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On the effect of school schedule on female labor outcomes

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Abstract

This paper examines the effect of the time children spend in school on female labor supply. We investigate whether having kids with more coordinate school schedules might lead to better labor outcomes of mothers of school-age children. We do find that mothers of kids with longer daily schedules show stronger labor outcomes. But we also find that having children with more compatible schedules matter the most. The more and more synchronized hours all the children in the household are taken care at school, the better the labor outcomes.

Keywords: Childcare; randomized control trial; after-school programs

JEL Codes: J13, I25

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1. Introduction

The absence of childcare is often highlighted as one of the causes for low female labor force participation (FLFP). As mothers are traditionally children's caregivers, an expansion of childcare is expected to increase their labor market ties. There is an extensive literature on this relationship, starting by (Baker et al., 2008) in Canada, and followed, among others, by (Berlinski et al., 2011; Martínez A. and Perticara, 2017) in Latin America and Nemitz (2015) in Europe.

In Chile, there has been a gradual implementation of an all-day schooling, and its quasi-experimental setting has been exploited to estimate its impact on FLFP, and it has been estimated that it increases it by (Contreras and Sepúlveda, 2017). These results are in line with Nemitz (2015) results in Germany, where full-day (hereafter FD) schooling had a positive impact on the extensive margin (mothers are 26 percentage points more likely to work), but no impact on the intensive margin. The same policy has estimated to increase students learning (Bellei, 2009) and decrease teenage pregnancy (Berthelon and Kruger, 2011). The school length extension has also been found to have positive impacts on student's outcomes in Mexico (Cabrera-Hernandez 2015) and Uruguay (Cerdan-Infantes y Vermeersch 2007). As most developed countries have never experienced important changes in school hours, the literature is mostly concentrated in developing countries.

The literature has focused on the increase in the mean coverage of school or pre-school of the youngest child. In this paper, we explore whether it also matters when the mother faces a lot of variance of the school schedule of all her children. The Chilean expansion of the school length extension established the mandatory number of school hours (per week) that FD schools should have, but each school has freedom to organize the preferred schedule. In fact, due to space restrictions some schools choose different schedules for different grades or levels (secondary or primary school). For instance, the more frequent reported schedule is to have school from 8 am to 4-5 pm for four days but leave earlier the fifth one (the most frequent short day is Friday, followed by Wednesday). But there is a lot of variation between the different levels and grades.

We hypothesize that both the school length and its within week variance, as well as the variance between siblings affects the FLFP. The distribution of hours within a week can affect the compatibility between the school schedule and labor market participation. A large dispersion of the school hours, for one child or between children, can be more difficult to reconcile with work. The literature has focused on the impact of the type of care of the youngest child in the household, and considers the presence of older siblings as potential childcare (Cascio, 2009; Gelbach, 2002 among

others). In this paper we will study if differences in school schedules within the household affects mother's labor market outcomes.

To do so, schools in the Metropolitan Region were surveyed to gather their school daily schedule for each class. We combined this data with labor outcomes and household characteristics from the Chilean household survey (Encuesta de Caracterización Socioeconómica 2015) and with administrative data from the Ministry of Education of Chile. We estimate FE models (at the municipality level) in which mother's labor outcomes depend on either the youngest child schedule or the average length of school schedule and its variance within the household. We also construct a variable that reflects how many hours a week each woman if free to work depending on how coordinate all the children's schedules are. For example, a woman who has two children, who both have schedules from 8 am. to 4 pm. every day, will have 36 hours a week for working. On the contrary a woman whose youngest child schedule is from 8 am. to 12 pm., but her oldest is from 8 am. to 4 pm. will have only 20 free hours a day. As schedule variables might be endogenous (women who want to work might choose schools with longer schedules or might coordinate their children schedules), we instrument our explanatory variables using information about available schedules at the municipality level.

As previously found by the literature, we find that the school length positively affects female labor force participation and employment of household heads and single women (Fitzpatrick, 2012; Cascio, 2009; Goux and Maurin, 2010). Our results are also in line with a recent paper of Berthelon et. al (2020), who find positive effect of access to full-day schools on several measures labor outcome measures of mothers. In all our models the standard deviation of the schedule within the household has the expected sign, but the coefficients are seldom statistically significant. But we do find that more coordinated schedules, that allow mothers longer working hours, lead to better labor outcomes.

In the next section we describe the reform. In Section 3 we present the data and empirical strategy. Results are presented in section 3, and we conclude in section 4.

2. The reform

It is well known that the Chilean education system exhibits specific characteristics. On one hand, in the system coexist three different kinds of schools. Public schools are run by the municipal government, but they are funded through a voucher or per-student subsidy paid by the central

government. The municipality might or might not allocate additional resources to their school system, depending on available resources. Private schools could receive public funding (the same voucher public schools receive), or they could be fully private. Private subsidized schools can charge students fees subject to some regulations regarding their amount. Fully private schools do not receive public funding at all. Parents can choose to which school they apply, although in recent years the government began centralizing this application process in a national system.

In 1997 the Chilean pass a national law that increased instructional time, increasing the number of weekly hours spent in the classroom. All schools with FD schedule would increase their instructional time up to 28.5 hours in primary school and 31.5 in secondary school (Ministerio de Educación, 1997). After adding up standard recess time, the school week would comprise 30 hours for the primary level and 33 for the secondary one. This reform, known as full-day (FD) schooling, mandated that all publicly funding schools might adopt such schedules before a defined date, 2007 for municipal schools but 2010 for private subsidized ones. Due to space constraints, schools were not forced to adopt the FD schedules for all the grades, but they should at least adopt the policy for one grade in each level.

The adoption of the policy was slow. The central government had to move the deadline on several occasions. Figure 1-A shows the proportion of schools that adopted the FD policy at least in one grade by year, while Figure 1-B shows coverage of students, for both primary and secondary education[2]. It is worth mentioning that by 2017, 16% schools (primary and secondary combined) didn´t have a FD schedule in any of their grades[3]; approximately 27% and 22% of primary and secondary education students, respectively. Qualitatively, it has been observed that a common schedule practice is to have the school day from 8 am to 4pm for four days a week, but end classes at the remaining one. The most frequent short day is Friday. We discuss school schedules more deeply in the following section.

3. Data and Empirical Strategy

Data

We use three sources of data. The first piece of data comes from public files about enrolment, FD regime adoption and other school characteristics. From this data we can identify which schools and which grades are under the FD regime, the typical schedule we get enrolment figures and school

[2] We are defining adoption as having at least one course under FD regime.
[3] We are excluding from this sample schools for children with disabilities, called Special Schools. These schools are mostly run on a half-day schedule. Full-day information is obtained from Mineduc's data base.

characteristics, such as GPS location and source of funding. The main shortcoming of this data is that we do not observe the actual Schedule, but schools report the most frequent schedule for each grade. For example, they might report that school begins at 8am and ends at 4 pm, but the school might have a different schedule for one or two days of the week. We do not observe this information, and this does not allow us to study how different schedules within households might impact female labor outcomes.

