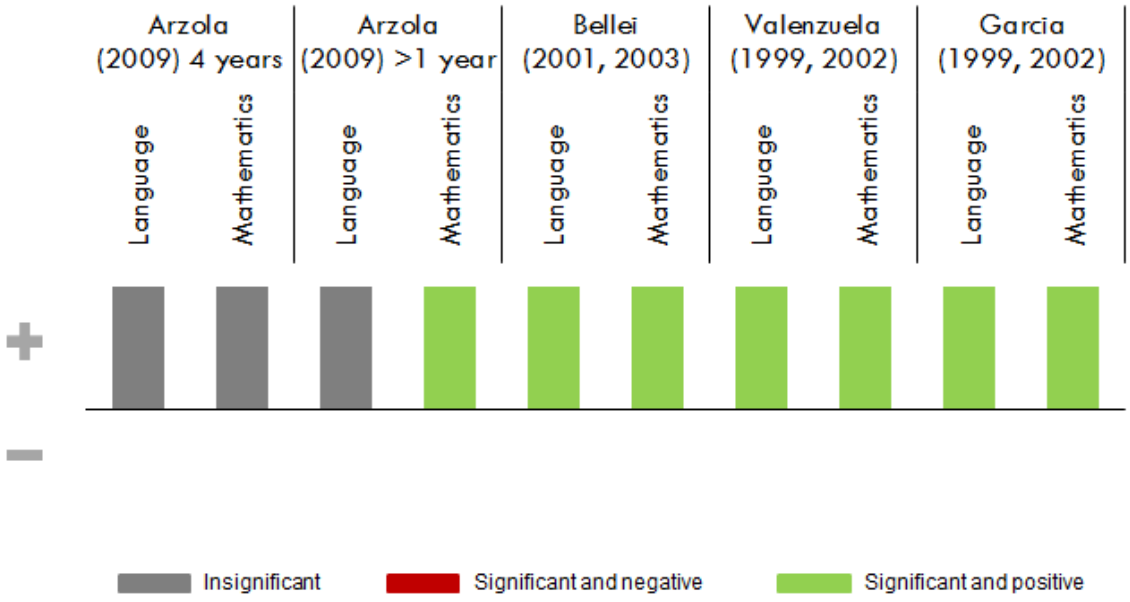
We organize the results into four sections, according to outcome variables of interest. Section 4.1 reviews the studies that estimate impacts on student learning, followed by impacts on other schooling outcomes (section 4.2). Section 4.3 discusses the impact on parental labor market participation. Section 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.

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 positive outcomes in Chile, Uruguay, and Colombia. Brazil is the one country that shows negative outcomes. Annex Table 1 presents the studies by country, author, methodology, and impact. The findings are also summarized in Figure 5.

[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.

