

# CHILDCARE INDIVISIBILITY AND MATERNAL EMPLOYMENT

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## Abstract

We study whether offering after school care for 6 to 13 year old children has an impact on labor market outcomes of women in Chile. We identify the effect using the random assignment of beneficiaries to a public program. Modest effects on participation and employment are found: the program increases employment by 5% and labor force participation by 7%. There is also an increase in child education and female clothing spending. Though women take advantage of the program, it also generates a significant substitution effect with existing childcare. The program has stronger effects for women who were not working at baseline, and women who had young children who were not eligible for the program. In this group, offering the program generates an increase in labor force participation of 1.7 percentage points and a 1.2 percentage point increase in the number of months they are active in the labor force. At the same time, there is also an increase in the use of daycare for young children. Both results are consistent with the indivisibility of childcare: all children must have the option to break the childcare constraint.

**Keywords:** Female labor supply; Childcare; random control trial; after school programs.

**Jel-codes:** J13, J21

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## 1. INTRODUCTION

For almost 20 years, the female labor force participation (FLFP) rate in Chile has been increasing in a sustained manner: from 34.3% in 1992 to 43.5% in 2011.<sup>2</sup> However, it remains rather low in comparison to international standards, showing a 9-point gap with regard to the Latin American average. This rate is particularly low for women with pre-school aged children and women from poor households: the female labor force participation in the first quintile is 24.8%, whereas in the fifth quintile it is 62.2%.

The most frequently reported reason for not participating in the labor market is household tasks (54%), followed by “doesn’t have anybody to leave her children with” (32.7%). This last reason is correlated with income levels: it is reported by 34% of non-participants in the first quintile and by 25% in the fifth quintile. (Casen, 2011) The literature has also consistently documented a negative effect of fertility on FLFP and other labor outcomes. (Rosenzweig and Wolpin (1980), Bronars and Grogger (1994), Jacobsen et al. (1999) and Caceres-Delpiano (2012) among others) Both the declared time constraint and the negative correlation between fertility and FLFP suggest that childcare subsidies and/or free childcare provision could have positive effects on women’s labor outcomes.

Since 2008, Chile has experienced a large expansion of public child-care for children under 5 years of age. Several papers have analyzed whether this policy has had any impact on mothers’ employment with mixed results. Bentancor (2013), using panel models with information from 1995 to 2009, finds that the childcare expansion had an impact on labor force participation (an increase of 15 percentage points) only among women who had no more than secondary education. But Medrano (2009), Encina and Martínez (2009), Manely and Vazques (2013), and Aguirre (2013) do not find any effect of this policy on female labor force participation or employment.<sup>3</sup> These results are in line with the findings of Havnes and Mogstad (2011) in Norway (who take advantage of a free childcare expansion) and Lundin, Mork et al. (2008) in Sweden (who study a sharp fall in child care prices); both studies find no effects of these programs on employment outcomes for women.

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<sup>2</sup> CASEN survey data.

<sup>3</sup> Aguirre (2013) does find that the program improved nutrition for infants and toddlers of mothers with low education.

Several hypotheses could be raised to explain these results. One of them is the potentially high rate of substitution between free and paid (both formal and informal) care. In this case we would not observe changes in employment outcomes for women, because they simply opt out of paid childcare and begin using the new free childcare services.<sup>4</sup> The provision of public care for young children might also have little effect on female labor supply if easing childcare restrictions for pre-school children is not enough to completely address the childcare needs of the mother (due to, for example, the presence of older children in the household who may also require childcare but may not be eligible for existing care options). This might be the case in Chile where not all schools are full time every day; some of them end at 1 pm, while others end at 4 pm. This kind of schedule is not compatible with full time work, while the supply of part-time jobs is very limited.

The main purpose of this paper is to study whether easing the childcare restrictions for school age children (6-13 years) increases female labor force participation and employment. Although the average effect is of interest from a public policy point of view, the Chilean context allows us to study whether offering these services triggers a heterogeneous reaction from women who also have smaller children. That is, we are (indirectly) exploring whether the apparent rigidity of women's labor outcomes in the face of the expanding provision of public childcare for young children could be related to this issue.

In order to answer this question, we randomly assigned vacancies to a publicly operated after school program called "Programa 4 a 7" in 25 schools across Chile. Random assignment was done taking advantage of the fact that there was oversubscription to the program. The program offers three hours of after-school childcare in educational institutions throughout the school year, and aims at facilitating mothers' insertion into the labor force. We then study if the offer of this vacancy has an impact on labor force participation, employment, and childcare using a follow-up household survey.

The study's results can help answer the following questions: 1) is there an actual demand for childcare? 2) Does the existence of childcare have an impact on mothers' labor

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<sup>4</sup> For example, Lundin, Mork et al. (2008) finds in Norway that expanding access to public childcare crowds out the use of paid childcare.

outcomes?; 3) Does formal childcare displace informal childcare? 4) Is there evidence of childcare indivisibility?; and 5) What characteristics of the program, if any, enhance the program impact?

Through the randomized vacancy offer, we find that 35% of women who were offered a vacancy didn't use it. Among those who did, 60-70% used it each month, and 74% every day of the week. This implies there is a heterogeneous need for after school child care. This should be considered in the design of cost effective childcare alternatives.

Our intention-to-treat (ITT) estimations show an increase of 0.5 percentage points (5% of the average in the control group) in the probability of working at least one month during the 10-month window of observation. And an increase of 0.45 percentage points in the probability of participating in the labor market every month that the program was available (7% of the average of the control group). Consistent with an increase in income (directly through the labor market effect or indirectly through the free provision of childcare), we find an increase in spending on the child's education (15.2% increase in spending on school uniforms and a 12.5% increase in spending on school materials) and a 19% increase in purchases of female clothing.

We find that the offering of childcare services increases in 0.5-0.6 percentage points the probability that children of eligible age are not taken care of by their mothers during the program hours (an increase of 5.1% relative to the control group). This is consistent with the existence of partial substitution between types of childcare, where a substantial share of the enrollment is substituting for other types of childcare.

Most of the effects on labor market outcomes are driven by women whose younger children were not eligible for the program. Women with more than one child must address the childcare needs of all their children in order to free up time for the labor market. Therefore, we document the existence of an indivisibility problem that has to be addressed. In the Chilean context, women seem to be facing more restrictions from the absence of after school care for older children, than from the lack of childcare for their younger children, particularly in the face of a 600% increase in daycare centers and a school day that is inconsistent with the demands of full time work.

While there is an extensive literature that investigates the relationship between labor supply (fundamentally female) and the availability or cost of childcare<sup>5</sup>, especially among small children, it is not trivial to identify childcare's (causal) price effect. We believe our research makes three important contributions to the literature. First, it is, as far as we know, the first randomized control trial of an after school program that focuses its impact measurements on caregiver outcomes. Second, it provides evidence of the importance of context, and particularly, how the existence of extensive free pre-school care affects the impact of an after school program and therefore the importance of considering the full array of childcare constraints in the design of public policies aimed at increasing FLFP. Finally, it documents the existence of extensive substitution in the type of childcare used.

