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**FEMALE LABOR SUPPLY AND CHILD CARE
SUPPLY IN CHILE**

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Female Labor Supply and Child Care Supply in Chile¹

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Abstract

We use a specially designed survey to evaluate the effect of several public policies on female labor force participation in Chile. First, we estimate a self-selection model to find the determinants of female labor participation and wages. Our participation estimates show that schooling is highly positively correlated with participation and being married or having a partner is negatively correlated with participation. Also, we found that having a daycare center close to either their home or place of work and that the center's hours of operation match labor hours are positively correlated with participation. We simulate changes in these two variables: closeness and compatible hours, which can be subject to public intervention, and evaluate the effect on labor participation, poverty, household income and income inequality. All these policies have a positive impact on labor force participation, which could increase by eight percentage points. The per capita income of these women's households increases by and 8%, however there is almost no effect on poverty and inequality since most of the women who benefit from these policies come from middle class households.

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1. Introduction

The increase in the participation of women in the work force has become one of the most relevant characteristics regarding the Chilean labor market during recent years. According to CASEN (Socioeconomic Characterization Survey), in 1990 the female participation rate in the labor market was around 32.5%, rising to 38.8% in 1998 and 43% in 2006.

In spite of this increase, Chile finds itself in the group of Latin American countries with low female participation in the labor market. Countries like Colombia and Brazil show participation rates over 55% for women between 18 and 64. Meanwhile, Chile has a female participation rate of 45% for the same age group, which is only higher than in Panama (44%) and Costa Rica (42%). This is particularly notable since Chilean women have relatively high educational levels and Chile exhibits economic stability and growth.

There are several potential reasons to explain such figures, particularly that the low level of female participation may be related to cultural factors. Contreras and Plaza (2010) argue that traditional gender attitudes reduce female participation even for highly educated women. Discrimination in labor markets could also lead to lower participation, since women could earn a lower wage than men with the same human capital levels which would lead to decreased desire and gains from working.

At the same time, limited access to childcare services may prevent women from entering the labor market, especially for poorer women. In fact, the increase in participation rates has been accompanied by a drop in the birth rate giving rise to the argument that having fewer children, has allowed women to more easily enter into the labor market. Also, higher-income deciles show higher participation rates and smaller families, while lower-income deciles show lower rates of participation and larger families, which is further evidence for the link

between childcare and participation.

In principle, childcare is an important public policy by itself. There is growing evidence that investment in childcare has important and long lasting effects on individuals (Cunha and Heckman (2007), Berhman et. al. (2004) and (2007)). Influenced by this evidence, the Chilean government decided to increase the number of childcare centers, especially those available for poor families. From 2005 to 2007, there has been a 240% increase in the number of day care centers. Even though this policy has the primary objective of child skill formation, it could also be affecting mother's work decisions. However, several papers (Medrano (2009) and Encina and Martinez (2009)) have studied the effect of the increasing day care centers on labor participation in Chile, finding that it does not induce any change on participation for low-income women. One possible explanation for the no response to the day care expansion is that the new centers are not located near the potential work places or the women's home, or that the attending hour do not allow women to participate full time or even part time.

The objective of this paper is to investigate the relationship between several characteristics of day care and women's labor participation. We simulate the effects that different policies related to childcare could have on female participation in the labor market. We take advantage of a survey specially designed to evaluate the effect of daycare centers on female participation. This survey considers only women with children younger than six and collects information on several background variables, including education of parents, quality of education and desire to work. Our work will contribute to understanding the lack of effects on participation found in the previously mentioned research.

We model the participation decision and find that physical proximity to a daycare center increases the likelihood of labor participation, and that having day care centers being open for the same hours as typical work hours also

increases participation. Since these two variables are subject to public policy, we simulate changes in them for all women and recalculate participation rates, household income, poverty and inequality.

All policy simulations increase labor participation rates, and improve household income, but there are no important effects on poverty and inequality since most of the women who would take advantage of such policies are middle-class. This last finding complements the previously mentioned results of Medrano (2009) and Encina and Martinez (2009).

In terms of policy recommendations we show that location and attending hours of the day care centers are important and they affect labor participation, however for day care centers to have an impact of participation of poor women more characteristics must be taken into account.

This paper is structured as follows. After this introduction, the second section presents a review of the literature. The third section describes the data and the methodology, while the fourth section presents the estimation results. The fifth section shows the results of the simulations, followed by the conclusion.