Figure 5. Evidence of Impact on Learning Outcomes in Chile

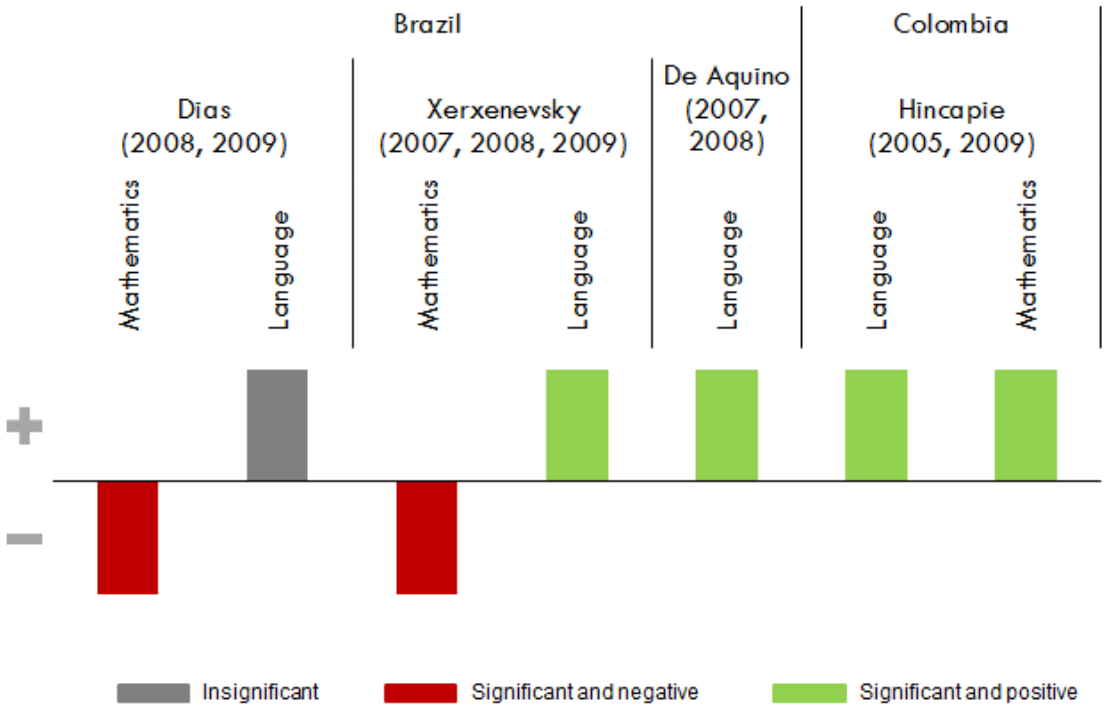


Note: Dates refer to cohorts tested, not study publication date. Details on the individual studies are available in the Annex.

The country experience that has been most evaluated is Chile. 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 robust, 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 a Sample of Other LAC Countries



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 Uruguay and Colombia, whereas at least some negative impacts are observed in the Brazilian context (Figure 6). In Uruguay, for example, 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 defined according 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. In Colombia, the author uses fixed effects estimation and finds positive, significant impacts for both language and math scores, of between 0.28 and 0.36 standard deviations (Hincapié, 2013).

In Brazil, Xerxenevsky (2012) combines propensity score matching with difference in differences to evaluate the impact of Mais Educaçõ 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. 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. Finally, Llambí (2013) uses a propensity score matching model in Uruguay and finds negative, significant impacts on student math scores.

Although we have insufficient data to explain precisely why one might find this range of positive, negative, and insignificant effects, they certainly demonstrate that while there may be a tendency toward positive academic outcomes, this is certainly not guaranteed. At least some literature from the United States similarly finds little benefit associated with a longer school day (Link & Mulligan, 1986).

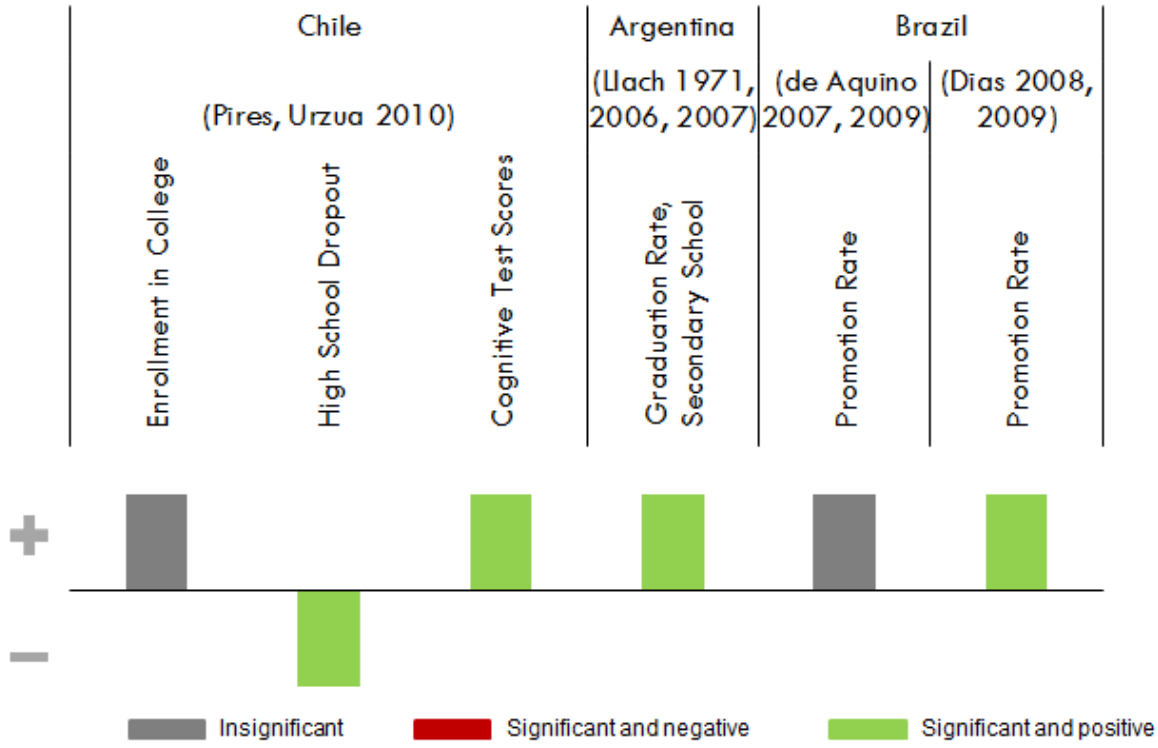
4.2. Extended School Days and Other Schooling Outcomes