The literature has used many empirical strategies in order to assess whether changes in childcare prices or, in the extreme case, offering free childcare, affects mothers' labor supply. Both structural and quasi-experimental estimations provide mixed evidence,<sup>6</sup> and high levels of heterogeneity by sub groups have often been reported. For instance in Germany, Hahan and Wrohlich (2011) find that the rise in a childcare subsidy would increase the fertility and the employment rate only among highly educated women or first-time mothers.

Exogenous variations in childcare provision, such as the expansion of preschool or discontinuities in the school starting age rules, have also been used to estimate the impact of this early care on mothers' labor outcomes. The seminal paper on this subject (Gelbach, 2002) estimates that offering free childcare for preschool age children increases the labor supply of married women by 6-15% and of single mothers by 6-24% in the US. In Argentina, Berlinki et al (2011) exploits a discontinuity rule in mandatory schooling for 4 year-old children, and finds that for every 100 enrolled children, 13 mothers enter the labor market, and also finds an increase in the intensity of the work. Lefebvre and Merrigan (2008) use the introduction of low cost childcare services in Canada and find big and significant effects on labor force participation in the short-run, particularly among less educated women. In both cases (Argentina and Canada), the policy had strong and positive

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<sup>5</sup> For examples see two bibliographic reviews: Anderson and Levine (2002) and Blau and Currie (2006).

<sup>6</sup> For a revision of these studies see Blau and Tekin (2001) and Blau (2004).

effects among women whose eligible child was the youngest. Again, this literature reports highly heterogeneous effects that vary depending on family composition and/or the mother's socio economic background (see Cascio, 2009; Fitzpatrick, 2012; Goux & Maurin, 2010; Havnes & Mogstad, 2011).<sup>7</sup>

There is, however, limited evidence of the relevance of providing free after school care for older children in the mothers' employment prospects. Lundin et al. (2008) evaluate separately a price reduction in childcare for children between 0-5 and 6-9 years of age in Sweden. They find that the reduction of childcare prices for older children increased mothers' full time employment. The effect is positive and statistically significant, but very small in magnitude. Felfe et al. (2013) exploits the regional variation in the provision of free after school care in Sweden for children between 4 and 12 years of age, finding a positive and statistically significant effect: full time employment for mothers increased by 8 percentage points. The program had the opposite effect on the probability that men work full time (which decreased by 10 percentage points). The authors interpret these findings by speculating that the offer of after school care creates a convergence in men and women's work time.

As far as we know, there is no experimental evaluation on the effects of an after school program on mothers' employment outcomes. Blau and Currie (2006) report the results of various experimental evaluations, which look at the effect of after school programs on children's outcomes. Among them, Hahn et al. (1994), LoSciuto et al. (1996), Tierney et al. (2000), and LoSciuto et al. (1997) find positive effects on several indicators of school success (graduation rates, attendance), positive attitudes at home, teenage pregnancy rates, among others.

The literature, then, seems extensive and inconclusive; particularly with an experimental evaluation strategy and on school age children. Generally, heterogeneous effects are observed in outcome variables that are led by the population that is directly "affected" by the care offered. Additionally, there is limited evidence of how important the crowding out effect of the program might be.

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<sup>7</sup> Other works that evaluate this kind of natural experiment and find positive effects are Nolleberg and Rodriguez (2011), Simonsen (2010), Baker et al, 2008.

This paper is organized as follows: in section 2, some stylized facts about female labor force participation are discussed; in section 3, the intervention is described, whereas in section 4 the data and estimation models are introduced; in sections 5 and 6, the main results are described and discussed; section 7 provides some final conclusions.

## **2. FEMALE LABOR FORCE PARTICIPATION IN CHILE BACKGROUND**

The female labor force participation rate in Chile has substantially increased over the last 20 years from 29.3% in 1986 to 47.7% in 2012 (*National Employment Survey*). Nevertheless, despite this significant growth, the female labor supply represents only 40% of the total supply. Labor force participation is particularly low among low educated women, women with small children, and women belonging to low-income households. Male and female labor force participation patterns in Chile also show significant differences regarding quality and types of employment.

The gap between male and female labor force participation in Chile is, approximately, 25 percentage points (CASEN 2011). This difference can rise to almost 30-35 points when considering family life cycle periods associated with birth and childcare. That same year, the participation rate of women with a completed upper secondary education more than doubled the participation rate of women without education or with incomplete primary education. A similar difference is recorded between female participation rates in the tenth and first decile (62.2% vs. 24.8% in 2011). Additionally, 39% of households and 51% of poor households in Chile are led by women. In this sense, the increase in female employment can represent a means of overcoming poverty.<sup>8</sup>

Women argue that childcare is the main reason they do not look for a job. According to data from the 2011 CASEN, more than 50% of women in the first and third quintile with

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<sup>8</sup> However, over the last 20 years, the participation gap among women from different socioeconomic levels has decreased, since women with lower educational levels and lower-income households are leading the way in the increase in global participation rates. The female participation rates in the first quintile have increased by almost 70%, with a 44% rise in the last quintile. The increase in labor force participation rates in this segment of women with low educational levels (up to incomplete secondary education) represents 35%, while it is only 13% for the segment with more education.

small children (up to 5 years old) state that they don't look for a job because they have to take care of their children. This answer is more prevalent among women with children younger than 5 years of age than among women with children older than 6-13 years old. It is in the first quintiles where there is also a higher fraction of women with school age children who state they can't work more hours (even though they wish they could) because they don't have anybody to leave their children with.

Between 2004 and 2011, public childcare vacancies for children under 2 years old increased six-fold, while vacancies for 2-4 year old children increased 50%. However, there is no conclusive evidence to date on the effects of this increase in the coverage of publicly provided childcare on labor force participation or employment. (Medrano (2009) and Encina and Martínez (2009), Aguirre (2013), Manely and Vazques (2013), and Bentancor (2013))

### **3. INTERVENTION AND EVALUATION STRATEGY**

#### ***a) Intervention Description***

The 4-7 Program offers after school care within an educational establishment for boys and girls from 6 to 13 years of age, while their mothers or caregivers are working, looking for work, taking training courses, or attending formal schooling programs. The 4-7 Program's main objective is to "contribute to the insertion and labor attachment of mothers and/or women responsible for caring for boys and girls from 6 to 13 years old, through the supply of after school educational and recreational activities." (SERNAM, 2012)<sup>9</sup>

Municipalities applied for the program,<sup>10</sup> and SERNAM selected municipalities based whether there were other programs in the community, whether there were a large number of

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<sup>9</sup> SERNAM (Servicio Nacional de la Mujer) is the governmental that both coordinates the implementation of the program and finances it. The program execution is at a local-level and takes place in municipal education institutions. The municipalities can execute the program directly or outsource it to non-profit entities. SERNAM carries out a resources transfer to the municipalities for the program implementation. In addition, the Ministry of Education participates along with SERNAM to delimit the Program's technical-pedagogical orientations.

<sup>10</sup> With an expression of interest that had the commune's participating institutions identification, the number of children who would be attended by each school, the workshops' results that would be implemented and the



children in the eligible age range in municipal schools, and whether the municipality had a relatively high proportion of active women relative to the region.