To overcome this limitation, we collect primary data. This will be our second source of information. Due to budget constraints, we only collect this data for the metropolitan region. We ask schools to inform us both entry and exit hours for each day of the week for all their grades. This information is collected for 2015, 2016 and 2017. As our primary source of information is collected only for the metropolitan region, all our analysis will be restricted to this area. We have a high non-response (30%) in our novel data. Non-response was highly biased towards private schools. We imputed daily data, using information from Mineduc about the typical schedule, type of schedule (only-mornings, only afternoons, both mornings and afternoons) and other municipality and school-grade characteristics. In any case, in all our regression we control for this fact. We also estimate all the models without the imputed data, and we get similar results. We also estimate all the models using the administrative data (the most frequent schedule for each grade), getting similar results.

The third source of data is employment data from the Chilean Household Survey, called "Encuesta de Caracterización Socioeconómica Nacional" (hereafter CASEN survey). In this survey we not only have detailed information about employment variables and household composition for mothers, but we also have information about kid's schooling. Specifically, we can link kids to our schedule data using a unique school identifier. We will then assign each mother, information about her children's schedule. When having only one kid, it is trivial to do so. When having more kids, we will define variables for the youngest child, and for the rest of the siblings, and we will also construct variables to reflect the variability of the schedule within the family. We will restrict our sample to either household heads women or single women (aged between 25 and 55 years old)[4], two groups where we expect to find stronger effects of the school schedule. We also restrict our sample to women whose youngest child is not older than 15 years old and we drop from our estimation households with

[4] In our main tables we present results for household heads. In the appendix we present the same tables for single women.

children with physical or cognitive disability[5]. Some estimations are presented for all mothers; others, the ones that include household variability, for mothers of more than one child.

Tables 1 to Tables 3 present descriptive statistics of our estimation sample for mothers, kids, and schools. Table 1 presents statistics for school-grade combinations. CASEN survey has statistical representation at the municipality level, but matched school-grade combinations might have different characteristics. That is, our estimation sample does not include all schools in the metropolitan area, but only the schools of children present in our sample. Table 1, then, shows summary statistics for the whole metropolitan area and for the specific school-grades combination that enter in our final estimation sample. Several of the measures presented in this table are statistically different between the two samples. But the size of the coefficients for most of the variables is small. The sample of school-grades present in our estimation sample is not dramatically different from the standard in the region.

This table is useful to present some of the variables that will be used in the estimations. The first three rows are dummies for school type. Rows (4) to (17) present different measures of children´s schedules. As we already explain from the public files of Mineduc, we have very limited information. We do know the year the school adopted the FD regime for each grade if the regime was adopted and what is the most frequent daily schedule of each grade in the school. The most common schedule in all the levels (1st and 2nd grade, 3rd to 8th and in the secondary school) is from 8 am to 4 pm. There is a high fraction of schools that due to space constraints are still teaching 1st and 2nd grade in the afternoons, from 2 pm to 7 pm. In the secondary school, FD school's day is from 8 am to 5 pm, while some schools have kept the old 8 am to 2 pm schedule. The average day last in the metropolitan region 7.2 hours while in our estimation sample, approximately 7.1. The average year in which schools enter the FD regime was 2004 (it is also true that 50% of school-grades observations that enter the FD regime, did that before 2004). Our novel data (hereafter Project's Data) describes better the way schools adopted the FD policy. For example, most schools offer shorter schedules on Fridays, and some on Wednesday. For example, it could be that the typical day would have 8 hours, but children would spend at most 5-5.5 hours at school on these days. There is some variation in daily hours that may matter to explain women's labor engagement. The dummy variable for FD schedule in Mineduc data comes from administrative files. The dummy variable for Project's Data is

[5] On one hand, children with disabilities demand special care; on the other, special schools for children with cognitive deficiencies were not required to enter the FD regime.

constructed checking whether each grade has weekly hours higher than 30 for primary education and higher than 33 for secondary education[6].

We will be restricting our data to household heads[7], whose younger child is in grades 1 to 10 (approximately 6-15 years old). Table 2 shows descriptive statistics of the children of these mothers. We can see that there are not big differences in schedules between children between the different samples. As we explained in the next section, for some models we would need to restrict the sample to mothers with more than one kid as we will evaluate the effect of having a variance of schedules within the household.

Finally, Table 3 show descriptive statistics at the mother level. Again, we compare the sample of household heads and single moms distinguishing the ones with more than one kid. Some differences are expected. Single mothers are less likely to have another adult working in the household, on average are almost half year younger than household heads. All the other characteristics are roughly similar across the two samples. Also, in the subsample of families with more than one kid, there is more variation in weekly and daily schedules, and because they not only have variation in daily hours for one kid, but they also face variation between kids. And in this sense these two samples are not comparable. But when inspecting schedule information for the youngest kid in the household, the four samples look roughly the same.

Empirical Strategy

We study the impact of the school day coverage of the youngest children on the mother's female labor force outcomes. We have several different specifications. Following previous literature, we estimate our two basic equations using the youngest child information, such as,

$$y_{ij} = \alpha + \beta\, FD_{ij} + \theta x_{ijt} + \delta_j + \varepsilon_{ij} \qquad [1]$$

$$y_{ij} = \alpha + \beta\, AvgH_{ij} + \theta x_{ijt} + \delta_j + \varepsilon_{ij} \qquad [2]$$

[6] Note that the law demanded FD schools to provide 38 45-minutes learning modules in primary school and 42 in secondary school. Adding standard recess and lunch time (two breaks in the mornings, 30 minutes and 50-60 minute for lunch), gave us a 30-hour week for the primary level and a 33-hour week for secondary one.
[7] In the appendix we present estimations for single mothers.

Where y_{ij} is an outcome variable (labor force participation or employment) for the mother i in municipality j in year 2015. FD_{ij} in model [1] is a dummy variable that equals to one if the youngest child in the household is under a FD regime. $AvgH_{ij}$ in model [2] is a measure of the youngest child's school hours. When we use the Ministry of Education data, $AvgH_{ij}$ corresponds to the typical hours in most days of the week. When we use Project's data, it corresponds to the most common school day hours in a week. X_{ij} correspond to a set of controls, that includes child's age, mothers' age and age squared, years of schooling, a dummy for married (in the household head sample), indicator variables for the presence of siblings of 15 or more and of another adult. It also includes an indicator for more adults employed. δ_j is a municipality fixed effect.

Our third specification is also run using information of the youngest child but includes both a measure of average daily hours and their variance.

$$y_{ij} = \alpha + \beta AvgH_{ij} + \gamma StdH_{ij} + \theta x_{ij} + \delta_j + \varepsilon_{ij} \qquad [3]$$

Where $AvgH_{ij}$ is the average daily hours of the youngest child, while $StdH_{ij}$ is the standar deviation of daily hours within the week.

Models [1] to [3], can be estimated both on the full sample (household heads or single mothers) and in the sample restricted to families with more than one kid. The reason for doing so is that these models are more closely related to the literature (that mostly used the schedule of the youngest child) and when estimating all the three models in the sample of families with more than one kid, we can check whether the sample restriction affects the estimated effect of these variables. Note that Model (3) cannot be estimated using Mineduc's data, as there is no information about variation in daily hours for each child.

We are also interested in evaluating the effect of the variance of hours within households with more than one child. To do so, we construct measures of average daily/weekly hours and indicators variables that reflect whether all the kids have FD schedules and how synchronized their schedules are.