The evidence of the impact on other schooling outcomes also shows generally positive effects (Figure 7). All effects move in desirable directions (fewer dropouts, higher promotion rates). Of those, four are positive and significant and two are positive but statistically insignificant. Annex Table 2 characterizes the studies in more detail.

One of these studies is unique among the studies reviewed here in that it 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 ten 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).

Figure 7. 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.

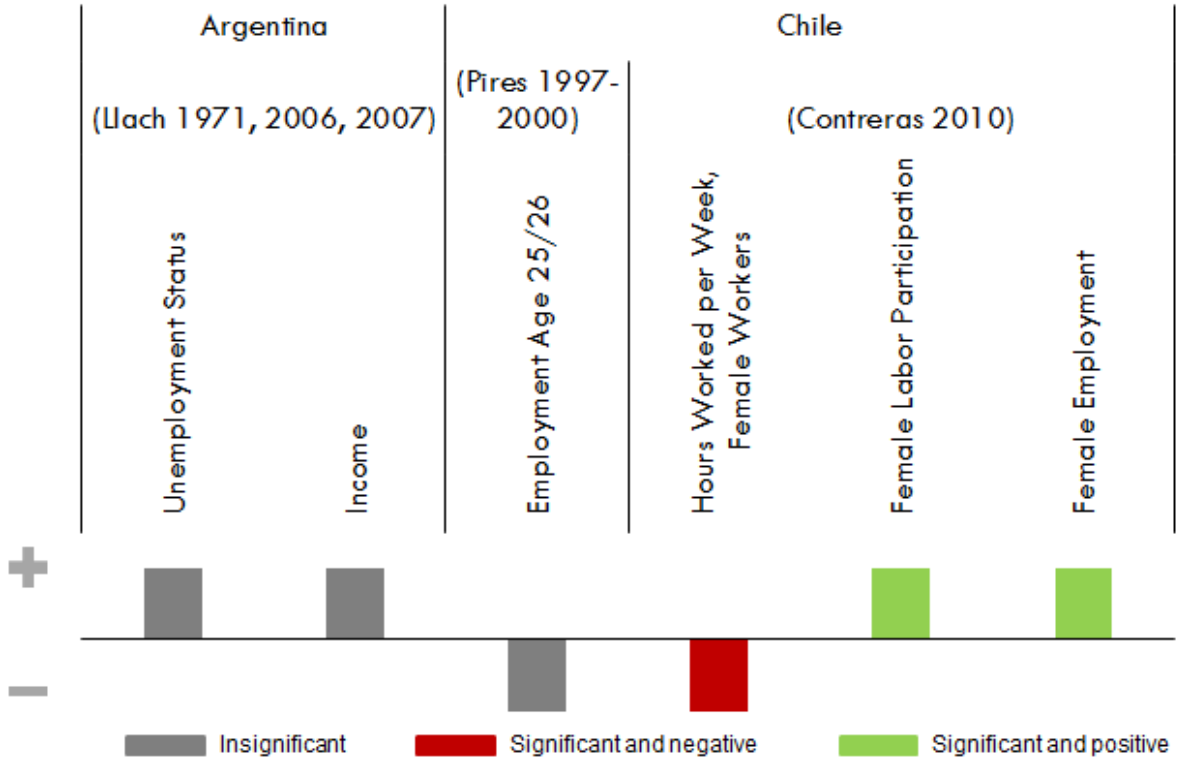
4.3. Extended School Days and Labor Market Outcomes

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 8). Annex Table 3 describes the studies in more detail. Llach, Adrogué, and Gigaglia (2009) shows positive but insignificant impacts on labor market outcomes some thirty 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) ten years after students were exposed to an extended school day in Chile.