The selected municipalities had to choose the educational establishments where the program was to be implemented. The eligible institutions had to be municipal schools and they couldn't have any other childcare programs for working women functioning in the same establishment.<sup>11</sup>

The eligibility requirements for the beneficiaries were: they had to be mothers and/or women responsible for boys and girls from 6 to 13 years of age; they had to be economically active (working, looking for work for the first time, unemployed, involved in training courses or completing schooling programs); they had to be more than 18 years old, work or live in the establishment's municipality, or have children studying in the educational institution where the program would be implemented; and they had to have a score lower than 14.236 in the *Ficha de Protección Social (Social Protection File)*.<sup>12/13</sup>

SERNAM's central authority defined the number of beneficiary children in each institution: from 50 to 100 local needs, the community and area's conditions, the expected demand, among other factors. The number of children in the program determined the personnel assigned to it.<sup>14</sup>

The program was implemented, after school hours, 5 days a week (Monday to Friday) starting on the first month of the program<sup>15</sup> and ending December 2012. The program's hours could be adjusted depending on the children's schedules, but they had to provide

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kind of subject of each one of them. In addition, the group of children to which the program is managed, the number of sessions and the responsible for each workshop must be specified.

<sup>11</sup> The institutions must have preferably up to 8<sup>th</sup> grade, a commitment letter from the principal and the necessary infrastructure. Additionally, they must have a sustained increase in SINCE outcomes if possible.

<sup>12</sup> In addition to the described selection criteria, the program reserves a maximum of 10% of the vacancies for non-targeted special cases, prior to the authorization of the Regional Director of SERNAM.

<sup>13</sup> The *Ficha de Protección Social* is a socioeconomic instrument used by the Chilean Government. The file aims at identifying and prioritizing populations subject to social benefits, by measuring their vulnerability or the "risk" of being or falling into a situation of poverty. A score below 14236 points is equivalent to being in the first three quintiles.

<sup>14</sup> Schools with 50 children were required to have at least one program coordinator and five workshop instructors.

<sup>15</sup> It varied between schools. Some began in March, others in April.

childcare for three hours a day.<sup>16</sup> The program offered workshops for schoolwork as well as other thematic workshops. The first ones were thought to develop study skills (children could also complete some of their homework during this time). The thematic workshops were designed to enhance children's abilities in areas like art and culture, sports, physical activity and self-care, and information and communication technologies.

In order to assess the quality of the intervention, in 2012, a process evaluation was carried out. The evaluation aimed at gathering quantitative and qualitative information about the implementation of the program. During a period from November to December 2012, participating schools received visits.<sup>17</sup> In these visits, details about workshop implementation, children's attitude towards the program, staff qualifications, among other variables<sup>18</sup> were collected.

In 2012 the program was run in 87 schools, and 6,750 vacancies were made available. The experimental evaluation was carried out in 25 schools, which offered the program for the first time in 2012.

### ***b) Evaluation Strategy***

The randomization was done at the individual level among applicants in each school who met the eligibility requirements established by SERNAM. If an applicant was assigned to the treatment group, a vacancy was offered to all children that the applicant had under her care. This was done in order to respect the program objective, which is to help women to work. Once instructors received the list of the selected participants, they had to contact them by telephone<sup>19</sup> to inform them that their children could attend the 4-7 Program.

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<sup>16</sup> The program lasts 3 hours a day, hence its name 4-7 Program. Still, depending on the school day, the program could start right after lunchtime or later, as long as it lasted three hours. In the 2012 version, the program's continuity was not taken into account during winter break or national holidays.

<sup>17</sup> It is important to note that given that the school calendar in Chile, which runs from March to December every year, December may not necessarily be representative of how the program was run.

<sup>18</sup> The process evaluation provided valuable information for the evaluation. For example, one finding was that only 70% of the institutions were seen to choose the 4-7 PM schedule. The average number of students observed in the workshops (first visit) was 17.6. At the same time, it was observed that some participating children in the program were not listed on the sign-up sheet. It was also observed that 65.2% of the visited institutions had students from others establishments in the program, but only 6.1% used transportation services between institutions.

<sup>19</sup> Or personally in case the telephone contact wasn't possible.

Women had to sign a registration and agreement form in order to enroll their children and accept the spot offered. The application process and the vacancy information activities were carried out by SERNAM.

A stratified randomization was performed within each school, using two variables consistently reported in the literature as being strongly correlated with female labor force participation: labor history as measured by whether the applicant was working at the time of the application; and the presence of small children, measured by a dummy variable equal to one if the applicant had children under 5 years of age under her care. This information was obtained from the application form.

In Table 1, column [1] the randomization process outcomes are presented. There are 973 women in the control group and 1,137 in the treatment group. The baseline data is obtained from the application form. The end line data comes from a household survey conducted between March and May 2013, where women were asked about their 2012 labor history, employment characteristics, participation in the program, and stress, among other variables. Column [2] of Table 1 shows that 1,834 women of the 2,110 participants in the evaluation (86,9%) were surveyed during the follow-up. This figure is the same in both the treatment and control groups.

Considering the quality of the administrative records, the program take-up analysis is carried out with the data provided by the follow-up surveys. In these surveys, women were asked if their children attended the program. The number of mothers whose children attend the program is reported in column [3], and the share is reported in column [4], which shows that 26% of children in the control group attended while 61% attended in the treatment group.

This take-up is important for the program effects analysis, since imperfect compliance affects the statistical power of the evaluation. However, as reported in the results table, the minimum effect size that can be detected is 0.2-0.4 standard deviations.

## 4. DATA AND EMPIRICAL STRATEGY DESCRIPTION

### *a) Descriptive Statistics*

In the first column from Table 2, the individuals' descriptive statistics are presented at baseline. The per capita income is Ch\$ 56,799. The labor force participation rate is 90% and the employment rate (of all applicants) is 85%. It is important to note that that these levels of participation are high relative to the average participation rate for women in Chile.

The applicants' average monthly income is Ch\$120,048<sup>20</sup>. The number of months worked in 2011 was 7. Half of the sample has an employment contract. Only 5% of applicants report being students. The stress index, as defined by the Cohen et al scale and adapted to Chile by Tapia et al (2007), has a value of 7.09 for the sample. 26% of the applicants have children less than 5 years of age, who are not eligible for the program because of their age.

The number of children nominated to the program is 1.32 on average. At the end of the table we present statistics about the stratification variables. Note that 62% of women declare working at baseline and do not have children less than 5 years of age. According to the outcomes from previous studies, this is the group of women that should be most impacted by the program. These women have already formed an attachment to the labor market (they are already working), and once the program is implemented they have more time to work. The program is providing a safe environment for their children for three hours after school.

Table 2, columns [4] and [5], present descriptive statistics for both the treatment and control groups. Column [6] shows the “p-value” for the mean comparison between the treatment and the control groups for a selected group of variables. The sample is balanced in all variables at a 5% significance level. This implies that the randomization was successful in creating comparable groups. Therefore, the comparison of the outcome variable averages between the treatment and the control groups after the intervention must be sufficient to estimate the program impact.

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<sup>20</sup> This figure corresponds to the average monthly income for workers belonging to the poorest 10% of households in Chile. (CASEN 2011)

### *b) Empirical Strategy*

The empirical strategy is based on the random assignment of vacancies to the 4-7 Program among eligible applicants under the condition of oversubscription.