We estimate then model [4] as

$$y_{ij} = \alpha + \beta AvgH_{ij} + \gamma StdH_{ij} + \theta x_{ij} + \delta_j + \varepsilon_{ij} \qquad [4]$$

Where H_{ij} is regular hours at school (the most frequent schedule for the week), daily hours, and total weekly hours. For these three variables we estimate the average within the household and its standard deviation.

This model imposes a lot of structure, while our objective is to test whether having children with more coordinated schedules might increase the likelihood of working or participating in the labor market. We then proceed to measure how many hours a week a woman can work given the amount of time her children are taken care of at school[8]. In our project data, for household-heads the average of this variable is 34 hours with a standard deviation of 7 hours. As expected within mothers with more than one child in school, the average is smaller (around 31.6 hours), and the standard deviation is higher 9.18). Note that to calculate this measure with administrative data we would need to impute total weekly hours as the regular hours per day multiplied by five. Note that this measure would be an upper bound of potential hours for working, as mothers might need extra time for working if their employment sites are not close to their homes or to children's schools.

Model [5], then would be

$$y_{ij} = \alpha + \beta MaxHH_{ij} + \theta x_{ij} + \delta_j + \varepsilon_{ij} \qquad [5]$$

Identification of the coefficient of all the schedule variables in models [1] to [4] relies on the different intensity of school-grade schedules, and the within household variation in these intensities. The identification assumption is that conditional on x_{ij} the variable of interest is not correlated with unobservables. This is a strong assumption. OLS estimates of these coefficients might be biased if more prone to work mothers are choosing schools because of their schedule. It is empirically unclear how the authority defined the school length extension phase-in, whether changes in the systems were announced or not. We also present IV estimates. We instrument schedule variables using available supply of FD schools and schedule availably within the municipality, as have been standard in the literature.

[8] Note that to calculate this measure with administrative data we would need to impute total weekly hours as the regular hours * 5.

4. Results

Tables 4 and 5 present the OLS estimation results for household heads[9], for participation and employment. Tables 4 use the data collected in this project, while table 5 uses the coarser administrative data. Each panel in table 4 has eleven columns, while each panel in table 5 has seven columns. Columns [1] and [5] in table 4 and columns [1] and [4] in table 5 present the estimated coefficients for model [1]. Columns [2] and [6] in table 4 and columns [2] and [5] in table 5 present the estimated coefficients for model [2]. These two results would be the only ones that we can compare with previous papers for Chile. Recall that in these two models de explanatory variable is a variable related to the youngest child in the household. The difference between columns [1] and [5], and columns [2] and [6] in table 4 (or between columns [1] and [4], and columns [2] and [5] in table 5), is that the first column presents the estimation of each model for all household heads with at least one child in school, while the second one presents the estimated coefficient in a sample of women with more than one child. The reason to present these two different estimations is that later all our models will have to be estimated in the restricted sample (women with more than one child) and we need to be able to compare our estimation with the previous literature y across samples.

Results in Table 4 suggest that participation and employment are positively correlated with the typical daily hours of young kids. Results mostly statistically significant on the sample of women with more than one child, not so for the whole sample. The coefficient for the dummy of having a full-day schedule although with the correct sign is not statistically significant in any of the regressions. For example, column [2] in Panel B in Table 4 shows that mother whose youngest child has longer regular hours are more likely to be employed in the labor market (4 pp) per extra hour a day.

Columns [3] and [7] in Table 4 present a novel estimation (model [3])[10]. We still consider the schedule of the youngest child in the household, but we evaluate whether labor force participation and employment might be affected by both average daily hours of school and its variance. Recall that we can construct such variables because in our project's data we do have information about hours at school every day. Our results suggest that labor force participation is positively affected by daily hours of work and negatively affected by the standard deviation of these hours. One extra hour of school per day increase labor force participation by 3.1 pp (6.2 pp for women with more than one child). One standard deviation of daily school hours reduces labor force participation in a similar amount. The sign of these two coefficients is similar in the model for employment, but they are not

[9] Tables A-1 and A-2 are identical to tables 4 and 5, but present estimation results for single mothers.
[10] Note that we cannot estimate model (3) with the administrative data, as the Ministry of Education does not register school daily hours.

statistically significant (in most specifications average school hours is statistically significant, but the standard deviation is not).

Columns [7] to [10] present estimation results for model [4] for the different ways of measuring school hours. For most of the specifications, the coefficient of average hours within the household is positive and statistically significant, while the coefficient for the standard deviation is negative but not statistically significant. Only in column [10] in panel A (labor force participation) in Table 4 (the model estimated with total hours per week), the coefficient for the standard deviation of weekly hours is statistically significant.

As we explained above, all the previously presented models imposes a lot of structure, forcing labor outcomes to increase or decrease linearly with the average and the standard deviation, while what we want to model es whether mothers whose children have more synchronized schedules would be more likely to engage in the labor market. To test this hypothesis, we define a variable that is equal to the total weekly time that a mother must work, given their children schedules at school. And we test whether either participating or working is correlated with this measure.

Columns [4] and [11] in table 4 present estimation results for model [5] with our project data, columns [3] and [6] in table 5 for the measure estimated with administrative data. In all the specifications this variable has the expected positive sign and in most of them it is statistically significant. For example, one extra hour of time per week increase labor force participation in 0.3 pp and employment in 0.4 pp. Recall that the standard deviation of this variable is around 7 for household heads and 9 for household heads with more than child in elementary school. So, for the whole sample of household heads an increase in one standard deviation in available weekly hours would increase labor force participation and employment in 2.1 pp and 2.8 pp. respectively. Among mothers with more than one child, these effects are larger, 3.6 and 2.7 pp. respectively. As expected, the coefficients for the administrative data are smaller and noisier, but they do have nevertheless the expected sign.

Tables A-1 and A-2 present the same models but now estimated in the sample of single women. All single women are household heads, but some household heads might have a partner present. This sample is, then, a subsample of the one used in Tables 4 and 5. We get similar results, but fewer results are statistically significant. Our sample sizes are reduced a lot when we restrict the sample to just single women.

On the potential endogeneity of school choice

As we already explained above, one may be concerned about the potential endogeneity of school schedules if parent's non-observables might be correlated with school choice and school schedule choice. In our data, only 15% of the mothers have at least one kid in a school in another municipality. We could interpret or hypothesize that mothers who are more eager to work might be more prone to search for schools outside their municipality if they were not FD schools available in their neighborhood. Note, however, that if more eager mothers are more prone to search outside the municipality, that variable should be a control in the labor outcomes equation and not an instrument for choice. We do not find that controlling for school location changes the results. Moreover, conditional on the different schedule's measures, school location (whether it is in the same municipality of residence) does not have any explanatory power for labor market outcomes. These results are available upon request.

The second strategy involves using instrumental variable estimation. Following the literature, we do construct different measures of the availability (with several alternative definitions) for FD schools in the municipality of residency. We create such measures for the youngest child, and the whole household taking into account how many FD schools and offered FD spots are available in the municipality and the length of the typical schedules. All the instruments are constructed using the administrative data. We measure, then, for all the children in the household the availability of FD within the municipality[11]: the fraction of FD schools, the fraction of enrolment in FD schools (as a measure of vacancies), the average of daily hours offered by schools in the municipality, both weighted and unweighted by enrolment.