One study in Chile, Contreras, Sepúlveda, and Cabrera (2010) provides evidence on the impact for the female caregivers of students. They find positive and significant impacts on female labor market participation and employment, but negative and significant impacts on the number of hours worked per week.

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 8. Evidence of Impact on Labor Market Outcomes

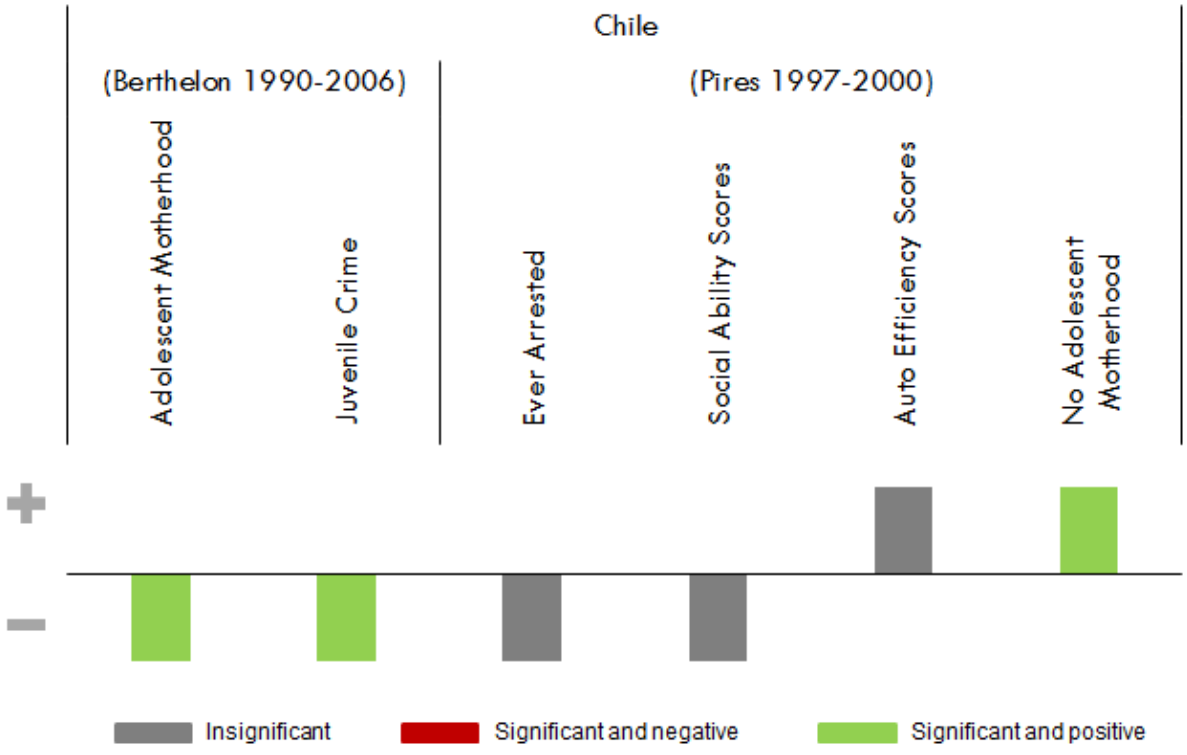


Note: Dates refer to cohorts tested, not study publication date. Details on the individual studies are available in the Annex.

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 9). 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 9. 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 estimators 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). However, the comparability of the studies is limited. Another limitation is that different evaluations consider different grades. Given the program designs and the availability of data, some evaluations are focused on primary education (Llambí 2013; Cerdan-Infantes and Vermeersch 2007) while others focus on secondary education (Bellei 2009), or even 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