On the basis of this allocation, the intention-to-treat (ITT) of being offered the program<sup>21</sup> is estimated for labor, stress and educational outcomes. That is, for an individual  $i$ , who applied to the program in school  $j$ , the impact of offering the program in the variable  $Y_{ij}$  is estimated with:

$$Y_{ij} = \alpha + \beta T_{ij} + v_{ij} \quad (1)$$

where  $T_{ij}$  is an indicator variable equal to one if the individual was assigned to the program and  $v_{ij}$  is a specific error term for the person. All regressions include fixed effects per strata, and cluster at the school level.  $\beta$  measures the ITT of offering a vacant slot in the 4-7 Program. If  $\beta$  is significantly different from zero, it can be interpreted as offering the program has an impact on the interest variable  $Y_{ij}$ .

The analysis focuses on the ITT; that is, we are interested in measuring the effect of offering the program, and we are not estimating the effect of using the program. In our view, this is the right estimator to study: the effect of offering the childcare option and letting every family decide the treatment “dose” of the program that they require. Each family may need the program at different intensities: some families might send their kids every day during the whole year. Others might limit their children’s attendance to once a week, only during winter months. At the same time, from a public policy point of view, analyzing the offering of the program is the correct question, as each participant is offered a vacancy but is not forced to use it. Additionally, defining “use” is complex in this program. Given that it is an annual program, problems may arise when defining what it is “to attend” (Once? All year round).

Also, for the purpose of studying the stability parameters, the regression [1] is estimated using the following control variables (measured at baseline): whether the applicant is the

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<sup>21</sup> Assigned to be offered to be more precise.

household head; educational level; total number of children in the household. We also present a version of the model that includes the lagged dependent variable when available.

At the same time, in order to assess the potential complementarity between preschool childcare and our program, we also explore the potential existence of heterogeneous effects by stratum. The estimated equation in this case is:

$$Y_{ij} = \alpha + \sum_k \beta_k S_{kij} T_{ij} + \sum_k \partial_k S_{kij} + v_{ij} \quad (2)$$

where  $k$  is the stratum indicator,  $S_{kij}$  is a dummy which takes the value of  $q$  for the  $k$  stratum, and  $\beta_k$  is the program's effect estimator in the  $k$  stratum.

Finally, we investigate whether offering the program at different hours might have produced heterogeneous effects. In its original design, the Program had to be offered between 4 and 7 in the afternoon, as a natural extension to the school day. During the processes evaluation, it was discovered that not all participating schools used this schedule. Only 18 out of the 25 institutions offered the program in such way that the program ended on or after 7 pm. Considering that an extended schedule may be more compatible with full time work, the following model is used:

$$Y_{ij} = \alpha + \beta_{early} H_{early,j} T_{ij} + \beta_{late} H_{late,j} T_{ij} + \partial H_{late,j} + v_{ij} \quad (3)$$

where  $\beta_{early}$  ( $\beta_{late}$ ) correspond to the program effect on institutions with a school day which finishes before (on or after) 7 PM.

### ***b) Attrition***

As reported in Table 1, the retention rate at follow-up is 88%. This figure is the same in both the treatment and control groups. In Table 3, we present the results of the estimation where the dependent variable is 1 if the individual was surveyed at the follow-up and 0, otherwise, for all the individuals present at the baseline. It is observed that regardless of the controls included, the treatment dummy is insignificant, which allows us to conclude that

the attrition rate is balanced across both groups. Therefore, attrition bias is not expected to affect our estimations.

## 5. RESULTS

In this section, we present the estimation of the impact of offering the program. We used four sources of data: treatment assignment from our administrative data; baseline data from the application process; dependent variables from the follow-up survey; and the program schedule from the process evaluation.

### *a) Labor Market: Employment, Participation and Incomes.*

In Table 4, we present the ITT for labor market outcomes. Results on labor force participation, employment and hours worked are presented in Panel A, B and C, respectively.

If the absence of after school childcare were a constraint for female labor force engagement, offering the program would increase labor force participation during the period when the program was available (May-December).<sup>22</sup> This engagement is studied using three measures: probability of participating in the labor market during at least one of the months when the program was offered (columns (1)-(3) of Panel A); probability of participating in the labor market during all months that the program was offered (columns (4)-(6)); and the number of months of labor market participation (columns (7)-(9)).

Columns (1) to (3) give the effect of offering the program on the probability of participating in the labor market at least one month between May and December 2013, corresponding to the months the program was in operation. The column (1) does not include controls, whereas in the column (2) controls are included and in the column (3) the lagged dependent variable is added to the control variables.

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<sup>22</sup> We don't have the exact date the program began. But the program was active in all schools by May 2012.

According to columns (1)-(3) from Panel A, the program has a positive but not significant effect in the probability of participating at least one month. It is important to notice that 75.5% of the control group participates in the labor market at least one month; therefore the outcome might be close to its ceiling making it difficult to modify. In addition, it can be observed that the minimum detectable effect for this variable is 0.26-0.27 standard deviations, which is equivalent to 5 percentage points.

In columns (4)-(6) offering the program is seen to increase the probability that a woman participates permanently in the labor market during the observation months. The point estimate indicates an increase in the probability of participating in the labor market of 4.1-4.5 percentage points (statistically significant at 10%), relative to a mean from the control group of 60.8%. These results are consistent with what is found in columns (7)-(9), as the offer generates an increase in the number of months that women participate in the labor market. This effect, which varies from 0.2 to 0.32 months depending on the specification, loses its significance when the lagged variable is included. Therefore, the offer seems to increase labor force participation.

In Panel B the treatment effect is observed over employment outcomes. Considering that the program should affect labor supply (participation), but not necessarily labor demand, we expect to find more tenuous effects on employment outcomes.

The columns (1) to (9) from Panel B show results analogous to the ones presented in Panel A, but now on employment outcomes. These are the probability of working at least a month (columns (1)-(3)), the probability of working throughout the program (columns (4) to (6)) and the number of months worked (columns (7) to (9)).

Consistent with the descriptive statistics at baseline, the fraction of women who work at least a month in the control group is 71.7%. In column (1) it is observed that offering the program has a positive effect on the probability of working at least a month by 3.1-3.7 percentage points. This effect is statistically significant at 5% in the absence of controls, and its confidence decreases to 10% after incorporating them. Offering the program does not have any effect on the probability of working throughout the entire period (columns (4)-(6)). In columns (7)-(9) the effect on the number of months worked is evaluated. It is



observed that, on average, the control group works 5 months (out of 10), and according to the results from column (10), offering the program produces an increase of 0.3 months. This effect is significant at the 10% level, but this significance is lost once controls are included.

Consequently, taking into account the outcomes from Panel A and B, it is observed that offering the program creates an increase of 7% in labor force participation, when the outcome is defined as continuous participation during the observation period. Furthermore, it increases the probability of working at least one month, as well as the number of months worked, although these effects are not robust to all specifications.

In Panel C, we present the same estimation for hours worked and income. The number of hours worked could be affected by the program because the presence of extended childcare services increases the number of hours of work that are available to the mothers and makes full time work potentially viable. However, columns (1)-(3) from Panel C show that offering the program has no effect on hours worked.