Tables 6 and 7 are identical to tables 4 and 5 but present IV estimates. Our set of instruments performs, poorly in some of our estimations. Although some of the F-test from the first stage are far from small, once we calculate both its effective F-test in only a few specifications this test is either bigger than 10 and it is never bigger than its critical value. For this reason, we are reporting in this version of the paper limited-information maximum likelihood estimators, that in theory are more robust to the presence of weak instruments.

In table 6 and 7 we can see that our IVs estimate are noisy. Some of our previous results hold, as longer hours increase both labor force participation and employment. In the estimations with the

[11] Note that as we do not have coordinates for households, we cannot estimate availability measures within some radius of it.

administrative data, the coefficient for the maximum available hours is still significant. For our project data this coefficient is only significant for employment and for the sample of household heads with more than one child in elementary school. The size of this coefficient in all the specifications is around 2 pp in the administrative data and around 4 pp. in our project data, meaning that having one extra hour to work a week increase labor force participation and employment in 2-4 pp. This coefficient is almost ten times the one obtained with OLS, so we are interpreting these results with cautious.

5. Discussion and conclusions

In this paper we study whether facing variance in the schedule of children may hurt mother's prospects of participating and being employed in the labor market. To do so, we take advantage of a novel data set, which compiled detailed information about school-grade schedules in the metropolitan region in Chile. Specifically, we asked schools to report daily entry and exit time for all the different grades. We then proceed to measure school schedules in different ways, for either the younger child in the household and for all the other siblings.

Our results are consistent with the previous literature that concludes that introduction of FD schooling did improve women´s employment outcomes (Contreras y Sepulveda, 2017; Berthelon et. al, 2020). We do find that mothers of kids with longer daily schedules show also stronger labor outcomes. But we also find that having children with more compatible schedules matter the most. The more hours all the children in the household are taken care at school, the better the labor outcomes.

One caveat of our analysis is the potential endogeneity of school schedule. That is, women with a strong attachment to the labor market or more eager to work might choose schools with longer schedules. We endogenize school schedule choice using the supply of FD schools, FD spots and long school schedules within the municipality. Our LIML estimates are aligned with the OLS estimates, although some of them are very noisy. Further research on how to instrument this decision is needed.

References

Baker, M., Gruber, J., Miligan, K., 2008. Universal childcare, maternal labor supply, and family well-being. J. Polit. Econ. 116, 709–745.

Bellei, C., 2009. Does Lengthening the School Day Increase Students' Academic Achievement? Results from a Natural Experiment in Chile. Econ. Educ. Rev. 28, 629–640.

Berlinski, S., Galiani, S., McEwan, P., 2011. Preschool and maternal labor market outcomes: evidence form a regression discontinuity design. Econ. Dev. Cult. Change 59, 313–344.

Berthelon, M., Kruger, D., 2011. Risky Behavior among Youth: Incapacitation Effects of School on Adolescent Motherhood and Crime in Chile. J. Public Econ. 95, 41–45.

Berthelon, Matias and Kruger, Diana and Lauer, Catalina and Tiberti, Luca and Zamora, Carlos, Longer School Schedules, Childcare, and the Quality of Mothers' Employment: Evidence from School Reform in Chile (May 26, 2020). Partnership for Economic Policy Working Paper No. 2020-07, doi http://dx.doi.org/10.2139/ssrn.3631391.

Cascio, E., 2009. Maternal labor supply and the introduction of kindergartens into American public schools. J. Hum. Resour. 44, 140–170.

Cerdan-Infantes, Pedro and Vermeersch, Christel, More Time is Better: An Evaluation of the Full Time School Program in Uruguay (March 1, 2007). World Bank Policy Research Working Paper No. 4167. Available at SSRN: https://ssrn.com/abstract=970809

Contreras, D., Sepúlveda, P., 2017. Effects of Lengthening School Day on Mothers's Labor Supply. World Bank Econ. Rev. 31, 747–766.

Fitzpatrick, Maria D. 2012. Revising our thinking about the relationship between maternal labor supply and preschool. The Journal of Human Resources Economics 47(3):583-612.

Gelbach, J.B., 2002. Public schooling for young children and maternal labor supply. Am. Econ. Rev. 92, 307–322.

Maurin, Eric & Goux, Dominique. (2009). Public School Availability for Two-year Olds and Mothers' Labour Supply. Labour Economics. 17. 951-962. 10.1016/j.labeco.2010.04.012.

Martínez A., C., Marcela, P., 2017. Childcare effects on maternal employment: Evidence from Chile. J. Dev. Econ. 126, 127–137.

Ministerio de Educación, 1997. Ley Nº 19.532. Régimen de Jornada Escolar Completa Diurna.

Ministerio de Educación. Centro de Estudios. Unidad Estadistica. 2017. Base de Datos. Esquema de Registros JEC por Establecimiento. Permanent link: https://bit.ly/2ijORIQ.

Ministerio de Educación. Centro de Estudios. Unidad Estadistica. 2017. Directorio Oficial de Establecimientos Educacionales. Permanent link: https://bit.ly/2fHCns4.

Ministerio de Educación. Centro de Estudios. Unidad Estadistica. 2017. Bases de datos de matrícula por estudiante. Permanent link https://bit.ly/2vKOcsT

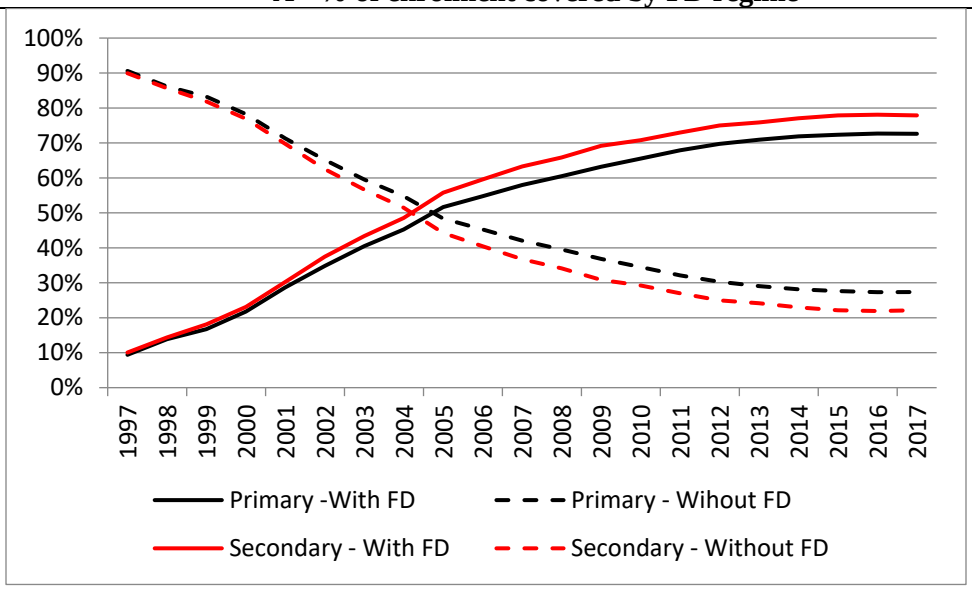
Ministerio de Desarrollo Social. 2015. Bases de dato Encuesta de Caracterización Socioeconómica Nacional 2015. Link http://observatorio.ministeriodesarrollosocial.gob.cl/casen-multidimensional/casen/casen_2015.php

Nemitz, J., 2015. "The effect of all-day primary school programs on maternal labor supply," ECON - Working Papers 213, Department of Economics - University of Zurich.