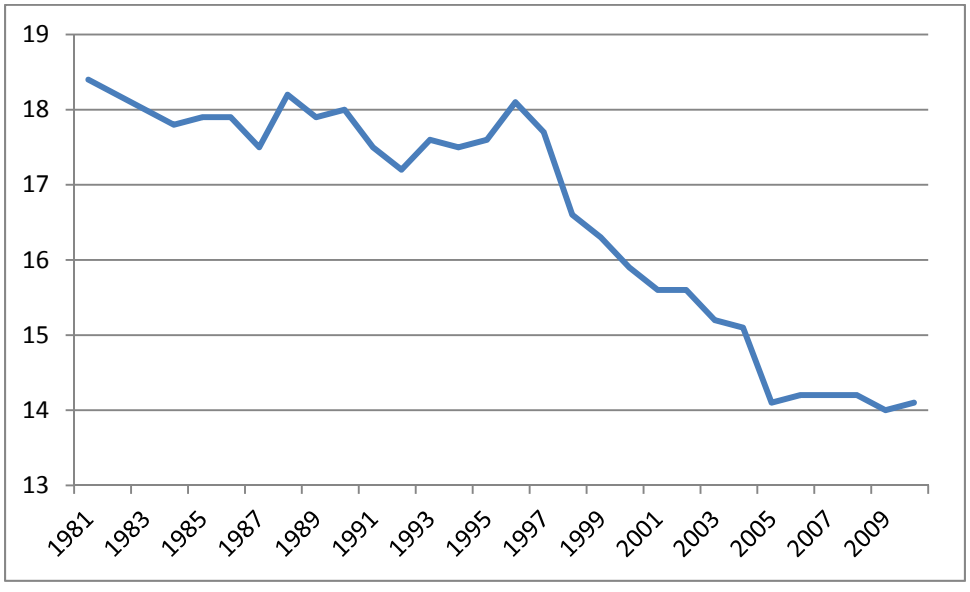
The evaluation evidence provides limited evidence that extending the school day may be effective for improving quality (among other desired outcomes); however, is it *cost* effective? This section provides a framework for assessing the cost of extending the school day, through the case of Uruguay. The 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

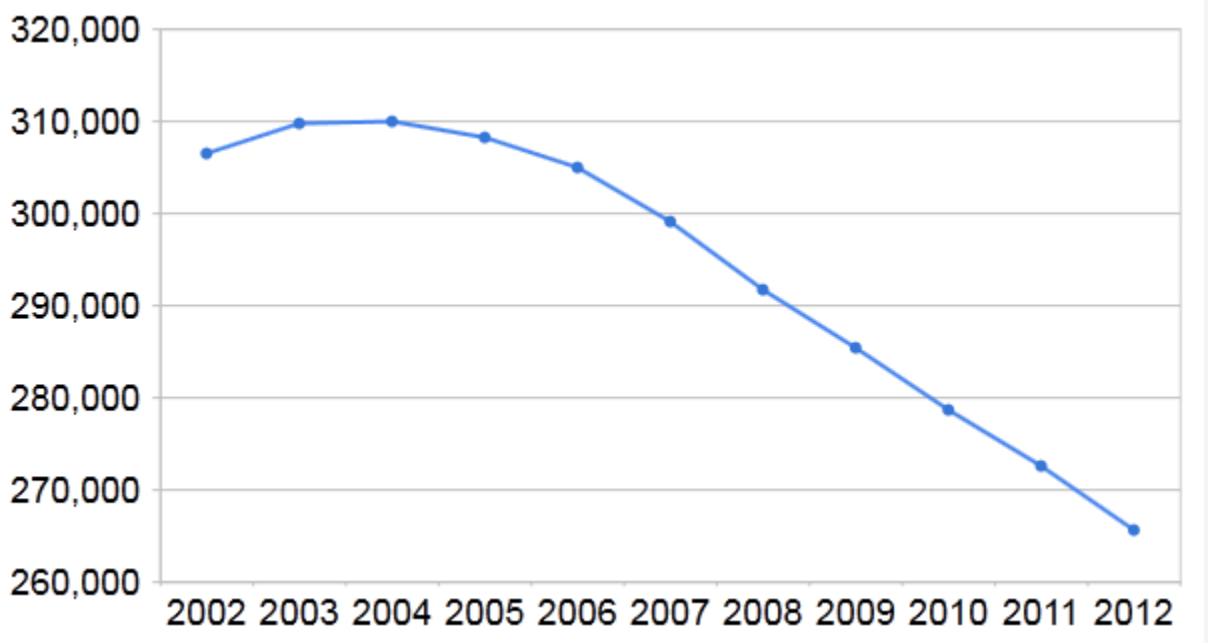
Two factors helped usher in the policy reforms that brought about the extended school day model in Uruguay. First, results from the 1996 National Learning Assessment revealed dramatic differences in income quintiles in student performance. More than 85.4 percent of students from the most advantaged backgrounds 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 10). A corresponding decline in primary enrollment rates began when that cohort entered primary school in 2002-2003 (Figure 11).