Finally, columns (4)-(9) present the effect on hourly (columns (4)-(6)) and monthly (columns (7)-(9)) income. These are of interest as the program could change the type of jobs beneficiaries could have, and consequently their wage income. Significant effects only appear in the specifications where controls and lagged variable are included. But the lack of consistency among the different specifications does not allow us to sustain that offering the program has any effect on income variables.<sup>23</sup>

#### **b) Income Effect and Childcare substitution.**

The program might generate an increase in income through two channels. On the one hand, it might change labor force participation/employment, which in turn might have a positive

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<sup>23</sup> As it was explained in a previous footnote, in the follow-up survey we asked both control and treated individuals if they had received or not a vacancy offer in the program. Some individuals in the control group answered that they did, while some individuals in the treatment group answered that they did not. To address this issue, we also estimate the model using instrumental variables, with the randomly allocated offer as an instrument for the reported offer. The IV produces bigger coefficients, while statistical significance is not lost.

effect on labor income. On the other, it might indirectly further increase the income of mothers who had already chose to work.

We don't find that the offering the program had a significant impact on labor income (although the estimated coefficient is positive). But we do find that the program increases female and child education related expenditures. Columns (1-4) of Panel A, Table 5 show a 13.3-15.2% increase in annual school uniform expenses and 12.5-13.2% increase in annual school materials (US\$24 and US\$13 aprox). Panel B of Table 5 shows a positive 17-19% increase in spending on female clothing (US\$2.8 per month).

### ***c) Program Use and Substitution***

The 4-7 Program provides caregivers with free after school childcare services. This new alternative allows those mothers, who used to take care of their children in the afternoon, to send them to the program, and use this time to carry out other activities. Meanwhile, mothers who already had childcare for their children, can find in this new alternative a better option, and decide whether to substitute their existing childcare for the 4-7 Program (Havnes and Mogstad, 2011; Gathman and Sass, 2012). The use of this free and formal childcare is the mechanism through which the program makes plausible the previous effects on labor outcomes and spending. In this section we investigate whether this is the case.

To study this hypothesis, we defined as a dependent variable an indicator that takes the value of 1 if the child is taken care of by a person other than the beneficiary or by any institution during the 4-7 Program hours (any use of childcare), and 0 if the beneficiary is the one who declares taking care of the child during those hours. If offering the program decreases the number of children who are being taken care of by their mothers, then the coefficient associated with the treatment allocation should be greater than zero

This hypothesis is tested in columns (1)-(2) of Table 6, where it is observed that offering the program increases the proportion of children who are taken care of by a third party in 6 percentage points, which represents a 10% increase, considering that 51% of beneficiaries from the control group report having a third party take care of their children. This result

allows us to conclude that offering the program increases external childcare. Columns (3) and (4) show that the increase is in formal childcare, while columns (5) and (6) show that it is specifically free formal childcare. Finally, we don't find evidence of an increase in paid formal childcare (columns (7) and (8) of the same Table). These results imply that offering the program increases the use of free formal childcare, and therefore the program is working through the expected mechanism.

The same results imply a substantial substitution in the type of childcare. If all care provided by the 4-7 Program substitutes for care provided by a third party, then the estimated coefficient must be zero, which is not the case as previously discussed. On the contrary, if the 4-7 care is carried out on children that otherwise would have been taken care of by their mothers, the expected coefficient would be 0.48.<sup>24</sup> The results of Table 6 show there is substantial substitution of childcare. Although there is an increase in the care by third parties (of 5-6 percentage points), it is lower than the 48 percentage point increase in the absence of substitution.

*e) Heterogeneous Effects for mothers with small children*

As we already explained, we stratified using two variables: whether the woman declared to be working when she applied to the program, and whether she had children under 5 years of age. The variables were chosen based on the stylized facts that work attachment and the presence of small children are among the strongest predictors of female labor market outcomes. In particular, we are interested in the effect of the program on mothers whose younger child is not eligible to participate in the program, meaning the intervention is not a full childcare solution. We also want to study whether the afterschool program could trigger childcare use for young children, which would be consistent with the existence of indivisibility in childcare.

Consistent with what is observed for the complete sample, the effects on labor market outcomes per strata are all positive, but not always statistically significant (see Table 7). Again the results are concentrated on the labor force participation during all periods

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<sup>24</sup> 52% of the control group has external childcare at the follow-up. If 100% of the treatment group had had external childcare, the treatment effect would be 48 percentage points.

(columns (4)-(6)) and additional positive effects come up in the total months of participation.

The positive effect in labor force participation is found on women that, besides having children that are eligible for the program, also have children who do not qualify to enter the program. The effect is greater on women who were not working at baseline. As was already stated above, a possible explanation for this finding is that, for these women, the program effectively lifted the strong restrictions they faced for entering the labor market. Small children are susceptible to care in public pre-schools or can also accompany their mothers to work. In this sense, offering care during extended hours could have solved childcare for children who did not have adequate childcare options, and increased the use of childcare for small children. Furthermore, this is the group that had lower baseline levels of labor market engagement, and therefore it is where there is a larger opportunity for growth.

We can directly explore whether the program has changed the pattern of childcare among young (non-eligible children). To study this hypothesis, we again defined as dependent variable an indicator that takes the value of 1 if the toddler is taken care of by any institution (free or for paid) during the 4-7 Program hours, and 0 otherwise. We also define similar indicator variables for both free and paid institutions.<sup>25</sup> We want to test whether treated mothers with young children are more likely to be sending their toddlers to formal childcare.

This hypothesis is tested in columns (1)-(2) of Table 8, where it is observed that offering the program increases the proportion of children who are being sent to formal childcare. The entirety of the effect is driven by free (presumably public) childcare institutions (columns (3)-(4)). Among treated families the program almost doubled the enrolment of small children into formal daycare (the enrolment rate goes from 7.6% in the control group, to 14.9% in the treatment group). These results are consistent with mothers taking full advantage of the existent supply of childcare.

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<sup>25</sup> We defined two indicator variables that take the value of 1 if the toddler is taken care of by a private (for free) institution (during the 4-7 Program hours), and 0 otherwise.

*f) Heterogeneous effects child care duration*

The 4-7 Program was thought of as a way to increase the employment opportunities for women by offering afterschool care in non-traditional schedules. Each school could adapt the program hours according to the school day duration, as long as it lasted for 3 hours. Considering the lack of part-time jobs in Chile (see Rau, 2008) it is expected that the longer the total childcare duration (school + after school), the more the potential female labor market effects. During the process evaluation, it was detected that the original program schedule (from 4 to 7 in the afternoon) was respected by 16 out of 25 participating schools.

Consistent with this hypothesis, when the effect of offering the program was evaluated in schools where the program ended on or after 7 PM, greater and statistically significant effects were found in this group. In Table 9 participation, employment, working hours and income estimations are presented considering potential heterogeneous effects depending on whether the program ends on or after 7 PM. It can be seen that the results already found for participation are maintained (the offer produces an increase in women's continuous participation during the observation period; columns (1)-(3) from Panel A), but now effects on employment are also found for the group of schools in which the 4-7 Program kept a schedule that ended on or after 7 PM. This employment effect is found in all the variables: having worked at least a month, having continuously worked, and the number of total months worked (columns (1)-(3) from Panel B) now appear significant at traditional levels. Once again, there is no effect on the number of hours worked, but there is an effect on hourly income: the offer increase hourly income by approximately 30%.

## **6. DISCUSSION**

The evidence given in the previous section is consistent with a positive but limited program offer average effect on labor force and employment. Additionally, the program does not completely crowd out care by third parties, but increases the proportion of children that are not taken care of by their caregiver during program hours.