2. Review of Literature

Female participation in the labor market has social as well as economic implications. Increases in female participation could be created by an important cultural change in society in the perception of the role of women in work. This cultural change, driven by the search for equality between men and women, is further developed in western countries and a gradual increase in the female rate of participation has been documented in such countries (Killingsworth and Heckman, 1986).

The research on the female labor supply in Chile has focused on the effects of education and children on participation. Pardo (1987) finds positive and significant correlations between the educational level of women and their rate of participation. Muchnik, Vial, Strüver and Harbart

(1991) find an inverse relationship between participation and the number of preschool age children, and find a positive relationship between the participation and the female head of household.

Contreras, Bravo and Puentes (2005) examine the causes that may have helped increase the female rate of participation by 10% from 1983 to 1997. Using a cohort strategy, they find that the woman's generation could be the most important effect on the increase in labor force participation. Age is the second most important variable and year effects are the least important. Additionally they find that having children older than six decreases the female rate of participation, although there is significant impact on participation by children under the age of six. Cultural factors also affect female labor participation, Contreras and Plaza (2010) document that concepts of machismo and role of women in the household tend to decreased female labor participation.

Globally, there has been a special focus on the effects of childcare on female participation. Some papers have used the actual cost of childcare to estimate the price elasticity of day care costs to labor supply, finding that there may not be a relationship between cost and participation (Blau and Currie, 2006).

Other papers have used changes in public policy to study the effects of increasing day care supply on participation. Duflo (2001) uses the increase in new centers for children to measure the impact on wages and schooling in the long run, finding a positive effect on both outcomes. Baker, Gruber, and Milligan (2005) also analyze the impact of the expansion in childcare subsidies in the USA. They find a positive impact employment and care quality.

Gelbach (2002) and Cascio (2006) analyze the effects of the provision of public and private childcare in the US particularly the impact of increased funding for public care between 1950 and 1990 on the employment rates of single mothers of children under 5. Both studies find a positive and significant effect on female labor supply for single mothers.

Berlinski and Galiani (2007) analyze the increase of preschools facilities in Argentina between 1991 and 2001. The authors estimate the causal effect of the program on maternal labor supply through a differences-in-differences strategy where they combine differences across region in the number of facilities built with differences in exposure across cohorts due to the timing of the program. They find a positive and significant effect of the program implementation on female labor supply. Lefebvre and Merrigan (2008), using difference in difference strategy, as well as Baker et al. (2005, 2008) find a strong positive impact of the universal childcare policy implemented in Québec, Canada on female labor supply for women with preschool-aged children.

Recently for the case of Chile, Medrano (2009) and Encina and Martinez (2009) have used the increase in public nurseries and day care centers that has been implemented by the government to study the effects on labor force participation. They find that, despite the extensive increase in day care centers, there is no significant effect on labor force participation for low-income women.

3. Data

3.1 Description of the Survey

To investigate the relationship between childcare and female participation, the National Women's Service in Chile (SERNAM) decided to conduct a survey, which was designed specifically to examine the impact of childcare services on women's decisions to participate in the labor market. As such, the investigation is focused on households with children under the age of six and in interviewing parents. The survey includes both urban population of Chile, excluding the extreme southern area, as well as the rural population of all regions. The coverage includes 82.8% of the population.

The questionnaire includes questions on variables not usually measured in Chilean household surveys, such as quality of education, information on parents, religion, use of day care centers, cost of day care center, the compatibility of child care and labor hours, closeness of day care center and other topics.

From a sample of 10,700 households, 2,670 were identified as having children younger than six and 1043 interviews were conducted.² Each household selected was cross-referenced to find the existence of children younger than six (as previously detected in the census) and the mother or guardian of the child/children was surveyed.

3.2 Sample statistics.

Table 1 shows a summary of the variables of the survey. The participation rate is 34% and there are important difference between women who work and those who do not work. Women who do not work tend to have more children and of different ages than women that do work .

Several questions were asked about day care centers, including cost which includes actual cost for children who are enrolled or percieved cost for familys that do not use day care. An important finding is that 23% of women say that they pay or would pay nothing for a day care center. This might seem a high percentage, but the government provides free day care centers and nurseries for impoverished families.³

² The sampling method was random, of compact conglomerates, and multi-staged. The sample was by getting minimum sample sizes for children younger than two and for households with children age two to five. The final data assigned to each interview includes a weighting factor that assures proper representation for the sample. The survey was done in the months of November and December of 1998 and the reply rate was 70%.