Figure 10: Annual Birthrates (per 1,000) in Uruguay, 1981-2011



Source: *Republica Oriental del Uruguay. Instituto Nacional de Estadisticia. Estadisticas Vitales.*

Figure 11: 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 to do so 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 proper ETC model was introduced in 1998 that featured a new pedagogical approach ("*propuesta pedagógica*") whereby bilingual education was introduced, teachers received supplemental training in 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, when the Mujica government came to power, 168 full-time schools had been built (or converted) after 15 years of implementation of the policy. The 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 8 times more expensive, using a low-case scenario of refurbishing (US$1.1 M) rather than new constructions (US$1.7M).

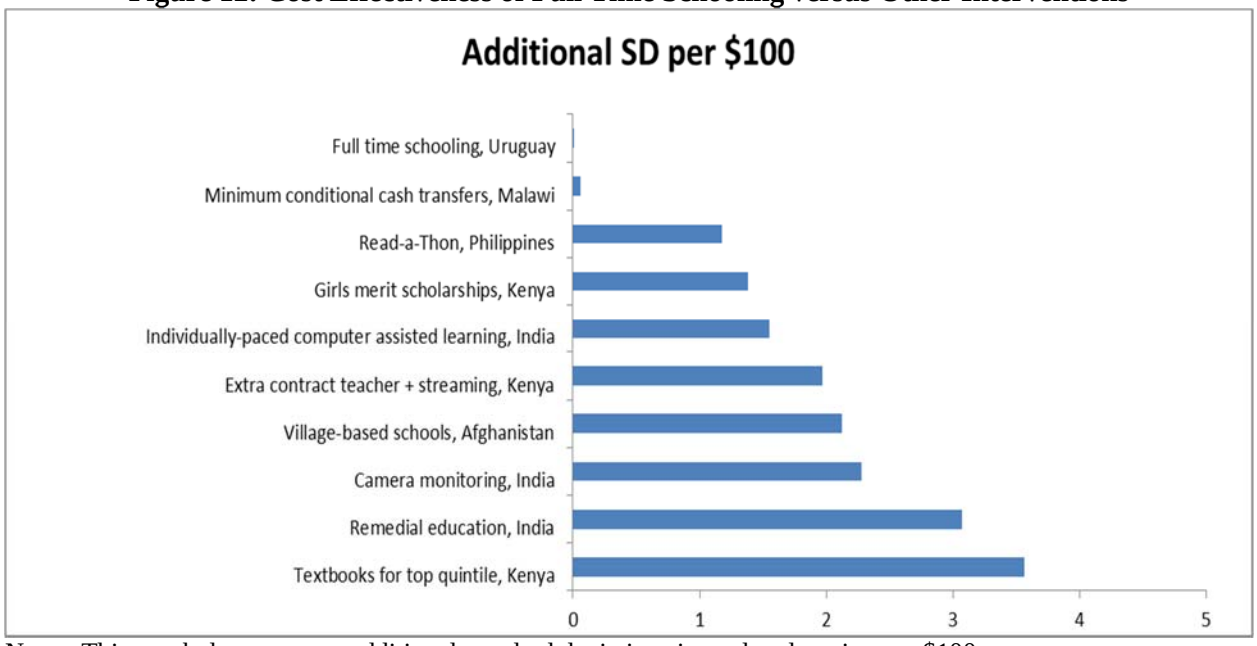
5.3. Preliminary Cost-Effectiveness Estimates

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 0.044 standard deviations for Spanish, and 0.063 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 12, 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 the largest learning impacts we observe across all our studies, a 0.36 standard deviation increase in language scores in

Colombia (Hincapié, 2013) and kept the costs the same, full time schooling would be slightly more cost effective than 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 the next intervention on the list (conditional cash transfers), or any of the other interventions. From an education perspective, this is not very promising.

Figure 12: 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 (2014), 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 and often statistically insignificant. That said, extending the school day may have a strong equity dimension, as impacts tend to be higher among more disadvantaged schools, and poorer students (Berthelon

& Kruger, 2011). However, when compared to other interventions seeking to improve educational outcomes, this policy does not seem likely to be cost effective.