The group that increase its labor force participation the most is the group of women that do not work at baseline and have children less than 5 years of age, in addition to children in the eligible age range for the program. This result also contradicts previous literature, which finds that most childcare programs have more effect on women whose youngest child is eligible for the program (Cascio, 2009; Berlinski et al., 2011; Fitzpatrick, 2012).

This apparent puzzle can be explained by the context of the intervention. First, a lower fraction of the group of women with small children reports working at baseline. This implies that this group presents a higher possibility of increasing FLFP and employment, considering that both behaviors have an upper bound, and the closer to this upper bound, the greater the difficulty to find an effect.

Second, at the follow-up 61% of the women surveyed report that they would use their time to work if they had safe childcare, while 5.1% state that they would rest, and 6.9% would dedicate their time to household tasks. In the same sense, 5.7% of the beneficiaries note that the main benefit of the program “is working in peace”, with the second choice mentioned being the one of “having more time for myself.” That is, not all beneficiaries seem to have intentions to work.

Also, finding a big effect of offering the program on labor market outcomes in the group of women with non-eligible children is consistent with the existence of a vast public childcare supply for children less than 5 years of age (non-eligible), but the absence of free care for children more than 5 years of age (eligible for the 4-7 program). In fact, the nurseries and kindergarten coverage extension in Chile between 2005 and 2009 could produce this context. Aguirre (2013) reports that between 2003 and 2009, the coverage rate (vacancies as a percentage of the size of the cohort) increases from 2% to 12% for children up to two years of age and from 38% to 44% for children of 3-4 years of age. Furthermore, the comparison between coverage and percentage of children using the public supply shows the existence of a gap which would indicate that the public facilities were operating under their capacity in 2009: the effective coverage reported by the users reaches 4.3% whereas the theoretical coverage (vacancies as a percentage of the population) was 7.2%.

It is important to recall that the schedule for this public preschool care supply is from 8:30 AM to 4:30 PM. In some of these establishments, childcare is also offered until 7 PM if both parents work. But, for older children, the school day at public primary schools<sup>26</sup> in Chile implies that 4 days a week the end time is around 4 pm, and around 1 pm the fifth day. Full time work is compatible with having pre-school age kids, but not when children are already in school.

Therefore, the scenario consistent with the results found is one in which small children's mothers could obtain childcare for these kids in public kindergartens (in schedules even compatibles with full time work), but they do not do it because there are no similar extended school hours for older children. The use of kindergarten or nurseries, then, do not set the mother free from childcare needs of older children during working hours, thus they could choose not to work and not to send their small children to formal childcare. The existence of an inflexible labor market, with very few part-time jobs (Rau, 2008) makes the need of childcare in extended hours a necessary condition to generate labor force participation on mothers who wish to get into the labor market. The presence of heterogeneous effects for the offered schedule (with dismissal time before or after 7 PM) supports this hypothesis.

In this scenario, the 4-7 program supply would increase the use of formal childcare of children less than 5 years of age. We find evidence of this effect. The program is then triggering the use of public daycare for small children and, at the same time, it is boosting labor force participation among women who weren't working at baseline.

## **7. CONCLUSSIONS AND RECOMMENDATIONS**

Labor force participation and employability of school-age children's mothers does not seem to be highly sensitive to the implementation of a childcare program in Chile. Modest effects on participation and employment are found. The program is used by mothers, but generates a significant (but not perfect) substitution effect with existing care.

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<sup>26</sup> This schedule is only for children who are not in first or second grade of primary school. For first and second graders, school ends at 1 pm.

We do find that the program had a more important effect within a particular sub-group: women who were not working at baseline, and had children who were not covered by the program (younger than 5 years of age). In this group, the offer of the program generates an increase in labor force participation of 1.7 percentage points and an increase in 1.2 months of labor market participation. These results could be explained as a result of the supply of public childcare programs in Chile that are concentrated around children younger than 5 years of age and available to women who are eligible to participate in the 4-7 program. Consistent with this hypothesis, a formal childcare increase on children between 0 and 5 years of age by six percentage points is found, which duplicates the existing level in the control group. Therefore, the availability of childcare for older children seems to encourage the use of preschool care among mothers of children from both age groups, which as a whole seems to solve the childcare issue. This would allow mothers to participate in the labor market more actively. In this sense, the absence of free care supplies on older children is what may be triggering mothers' non-participation.

The non-effect on groups of mothers already working, with older children could simply reflect substitution effects (these mothers were already working) among types of care. The non-effect on mothers who were not working and did not have children younger than 5 years of age, only reflects that affecting this group (with low labor force attachment) demands strategies which go beyond removing entrance barriers to labor market.

The measure in which the mothers' behavior is sensitive to program schedule is also studied. And it is found that effectively, the offer has a much more important effect (on employment and participation variables) when it is offered in schedules that allow mothers to complete the working hours, finishing at 7 PM. This clearly shows that the childcare supply modality is not innocuous, and is information that most childcare providers should take into account when designing childcare interventions aimed at increasing female labor force participation.



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**Table 1: Compliance Rates**

	Base Line [1]	Follow-up [2]	Participating in the program [3]	Participation Rate [4]=[3]/[2]
Control	973	852	222	0.26
Treatment	1,137	982	598	0.61
Total	2,110	1,834	820	

Note: Columns [1] and [2] indicate the amount of applicant who were surveyed at baseline and follow-up, respectively. The proportion of baseline observations collected at the follow-up is 0.88 for both groups. Column [3] indicates the number of applicants who felt chosen in the program. Column [4] reflects the amount of applicants who declare to participate in the program (take-up). Column [5] indicates the applicants' proportion that felt selected in the program

**Table 2: Balance between treatment and control group at baseline**

Variables	Average [1]	SD [2]	N° [3]	Treatment [4]	Control [5]	P-value T=C [6]
Applicant age	37.39	8.95	1833	37.40	37.38	0.968
Household per capita income	56799.88	41864.56	1820	55961.63	57767.09	0.359
Applicant monthly income	120047.90	98684.76	1517	121710.57	118086.62	0.476
Labor force participation rate	0.90	0.31	1786	0.90	0.90	0.854
Employment Rate	0.05	0.22	1601	0.05	0.05	0.939
Occupation Rate	0.85	0.36	1786	0.85	0.85	0.918
Daily Hours	8.65	9.26	1617	8.90	8.35	0.233
Worked Months 2011	6.99	4.91	1703	7.13	6.83	0.217
Have employment contract	0.49	0.50	1303	0.51	0.48	0.237
Years of Education	9.32	3.25	1778	9.35	9.29	0.709
Proportion without education	0.02	0.12	1787	0.02	0.01	0.542
Primary school proportion	0.39	0.49	1787	0.38	0.41	0.184
Secondary school proportion	0.53	0.50	1787	0.54	0.51	0.274
College (and/or further) education proportion	0.06	0.24	1787	0.06	0.06	0.905
Attending an educational institution	0.05	0.23	1811	0.05	0.05	0.975
Stress Index	7.09	3.86	1698	6.95	7.26	0.099
Applicants with children less then 5 years old	0.26	0.44	1834	0.27	0.26	0.590
Children signed up to the program by applicants	1.32	0.57	1834	1.30	1.34	0.116
Proportion that receives support in childcare	0.61	0.49	1478	0.62	0.60	0.584
Strata 1 works and children<5	0.20	0.40	1834	0.21	0.20	0.527
Strata 2 does not work and children<5	0.06	0.24	1834	0.06	0.06	0.943
Strata 3 works and children>5	0.62	0.49	1834	0.61	0.63	0.337
Strata 4 does not work and children >5	0.12	0.32	1834	0.12	0.11	0.478

Note: Baseline survey data collected from March to May 2012. The sample size varies according to the amount of data without observations for each respective variable. Income variable is measured in hundreds of Chilean pesos. Columns [1], [2] and [3] show the variable mean for the total of the sample, the standard deviation and the number of observations, respectively. Column [4] and [5] show the variable mean for the treatment and control group, respectively. Column [6] the p-value of the null hypothesis that Treatment=Control considering \*\* p<0.01, \*p<0.05.