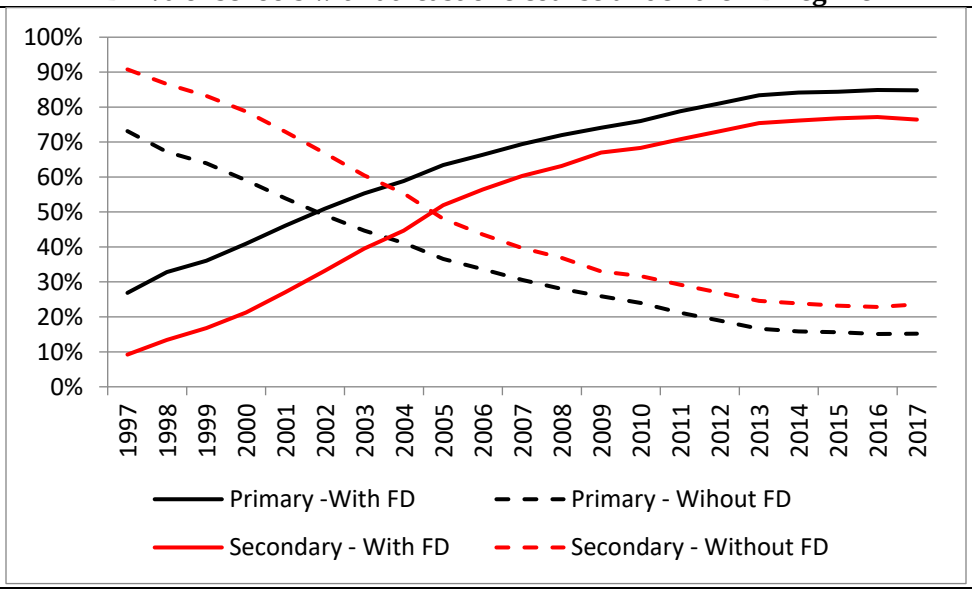
Padilla-Romo, M. and F. Cabrera-Hernández, 2018. "The Effect of Children's Time in School on Mothers' Labor Supply: Evidence from Mexico's Full-Time Schools Program," Working Papers 2018-04, University of Tennessee, Department of Economic.

Figure 1: Adoption of FD regime. School and Students coverage.

A - % of enrolment covered by FD regime



B - % of schools with at least one course under the FD regime



Source: own calculations based on Mineduc's administrative data.

Table 1: Descriptive Statistics for schools present in our estimation sample vs all schools in the metropolitan area

- Observations: combinations of grades-school-

	Schools that are part of our estimation sample			All schools in the Metropolitan Region			Differences in means	
	N	Mean	Std	N	Mean	Std	Coef	p-value
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
=1 if municipal school	4814	0.28	0.45	15436	0.27	0.44	0.02	0.23
=1 if voucher school	4814	0.59	0.49	15436	0.59	0.49	0.04	0.01
=1 if private school	4814	0.13	0.34	15436	0.15	0.35	-0.05	0.00
Grade	4814	5.55	2.82	15436	5.16	2.74	0.56	0.00
Mineduc data. Year that FD schedule began	3036	2004	4.48	8896	2004.6	4.71	-0.27	0.11
Fondecyt Data. =1 if has FD schedule	4814	0.86	0.35	15436	0.85	0.36	0.01	0.12
Fondecyt Data. Total hours on Monday	4814	7.56	0.73	15436	7.48	0.71	0.11	0.00
Fondecyt Data. Total hours on Tuesday	4814	7.53	0.72	15436	7.45	0.70	0.11	0.00
Fondecyt Data. Total hours on Wednesday	4814	7.18	0.95	15436	7.17	0.88	0.02	0.37
Fondecyt Data. Total hours on Thursday	4814	7.50	0.72	15436	7.43	0.71	0.11	0.00
Fondecyt Data. Total hours on Friday	4814	6.17	1.16	15436	6.06	1.09	0.09	0.02
Fondecyt Data. Average hours per day	4814	7.19	0.60	15436	7.12	0.59	0.09	0.00
Fondecyt Data. Std of daily hours	4814	0.79	0.48	15436	0.77	0.46	0.06	0.00
Fondecyt Data. Weekly hours	4814	35.95	2.98	15436	35.60	2.94	0.43	0.00
Fondecyt Data. Tipical daily hours	4814	7.49	0.67	15436	7.42	0.65	0.09	0.00
Mineduc Data. Tipical daily hours	4814	7.40	1.30	15436	7.20	1.33	0.27	0.00
Mineduc Data. =1 if has FD schedule	4814	0.63	0.48	15436	0.58	0.49	0.10	0.00

Note: observations are school-grade combinations. The data corresponds to year 2015. Special schools for disable children are excluded. Column [7] presents the coefficiente of a regression of each variable over an indicator variable for the estimation sample. Column [8] presents the p-value associated to this coefficient. Regressions include municipality fixed effects and clustered standard errors.

Table 2: Descriptive Statistics for childrens present in our estimation sample

	Household Heads						Single Mothers					
	All			Only kids with other sibblings in school			All			Only kids with other sibblings in school		
	N	Mean	Std	N	Mean	Std	N	Mean	Std	N	Mean	Std
Female	3541	0.50	0.50	1879	0.49	0.50	2675	0.50	0.50	1370	0.48	0.50
Age	3541	11.90	3.27	1879	12.09	3.46	2675	11.90	3.27	1370	12.17	3.45
Grade	3541	6.06	3.11	1879	6.23	3.31	2675	6.05	3.11	1370	6.28	3.31
Fondecyt Data. Average hours per day	3535	7.22	0.60	1877	7.24	0.60	2671	7.21	0.58	1370	7.23	0.57
Fondecyt Data. Std of daily hours	3535	0.82	0.49	1877	0.84	0.49	2671	0.83	0.48	1370	0.86	0.48
Fondecyt Data. Weekly hours	3535	36.11	2.98	1877	36.19	3.02	2671	36.06	2.89	1370	36.13	2.83
Fondecyt Data. Tipical daily hours	3535	7.52	0.68	1877	7.54	0.69	2671	7.51	0.66	1370	7.54	0.65
Mineduc. Tipical daily hours	3527	7.48	1.32	1872	7.53	1.30	2663	7.47	1.32	1365	7.56	1.27
Mineduc. =1 if has FD schedule	3533	0.67	0.47	1874	0.67	0.47	2667	0.67	0.47	1365	0.69	0.46
=1 if municipal school	3541	0.31	0.46	1879	0.32	0.47	2675	0.31	0.46	1370	0.32	0.47
=1 if voucher school	3541	0.59	0.49	1879	0.59	0.49	2675	0.60	0.49	1370	0.59	0.49
=1 if private school	3541	0.09	0.29	1879	0.09	0.29	2675	0.09	0.28	1370	0.08	0.28

Note: Observations corresponds to the whole sample of children who are part of our estimation sample.