Caveats to this conclusion are necessary. First, the cost-effectiveness estimates are from just one country; 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 policy makers place an extremely 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 (although other interventions might achieve those social impacts more cost-effectively too).

If policy makers 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, future 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 examples of the next generation of 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.

Extending the school day is unlikely to deliver the best return on investment for ministries of education. 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.

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8. Annexes

Annex Table 1: Evidence of Extended Day Schooling on Learning Outcomes

Title	Authors	Country	Outcomes, Effects, Significance	Methodology
Does lengthening the school day increase students' academic achievement? Results from a natural experiment in Chile	Bellei (2009)	Chile	Positive impact on math and language	Natural experiment/diff in diff
Longer School Days, Better Outcomes?	Pires & Urzua (2015)	Chile	Positive impact on academic outcomes, cognitive test scores.	Propensity Score Matching
Partial Evaluation of a Big Reform in the Chilean Education System: From a Half Day to a Full Day Schooling	Valenzuela (2005)	Chile	Robust and significant positive effects in the short run on schooling outcomes; public schools increase their scores by only 0.1 – 0.2 standard deviations in Language test, voucher schools by 0.4	Propensity Score Matching
Evaluación del Impacto de la Jornada Escolar Completa	Garcia (2006)	Chile	Significant impact on language results at urban public schools (0.07) and with copayment (0.14) at urban voucher	Propensity Score Matching

O Impacto do Programa Mais Educação no Desempenho dos Alunos da Rede Pública Brasileira	Dias Mendes (2011)	Brazil	Significant negative effect on math results by -0.03 (4th grade) and -0.06 (8th grade)	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	Students who participated in jornada escolar completa during the four years between 2005 and 2009, increased their scores about one point on each test, although this value is not statistically significant	Panel, difference in differences
Do Longer School Days Improve Student Achievement? Evidence from Colombia	Hincapié (2013)	Colombia	Test scores increase by about 0.357 for 9th grade language test scores, and by 0.289 for math test scores.	Fixed Effects
El efecto causal de la política de tiempo completo sobre los resultados educativos en la enseñanza media	Llambí (2013)	Uruguay	Significant negative effect on test scores (science -0.29, math -0.27 and language -0.24)	Propensity Score Matching
Programa Mais Educação: Avaliação Do Impacto Da Educação Integral No Desempenho de Alunos No Rio Grande Do Sul	Xerxenevsky (2012)	Brazil	No significant effect on 8th grade students; but 0.05 for language and 0.06 for math scores	Propensity Score Matching
More Time is Better	Cerdan-Infantes and Vermeersch (2007)	Uruguay	Improvements in test scores of 0.04 SD (language) and 0.07 (math) per year	Propensity Score Matching

Uma ampliação da jornada escolar melhora o esempenho acadêmico dos estudantes?	De Aquino (2011)	Brazil	No impact on proficiency, grade advancement, or math. Small effect on language (significant)	Propensity Score Matching

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

Title	Authors	Country	Outcomes, Effects, Significance	Methodology
Longer School Days, Better Outcomes?	Pires & Urzua (2011)	Chile	Significant overall effects on High School dropout (-3%) and cognitive test results (10%)	Propensity Score Matching
Do Longer School Days Have Enduring Educational, Occupational, or Income Effects?	Llach, Androgué, & Gigaglia (2009)	Argentina	Positive impact on 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	Effect of 1.1% on promotion rate (but not significant)	Propensity Score Matching

O Impacto do Programa Mais Educação no Desempenho dos Alunos da Rede Pública Brasileira	Dias (2011)	Brazil	Schools experienced significant higher promotion rate by 1.1%	Propensity Score Matching

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 on labor market outcomes; no significant overall effects on employment or wages; no statistically significant effect on social ability and 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	Positive and significant effect on labor participation and female employment in all age groups and a negative and statistically significant effect on the number of hours worked	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 statistically significant effect on social ability and metacognitive scores	Propensity Score Matching
Risky behavior among youth: Incapacitation effects of school on adolescent motherhood and crime in Chile	Berthelon & Kruger (2009)	Chile	Access to full-day schools reduces the probability of becoming an adolescent mother among poor families and in urban areas, and that the reform reduced youth crime	Fixed Effects