Table 3: Attrition and Base Line Characteristics

	Follow-up [1]	Follow-up [2]	Follow-up [3]
Treatment	-0.0120 (0.0147)	0.00321 (0.0182)	0.0112 (0.0200)
Household per capita income		-3.21e-07 (2.61e-07)	-2.68e-07 (2.76e-07)
Applicant monthly income		-1.73e-07 (1.24e-07)	-4.97e-08 (1.37e-07)
Employment Rate		-0.115 (0.173)	-0.100 (0.208)
Declared worked hours		-0.000920 (0.000953)	-0.00132 (0.00101)
Worked Months in 2011		0.00382 (0.00218)	0.00219 (0.00248)
Have employment contract			-0.00946 (0.0215)
Attending an educational institution		0.0149 (0.0409)	-0.00813 (0.0442)
Self-confidence (adds score)			0.00469 (0.00258)
Children signed to program by applicants		0.0102 (0.0163)	0.0128 (0.0181)
Strata 1 works and children<5		-0.136 (0.174)	-0.0931 (0.200)
Strata 2 does not work and children<5		-0.0256 (0.0874)	0.127 (0.170)
Strata 3 works and children>5		-0.0997 (0.173)	-0.0542 (0.199)
Constant	0.876** (0.0108)	0.987** (0.178)	0.911** (0.207)
R2	0.000	0.011	0.013
N°	2,110	1,353	1,103

Note: Standard error in brackets.\*\* p<0.01, \*p<0.05.

**Table 4: Labor Market Outcomes**

<i>Panel A: Labor Force Participation</i>									
	Participates (at least a month May-Dec)			Participates (always)			Months Participating (May-Dec)		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Treatment	0.0314	0.0277	0.0247	0.0453+	0.0434+	0.0416+	0.328+	0.297+	0.241
N	1,823	1,767	1,722	1,823	1,767	1,722	1,823	1,767	1,642
R2	0.172	0.202	0.225	0.175	0.207	0.222	0.198	0.235	0.288
Average C	0.755	0.755	0.755	0.608	0.608	0.608	5.413	5.413	5.413
MDE	0.262	0.266	0.269	0.269	0.273	0.276	0.2736	0.2779	0.2882
<i>Panel B: Employment</i>									
	Works (at least a month May-Dec)			Works (always)			Worked Months		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Treatment	0.0375*	0.0339+	0.0315 +	0.0326	0.0327	0.0316	0.342+	0.310	0.205
N	1,823	1,767	1,722	1,823	1,767	1,722	1,823	1,767	1,642
R2	0.184	0.213	0.218	0.178	0.194	0.201	0.208	0.237	0.312
Average C	0.717	0.717	0.717	0.528	0.528	0.528	6.184	6.184	6.184
MDE	0.264	0.2681	0.2712	0.272	0.276	0.279	0.2736	0.2779	0.2882
<i>Panel C: Worked Hours and Income</i>									
	Worked Hours			Monthly Income per Hour (ln)			Monthly Income (\$)		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Treatment	0.462	0.517	0.476	0.0743	0.0707	0.0978+	6,149	5,794	9,575*
N	1,734	1,681	1,484	1,219	1,177	1,026	1,716	1,666	1,375
R2	0.161	0.184	0.186	0.115	0.152	0.232	0.160	0.217	0.399
Average C	27.76	27.76	27.76	6.905	6.905	6.905	124345	124345	124345
MDE	0.280	0.285	0.303	0.286	0.290	0.320	0.282	0.286	0.315
Controls Base									
Line		X	X		X	X		X	X
Lagged Variable			X			X			X

Note: Follow-up survey data collected from February to April 2013. The sample size varies according to the amount of data without observations for every respective variable. The table indicates the treatment's coefficient impact, considered as an offering of the 4-7 Sernam program. In all regressions, the strata and educational institutions interaction are controlled. The second column of each variable considers additional controls for 1) head of household applicant, 2) education years and 3) number of household children. The third column considers the controls 1) and 2) plus the value of the respective variable at baseline (lagged variable). Standard error in brackets. \*\* p<0.01, \*p<0.05, +0.10.

**Table 5: Expenses****Panel A: Annual Educational Expenses**

	School Monthly Fee		School Enrollment Fee		Uniform		Materials		Transport	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Treatment	5,711 (9,873)	5,219 (10,018)	4,278 (3,604)	3,808 (3,418)	12,033+ (5,876)	13,667* (5,885)	6,423* (2,917)	6,051* (2,508)	7,510 (7,816)	5,964 (7,904)
Base line Controls		X		X		X		X		X
N	1,755	1,701	1,776	1,721	1,767	1,711	1,758	1,704	1,769	1,714
R2	0.047	0.057	0.072	0.081	0.041	0.063	0.101	0.132	0.112	0.133
Mean C	46011	46011	15136	15136	90057	90057	48559	48559	74473	74473
MDE	0.278	0.283	0.277	0.281	0.277	0.282	0.278	0.282	0.277	0.282

**Panel B: Monthly Other Expenses**

	Food		Child Clothing		Female Clothing		Male Clothing		Other Expenses	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Treatment	-2,224 (3,807)	-2,375 (3,978)	-9,723 (10,288)	-9,003 (9,597)	1,397* (712)	1,590* (747)	12 (534)	103 (535)	530 (3,175)	221 (3,299)
Base line Controls		X		X		X		X		X
N	1,786	1,731	1,725	1,670	1,706	1,651	1,667	1,613	1,649	1,594
R2	0.130	0.152	0.013	0.018	0.080	0.096	0.100	0.107	0.145	0.176
Mean C	105799	105799	28544	28544	8338	8338	6076	6076	85182	85182
MDE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Note: Follow-up survey data collected from February to April 2013. The sample size varies according to the amount of data without observations for every respective variable. The table indicates the treatment's coefficient impact, considered as an offering of the 4-7 Sernam program. In all regressions, the strata and educational institutions interaction are controlled. The second column of each variable considers additional controls for 1) head of household applicant, 2) education years and 3) number of household children. . Standard error in brackets. \*\* p<0.01, \*p<0.05, +0.10





**Table 6: Childcare Use. School Age Children (Age>5)**

	Childcare		Formal Childcare		Free Formal Childcare		Paid Formal Childcare	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Treatment	0.063* (0.0266)	0.055+ (0.0275)	0.049** (0.014)	0.049** (0.016)	0.042** (0.013)	0.042** (0.014)	0.007 (0.006)	0.007 (0.006)
Follow-up Controls		X		X		X		X
N	1,811	1,756	1,811	1,756	1,811	1,756	1,811	1,756
R2	0.152	0.162	0.257	0.257	0.283	0.282	0.032	0.037
Mean C	0.513	0.513	0.096	0.096	0.085	0.085	0.012	0.012
MDE	0.273	0.277	0.299	0.304	0.3015	0.3066	0.365	0.3716

Note: Follow-up survey data collected from February to April 2013. The sample size varies according to the amount of data without observations for every respective variable. The table indicates the treatment's coefficient impact, considered as an offering of the 4-7 Sernam program. In all regressions, the strata and educational institutions interaction are controlled. The second column of each variable considers additional controls for 1) head of household applicant, 2) education years and 3) number of household children. Standard error in brackets. \*\* p<0.01, \*p<0.05, +0.10.