Table 3: Descriptive Statistics of our estimation sample

- Women 25-55 years old with at least one 6-15 years old child in school-

	Household Heads						Single moms					
	All			With more than one child in school			All			With more than one child in school		
	N	Mean	Std	N	Mean	Std	N	Mean	Std	N	Mean	Std
edad	1535	40.45	7.72	501	40.22	6.42	1200	40.05	7.79	367	39.96	6.35
escolaridad	1534	12.21	3.19	501	12.12	3.25	1199	12.14	3.13	367	11.86	3.23
=1 if single	1535	0.78	0.41	501	0.73	0.44	1200	1.00	0.00	367	1.00	0.00
=1 if there other adults employed in the HH	1535	0.34	0.58	501	0.34	0.58	1200	0.14	0.40	367	0.09	0.31
=1 if there other women older than 18 years old in the HH	1535	0.15	0.36	501	0.12	0.33	1200	0.15	0.35	367	0.11	0.32
Age younger child in HH	1535	11.03	3.07	501	9.69	2.66	1200	11.05	3.08	367	9.76	2.72
Age younger child that goes to school	1535	11.04	3.07	501	9.69	2.66	1200	11.07	3.08	367	9.76	2.72
1 if there are at least one +15 brother	1535	0.26	0.44	501	0.33	0.47	1200	0.25	0.43	367	0.32	0.47
1 if there are at least one +15 brother	1535	0.21	0.41	501	0.29	0.45	1200	0.21	0.41	367	0.30	0.46
Grade of younger child in school	1535	5.24	2.89	501	3.97	2.50	1200	5.27	2.91	367	4.03	2.53
=1 if mother is working or looking for a job; 0 other case	1535	0.86	0.34	501	0.86	0.35	1200	0.89	0.32	367	0.88	0.32
=1 if working; 0 other case	1535	0.82	0.39	501	0.82	0.38	1200	0.83	0.37	367	0.84	0.36
Weekly hours of work (missing if not working)	1255	40.94	13.46	413	40.05	14.49	999	41.11	13.49	310	39.96	14.49
Fondecyt Data. =1 if youngest kid in HH has JEC (weekly hours)	1530	0.85	0.36	500	0.84	0.36	1196	0.85	0.36	367	0.86	0.35
Fondecyt Data. Tipical hours at school (more frequent schedule) of youngesth child in HH	1530	7.45	0.67	500	7.35	0.69	1196	7.45	0.65	367	7.38	0.65
Fondecyt Data. Average hours per day of youngest child in HH	1530	7.15	0.59	500	7.05	0.61	1196	7.15	0.58	367	7.05	0.58
Fondecyt Data. Std of daily hours of youngest child in HH	1530	0.81	0.48	500	0.79	0.47	1196	0.81	0.47	367	0.83	0.46
Fondecyt Data. Average tipical daily hours in HH	1530	7.51	0.62	500	7.54	0.54	1196	7.50	0.61	367	7.55	0.51
Fondecyt Data. Std of tipical daily hours in HH	1535	0.11	0.30	501	0.33	0.46	1200	0.10	0.27	367	0.31	0.41
Fondecyt Data. Average daily hours in HH	1530	7.21	0.55	500	7.23	0.48	1196	7.20	0.54	367	7.22	0.45
Fondecyt Data. Std of daily hours in HH	1515	0.78	0.42	498	0.87	0.37	1183	0.78	0.41	366	0.88	0.36
Fondecyt Data. Average weekly hours in HH	1530	36.04	2.75	500	36.13	2.42	1196	36.02	2.71	367	36.10	2.26
Fondecyt Data. Std of weekly hours in HH	1535	0.48	1.26	501	1.48	1.85	1200	0.42	1.11	367	1.38	1.65
Maximum hours mothers could work per week	1530	33.99	7.00	500	31.36	9.18	1196	34.03	6.94	367	31.34	9.24
=1 if all children have either a morning schedule or full-day schedule	1535	0.89	0.32	501	0.85	0.35	1200	0.89	0.32	367	0.86	0.35
=1 at least one child in the household goes to school in the afternoon	1535	0.04	0.21	501	0.13	0.34	1200	0.04	0.20	367	0.13	0.34
Mineduc Data. =1 if youngest kid in HH has JEC (based on tipical hours)	1534	0.74	0.44	501	0.71	0.45	1199	0.73	0.44	367	0.74	0.44
Mineduc Data. Tipical hours at school (more frequent schedule) of youngesth child in HH	1529	7.34	1.35	500	7.20	1.36	1195	7.34	1.36	367	7.27	1.35
Mineduc Data. Average tipical daily hours in HH	1529	7.45	1.25	500	7.52	1.04	1195	7.43	1.27	367	7.56	1.02
Mineduc Data. Std of tipical daily hours in HH	1535	0.21	0.57	501	0.65	0.85	1200	0.19	0.54	367	0.63	0.83
Mineduc data. Maximum hours mothers could work per week	1529	35.86	8.36	500	33.34	10.33	1195	35.87	8.31	367	33.53	10.40

Note: Sample size varies according to the number of observations with missing respones in the respective variable

Table 4. Household-heads. Female labor participation and schooling time

	Panel A - Labor force Participation											Panel B - Employment										
	All				More than one child							All				More than one child						
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
=1 if youngest kid has FD school	0.022				-0.003							0.042				0.011						
	(0.030)				(0.043)							(0.034)				(0.049)						
Regular Hours per day of youngest kid		0.027				0.051							0.043**				0.062*					
		(0.019)				(0.031)							(0.017)				(0.032)					
Average daily hours of younger kid			0.031*				0.062**							0.042**				0.063**				
			(0.016)				(0.030)							(0.017)				(0.030)				
Std daily hours younger kid			-0.031*				-0.067							-0.031				-0.042				
			(0.017)				(0.042)							(0.019)				(0.042)				
Average regular hours within HH								0.075*											0.098**			
								(0.038)											(0.041)			
Std regular hours within HH								-0.026											-0.008			
								(0.032)											(0.035)			
Average daily Hours (within HH)									0.059*											0.073*		
									(0.035)											(0.037)		
Std daily Hours (within HH)									-0.081											-0.039		
									(0.060)											(0.058)		
Average total hours per week (HH)										0.012*											0.015*	
										(0.007)											(0.007)	
Std total hours per week (HH)										-0.015*											-0.010	
										(0.009)											(0.010)	
Maximum coverage of household per week				0.003**							0.004*				0.004**							0.003
				(0.002)							(0.002)				(0.002)							(0.003)
Observations	1,529	1,529	1,529	1,529	500	500	500	500	498	500	500	1,529	1,529	1,529	1,529	500	500	500	500	498	500	500
R-square	0.096	0.097	0.099	0.098	0.127	0.134	0.138	0.138	0.137	0.136	0.135	0.079	0.082	0.082	0.081	0.123	0.132	0.130	0.137	0.129	0.130	0.126
Average Y	0.865	0.865	0.865	0.865	0.860	0.860	0.860	0.860	0.859	0.860	0.860	0.819	0.819	0.819	0.819	0.826	0.826	0.826	0.826	0.825	0.826	0.826

Notes: Dependent variable is labor force paticipation. Women younger than 55 years old, with children in primary or secondary school. The sample size varies according to the number of observations with missing respones in the respective variable. All regressions include municipality fixed effects and control for age, spouse present, the presence of other adults and older kids in the household, and the age of the youngest child. Cluster standard errors at school level are given in parentheses.*** p<0.01, ** p<0.05, * p<0.1 .

Table 5. Household-heads. Female labor participation and schooling time

	Panel A - Labor force Participation							Panel B - Employment						
	All			More than one child				All			More than one child			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[1]	[2]	[3]	[4]	[5]	[6]	[7]
=1 if youngest kid has FD school	0.048**			0.050				0.059**			0.053			
	(0.022)			(0.038)				(0.022)			(0.042)			
Regular Hours per day of youngest kid		0.011			0.015				0.012*			0.018		
		(0.007)			(0.012)				(0.006)			(0.013)		
Average regular hours within HH							0.041**							0.053***
							(0.019)							(0.019)
Std regular hours within HH							0.030							0.047**
							(0.019)							(0.020)
Maximum coverage of househousehold per week			0.002*			0.002				0.002			0.002	
			(0.001)			(0.002)				(0.001)			(0.002)	
Observations	1,533	1,528	1,528	500	500	500	501	1,533	1,528	1,528	500	500	500	501
R-square	0.097	0.096	0.096	0.129	0.139	0.131	0.132	0.083	0.079	0.079	0.125	0.141	0.124	0.125
Average Y	0.864	0.865	0.865	0.860	0.860	0.860	0.858	0.817	0.819	0.819	0.826	0.826	0.826	0.824

Notes: Dependent variable is labor force paticipation. Women younger than 55 years old, with children in primary or secondary school. The sample size varies according to the number of observations with missing respones in the respective variable. All regressions include municipality fixed effects and control for age, spouse present, the presence of other adults and older kids in the household, and the age of the youngest child. Cluster standard errors at school level are given in parentheses.*** p<0.01, ** p<0.05, * p<0.1 .

Table A-1. Single Women. Female labor participation and schooling time

	Panel A - Labor force Participation											Panel B - Employment										
	All				More than one child							All				More than one child						
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
=1 if youngest kid has FD school	0.010				0.041							0.042				0.088**						
	(0.027)				(0.056)							(0.025)				(0.042)						
Regular Hours per day of youngest kid		0.012				0.042							0.020				0.050**					
		(0.020)				(0.035)							(0.012)				(0.022)					
Average daily hours of younger kid			0.018				0.059							0.019				0.058**				
			(0.022)				(0.043)							(0.018)				(0.028)				
Std daily hours younger kid			-0.022				-0.072							-0.015				-0.024				
			(0.020)				(0.045)							(0.016)				(0.032)				
Average regular hours within HH								0.048											0.066*			
								(0.036)											(0.034)			
Std regular hours within HH								-0.060											-0.040			
								(0.056)											(0.046)			
Average daily Hours (within HH)									0.040											0.049		
									(0.048)											(0.040)		
Std daily Hours (within HH)									-0.101											-0.022		
									(0.071)											(0.048)		
Average total hours per week (HH)										0.005											0.010	
										(0.009)											(0.008)	
Std total hours per week (HH)										-0.020*											-0.015	
										(0.011)											(0.011)	
Maximum coverage of household per week				0.002							0.005				0.002							0.002
				(0.002)							(0.003)				(0.001)							(0.002)
Observations	1,195	1,195	1,195	1,195	367	367	367	367	366	367	367	2,543	2,543	2,543	2,543	856	856	856	856	850	856	856
R-square	0.080	0.080	0.081	0.081	0.184	0.187	0.195	0.192	0.193	0.192	0.194	0.052	0.052	0.052	0.052	0.081	0.084	0.084	0.088	0.083	0.085	0.081
Average Y	0.886	0.886	0.886	0.886	0.883	0.883	0.883	0.883	0.883	0.883	0.883	0.820	0.820	0.820	0.820	0.819	0.819	0.819	0.819	0.818	0.819	0.819

Notes: Dependent variable is labor force paticipation. Women younger than 55 years old, with children in primary or secondary school. The sample size varies according to the number of observations with missing respones in the respective variable. All regressions include municipality fixed effects and control for age, spouse present, the presence of other adults and older kids in the household, and the age of the youngest child. Cluster standard errors at school level are given in parentheses.*** p<0.01, ** p<0.05, * p<0.1 .

Table A-2. Single Women. Female labor participation and schooling time

	Panel A - Labor force Participation							Panel B - Employment						
	All			More than one child				All			More than one child			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[1]	[2]	[3]	[4]	[5]	[6]	[7]
=1 if youngest kid has FD school	0.026			0.053				0.059**			0.058			
	(0.020)			(0.039)				(0.023)			(0.041)			
Regular Hours per day of youngest kid		0.008			0.019				0.020**			0.022		
		(0.006)			(0.014)				(0.008)			(0.014)		
Average regular hours within HH							0.025							0.019
							(0.025)							(0.018)
Std regular hours within HH							0.003							0.000
							(0.023)							(0.027)
Maximum coverage of householhold per week			0.001			0.002				0.003**			0.002	
			(0.001)			(0.002)				(0.001)			(0.002)	
Observations	1,198	1,194	1,194	367	367	367	367	1,948	1,944	1,944	624	624	624	624
R-square	0.079	0.079	0.079	0.187	0.187	0.187	0.186	0.045	0.044	0.042	0.096	0.093	0.093	0.095
Average Y	0.886	0.886	0.886	0.883	0.883	0.883	0.883	0.832	0.833	0.833	0.829	0.829	0.829	0.829

Notes: Dependent variable is labor force paticipation. Women younger than 55 years old, with children in primary or secondary school. The sample size varies according to the number of observations with missing respones in the respective variable. All regressions include municipality fixed effects and control for age, spouse present, the presence of other adults and older kids in the household, and the age of the youngest child. Cluster standard errors at school level are given in parentheses.*** p<0.01, ** p<0.05, * p<0.1 .

Tabla 6. Household-heads. Female labor participation and schooling time. IV Estimation

	Panel A - Labor force Participation											Panel B - Employment										
	All				More than one child							All				More than one child						
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
=1 if youngest kid has FD school	-0.041				0.431							-0.000				0.616*						
	(0.186)				(0.311)							(0.206)				(0.320)						
Regular Hours per day of youngest kid		0.030				0.325**							0.005				0.381***					
		(0.082)				(0.146)							(0.075)				(0.146)					
Average daily hours of younger kid			0.045				0.045							-0.134				-0.134				
			(0.220)				(0.220)							(0.324)				(0.324)				
Std daily hours younger kid			0.081				0.081							0.462				0.462				
			(0.622)				(0.622)							(0.862)				(0.862)				
Average regular hours within HH								0.347											0.420			
								(0.466)											(0.562)			
Std regular hours within HH								-0.544											-0.670			
								(0.821)											(1.013)			
Average daily Hours (within HH)									0.074											-0.149		
									(0.253)											(0.350)		
Std daily Hours (within HH)									-0.049											0.344		
									(0.449)											(0.607)		
Average total hours per week (HH)										0.021											-0.000	
										(0.095)											(0.121)	
Std total hours per week (HH)										-0.020											0.019	
										(0.188)											(0.240)	
Maximum coverage of househousehold per week				0.026							0.035				0.022							0.041*
				(0.024)							(0.022)				(0.025)							(0.022)
Observations	1,529	1,529	1,529	1,529	500	500	1,529	1,529	1,514	1,529	500	1,529	1,529	1,529	1,529	500	500	1,529	1,529	1,514	1,529	500
F-test Instrumento 1	12.82	28.51	55.01	6.261	8.640	9.886	19.18	10.48	29.63	29.63	5.109	12.82	28.51	55.01	6.261	8.640	9.886	19.18	10.48	29.63	29.63	5.109
F-test Instrumento 2			4.486				2.519	9.597	11.20	30.76				4.486				2.519	9.597	11.20	30.76	
F-Effective	12.65	28.14		3.932	7.939	9.083					3.371	12.65	28.14		3.932	7.939	9.083					3.371
F-critical	37.42	37.42		17.87	37.42	37.42	19.18	10.48	29.63	29.63	17.35	37.42	37.42		16.91	37.42	37.42	19.18	10.48	29.63	29.63	18.14

Notes: Dependent variable is labor force paticipation. Women younger than 55 years old, with children in primary or secondary school. The sample size varies according to the number of observations with missing respones in the respective variable. All regressions include municipality fixed effects and control for age, spouse present, the presence of other adults and older kids in the household, and the age of the youngest child. Cluster standard errors at school level are given in parentheses.*** p<0.01, ** p<0.05, * p<0.1 .