**Table 7: Results in Labor Market per Stratum**

	Participates (at least a month May-Dec)			Participates (always)			Months Participating (May-Dec)		
T*Works LB and >5	0,0277	0,0202	0,0208	0,0336	0,0269	0,0273	0,237	0,177	0,129
T*Works LB and <5	0,0446	0,0464	0,0469	0,0788	0,0882+	0,0888+	0,555*	0,589*	0,447
T* Does not Wo LB and <=5	0,0985	0,102	0,0374	0,172+	0,188*	0,133	1,177+	1,249*	1,965**
T* Does not Wo LB and >5	-0,00147	0,00469	-0,0024	-0,00564	-0,00727	-0,00469	0,0499	0,0389	-0,189
R2	0,172	0,202	0,225	0,176	0,208	0,223	0,199	0,236	0,291
Average C	0,76	0,76	0,76	0,61	0,61	0,61	5,41	5,41	5,41

  

	Works (at least a month May-Dec)			Works (always)			Worked Months (May-Dec)		
T*Works LB and >5	0,0352	0,028	0,0282	0,0198	0,0149	0,0149	0,174	0,114	0,0622
T*Works LB and <=5	0,0494	0,0521	0,0528	0,059	0,0672	0,0678	0,476	0,506	0,326
T* Does not Wo LB and <=5	0,0784	0,0863	0,0297	0,096	0,119	0,0748	0,746	0,859+	1,402*
T* Does not Wo LB and >5	0,0109	0,0112	0,00861	0,0287	0,0336	0,0457	0,264	0,238	-0,0345
Base Line Controls		X	X		X	X		X	X
Lagged Variable			X			X			X
N	1.823	1.767	1.722	1.823	1.767	1.722	1.823	1.767	1.642
R2	0,184	0,213	0,218	0,178	0,195	0,201	0,204	0,232	0,304
Average C	0,72	0,72	0,72	0,53	0,53	0,53	4,95	4,95	4,95

Note: Follow-up survey data collected from February to April 2013. The sample size varies according to the amount of data without observations for every respective variable. The table indicates the treatment's coefficient impact for the specified stratum, considered as an offering of the 4-7 Serman program. In all regressions, the strata and educational institutions interaction are controlled. The second column of each variable considers additional controls for 1) head of household applicant, 2) education years and 3) number of household children. The third column considers the controls 1) and 2) plus the value of the respective variable at baseline (lagged variable). a. Standard error in brackets. \*\* p<0.01, \*p<0.05, +0.10.

**Table 8: Childcare Use. Toddlers and Infants (Age <=5)**

	Childcare		Formal Childcare		Free Formal Childcare		Paid Formal Childcare	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Treatment	0.076 (0.064)	0.071 (0.067)	0.073* (0.030)	0.065+ (0.033)	0.057+ (0.030)	0.055+ (0.031)	0.007 (0.006)	0.007 (0.006)
Follow-up Controls		X		X		X		X
N	414	400	414	400	414	400	414	400
R2	0.136	0.166	0.110	0.130	0.131	0.149	0.066	0.098
Mean C	0.374	0.374	0.076	0.076	0.065	0.065	0.011	0.011
MDE	0.481	0.487	0.554	0.562	0.574	0.582	0.6727	0.682

Note: Follow-up survey data collected from February to April 2013. The sample size varies according to the amount of data without observations for every respective variable. The table indicates the treatment's coefficient impact, considered as an offering of the 4-7 Sernam program. In all regressions, the strata and educational institutions interaction are controlled. The second column of each variable considers additional controls for 1) head of household applicant, 2) education years and 3) number of household children. Standard error in brackets. \*\* p<0.01, \*p<0.05, +0.10.

**Table 9: Occupation Impact Estimation – Heterogeneous effects for program schedule**

*Panel A: Labor Force Participation*

	Participates (at least a month)	Participates (at least 4 months)	Participates (always)	Months Participating
T*Prog ends before 19 hrs	-0.00986	-0.0480	-0.0256	-0.165
T*Progr ends on or after 19 hrs	0.0294	0.0444+	0.0465+	0.349*
N	1,692	1,692	1,692	1,692
R2	0.168	0.186	0.168	0.192
Average C	0.755	0.664	0.608	5.413

*Panel B: Work*

	Works (at least a month)	Works (at least 4 months)	Works (always)	Months working
T*Prog ends before 19 hrs	-0.0225	-0.0769	-0.0807	-0.358
T*Progr ends on or after 19 hrs	0.0429*	0.0412+	0.0459+	0.345*
N	1,692	1,692	1,692	1,692
R2	0.177	0.177	0.174	0.197
Average C	0.717	0.604	0.528	4.950

*Panel C: Worked Hours and Income*

	Worked Hours	Monthly Income (\$)	Income per Hour (ln)
T*Prog ends before 19 hrs	-4.309	7,397	-0.0247
T*Progr ends on or after 19 hrs	1.047	6,424	0.342*
N	1,615	1,603	1,561
R2	0.156	0.149	0.185
Average C	27.76	124345	6.905

Note: There are estimations for randomization strata; In the first column, for all the sample; in the second one the sample is limited to 80% of the schools with “better evaluation” (not evaluated schools are also omitted)

\*\* p<0.01, \* p<0.05, + p<0.1

**Table 10: Self-perceived Stress Impact Estimation**

	Global Perceived Stress Scale in Chile		
	[1]	[2]	[3]
T*Works LB and >5	0.0340	0.139	-0.240
T*Works LB and <5	-0.304	-0.320	-0.183
T* Does not Work LB and <5	0.116	0.375	0.602
T* Does not Work LB and >5	-2.217**	-2.212**	-2.913**
N	1,731	1,676	1,557
R2	0.112	0.123	0.153
Promedio C	25.34	25.34	25.34

Note: Follow-up survey data collected from February to April 2013. The sample size varies according to the amount of data without observations for each respective variable. The table indicates the treatment impact coefficient, considered as an offering of the Serman 4-7 program. In all the regressions the strata interactions and educational institutions are controlled. The second column of each variable considers additional controls for 1) head of household applicant, 2) years of education and 3) number of children in the household. The third column considers the controls 1) and 2) plus the value of the respective variable in the Base Line survey (lagged variable). Standard error in brackets. \*\* p<0.01, \*p<0.05, +0.10.