Tabla 7. Household-heads. Female labor participation and schooling time. IV Estimation

	Panel A - Labor force Participation							Panel B - Employment						
	All			More than one child				All			More than one child			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[1]	[2]	[3]	[4]	[5]	[6]	[7]
=1 if youngest kid has FD school	0.083			0.138				0.019			0.302**			
	(0.101)			(0.140)				(0.111)			(0.125)			
Regular Hours per day of youngest kid		0.037			0.070				0.004			0.141***		
		(0.024)			(0.053)				(0.030)			(0.054)		
Average regular hours within HH							-0.049							0.161
							(0.479)							(0.242)
Std regular hours within HH							0.329							-0.034
							(0.983)							(0.619)
Maximum coverage of househousehold per week			0.016*			0.022*				0.009			0.022**	
			(0.009)			(0.012)				(0.010)			(0.010)	
Observations	2,545	2,540	2,540	857	856	856	856	1,533	1,528	1,528	501	500	500	500
F-test Instrumento 1	51.41	103.4	34.08	32.46	15.99	14.52	41.15	27.89	57.44	18.43	26.25	12.13	8.966	14.12
F-test Instrumento 2							11.28							7.431
F-Effective	50.39	101.4	18.51	30.58	15.07	7.409		27.52	56.69	13.25	24.12	11.15	5.826	
F-critical	37.42	37.42	20.46	37.42	37.42	20.37		37.42	37.42	13.91	37.42	37.42	16.37	

Notes: Dependent variable is labor force paticipation. Women younger than 55 years old, with children in primary or secondary school. The sample size varies according to the number of observations with missing respones in the respective variable. All regressions include municipality fixed effects and control for age, spouse present, the presence of other adults and older kids in the household, and the age of the youngest child. Cluster standard errors at school level are given in parentheses.*** p<0.01, ** p<0.05, * p<0.1 .

Table A-3. Single Women. Labor participation and schooling time. IV Estimation

	Panel A - Labor force Participation											Panel B - Employment										
	All				More than one child							All				More than one child						
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
=1 if youngest kid has FD school	-0.085				0.421*							0.112				0.365						
	(0.191)				(0.251)							(0.218)				(0.264)						
Regular Hours per day of youngest kid		-0.003				0.231*							0.074				0.143					
		(0.074)				(0.119)							(0.084)				(0.136)					
Average daily hours of younger kid			0.046				0.261							-0.393				-1.159				
			(0.225)				(1.383)							(2.786)				(1.251)				
Std daily hours younger kid			0.070				-0.146							1.287				2.040				
			(0.590)				(2.502)							(7.908)				(2.619)				
Average regular hours within HH								0.030											0.147			
								(0.200)											(0.398)			
Std regular hours within HH								0.269											-0.139			
								(0.564)											(0.878)			
Average daily Hours (within HH)									1.134											-1.176		
									(3.570)											(0.816)		
Std daily Hours (within HH)									-1.380											1.650		
									(4.368)											(1.075)		
Average total hours per week (HH)										0.948											0.598	
										(8.889)											(1.349)	
Std total hours per week (HH)										-1.584											-0.893	
										(14.684)											(1.964)	
Maximum coverage of househousehold per week				0.021							0.020				0.026							0.019
				(0.020)							(0.016)				(0.019)							(0.022)
Observations	1,195	1,195	1,195	1,195	367	367	367	367	366	367	367	1,947	1,947	1,947	1,947	624	624	624	624	619	624	624
F-test Instrumento 1	17.32	23.40	58.21	5.798	12.16	9.075	18.50	11.50	41.71	41.71	4.867	23.65	39.90	80.66	11.34	11.34	10.81	11.59	22.46	33.26	33.26	5.015
F-test Instrumento 2			4.326				3.076	2.969	9.112	19.90				5.500				2.437	5.296	14.26	22.86	
F-Effective	16.60	22.43		3.491	10.53	7.855					3.676	23.04	38.87		6.230	10.43	9.942					4.073
F-critical	37.42	37.42		18.45	37.42	37.42					15.03	37.42	37.42		20	37.42	37.42					16.15

Notes: Dependent variable is labor force paticipation. Women younger than 55 years old, with children in primary or secondary school. The sample size varies according to the number of observations with missing respones in the respective variable. All regressions include municipality fixed effects and control for age, spouse present, the presence of other adults and older kids in the household, and the age of the youngest child. Cluster standard errors at school level are given in parentheses.*** p<0.01, ** p<0.05, * p<0.1 .

Table A-4 . Single Women. Labor participation and schooling time. IV Estimation

	Panel A - Labor force Participation							Panel B - Employment						
	All			More than one child				All			More than one child			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[1]	[2]	[3]	[4]	[5]	[6]	[7]
=1 if youngest kid has FD school	0.061			0.154				-0.023			0.263*			
	(0.086)			(0.142)				(0.116)			(0.148)			
Regular Hours per day of youngest kid		0.037			0.088				0.003			0.117*		
		(0.026)			(0.063)				(0.031)			(0.062)		
Average regular hours within HH							-0.058							0.106
							(0.243)							(0.162)
Std regular hours within HH							0.325							-0.095
							(0.800)							(0.382)
Maximum coverage of householdhousehold per week			0.013*			0.014				0.008			0.014	
			(0.007)			(0.013)				(0.010)			(0.010)	
Observations	1,948	1,944	1,944	624	624	624	624	1,198	1,194	1,194	367	367	367	367
F-test Instrumento 1	62.48	107.9	22.50	26.98	13.16	9.958	37.82	33.72	54.56	9.748	21.49	9.648	8.895	9.886
F-test Instrumento 2							4.675							3.310
F-Effective	60.87	105.1	17.13	24.82	12.11	8.339		32.96	53.32	8.604	18.94	8.502	5.610	
F-critical	37.42	37.42	11.89	37.42	37.42	19		37.42	37.42	11.90	37.42	37.42	16.31	

Notes: Dependent variable is labor force paticipation. Women younger than 55 years old, with children in primary or secondary school. The sample size varies according to the number of observations with missing respones in the respective variable. All regressions include municipality fixed effects and control for age, spouse present, the presence of other adults and older kids in the household, and the age of the youngest child. Cluster standard errors at school level are given in parentheses.*** p<0.01, ** p<0.05, * p<0.1 .