³ In 1998 there were few child care centers, but they were free of charge for most poor women. The quality of these nurseries was lower than that of the private ones. En la seccion % se discute sobre las politicas de los ultimos años.

Twenty-four percent of women send their children to a day care center, however there are important differences by labor status. Thirty-nine percentage of working mothers send at least one of their children to a day care center, where only 17% of non-working mothers send their children to day care.

[Insert Table 1]

Another question considered related to day care is perceived physical proximity of day care centers to home or place of work: this provides a measure of constraints that could be important for women when considering the work decision. Table 1 shows that 81% of women think that a day care center is close to their home or place of work with a higher percentage for working mothers (90%) than for non-working mothers (76%).

Finally, there is the question of compatibility between day care hours and labor hours; note that for women who do not send their children to a day care center or nursery, this is a perception.⁴ Seventy-three percent of women think that day care hours are compatible with a working day, with a difference of six percentage points for working and not working mothers.

One important difference between working and not working women is that 84% of the non-working women are married compared to 69% of the working mothers. The quality of education is higher for working women who are more likely to have attendend private schools and less likely to attend rural schools.⁵

Another important difference is that of the poverty rate and household income; in households where women work, income is higher and as a consequence their

⁴ For the closeness and compatibility questions, the variables include both actual observations and perceptions, depending on current and past use of day care centers, which is impossible to tell which women have better informed perceptions.

⁵ In Chile, the voucher system means that private primary and secondary schools can be funded with public funds but the schools cannot charge for enrollment. There are also public schools that compete with the voucher private schools for public funds. Finally private schools charge for enrollment but do not receive public funds.

poverty rate is lower. This implies that if women in poorer households start to work, there may be important changes in poverty and inequality.

4. Determinants of the female participation in the labor market and wages

In order to calculate the effects of different public policies on female labor force participation, poverty, household income and inequality, we have to estimate simultaneously the wage equation and the participation decisions of the women in the sample. The simultaneous estimation allows us to control for the selection bias produced by the fact that only a fraction of the women are employed.

The wage equation includes information on schooling, quality of education measured by the zone where women received their primary education and whether that education was private or public. We also include tenure in employment instead of potential experience. This is key because potential experience can be a very crude and non-accurate indicator for women's experience since women are more likely to interrupt their working cycle.

In the participation equation, several exclusion variables are included. We incorporate variables that could reduce the probability of female participation, such as the number of children to care for, especially children under the age of six. We also include costs of childcare, unavailability of care centers, and incompatibility of the workday with the day care center schedule. Among the factors that would be expected to increase female participation, we mention being a head of household and having a family or social network that permits the care of children and others. Other variables that could affect participation are religion and having a spouse. These variables do not affect wages, since they reflect costs to enter into the labor market, but do not affect human capital or the wage offered to individuals.

In the participation equation we include age and age squared because is more closely related to the life cycle. We also include information about the presence of parents in the house where the women grew up; these variables are informative about family backgrounds⁶.

The estimation of the determinants of female participation in the labor market and of market salaries must be made simultaneously in order to obtain unbiased parameters to utilize in the projections in the following (Heckman, 1974). We show three different specifications of the model estimation in order to study the robustness of the results.

4.1 Wage Equation

The results for the wage equation are presented in Table 2. The salary equation shows a positive correlation between human capital and labor income. We use three educational variables, the first identifying women with secondary education, the second for women who attended a vocational secondary school, and the third one for women who attended tertiary education, with primary/ no education as the comparison group. The results show that having a secondary education increases income, however a vocational secondary education does not provide a higher return. Tertiary education has a very high return almost doubling hourly wages.

We also include some quality measures of primary education. Attending a rural primary school lowers wages, but attending a privately managed schools increases wages. The comparison group is public schools.

We include tenure at their current employment and the results show a positive, but decreasing return to tenure. Regional variables are also included, showing

⁶ We also have information about parent`s education, but they were not statistically significant in most of our estimations.

some regional heterogeneity with the comparison group being Santiago with higher wages than the rest of the country.

We will use these estimates to predict the wage that a woman can obtain if she is induced to work by a change in day care policies.

[Insert Table 2]

4.2 Participation Equation

In Table 3 we show the variables that affect participation in the labor market. The dependent variable is defined as a dummy variable that is assigned the value 1 if the woman receives a wage and 0 if she does not. Among the explanatory variables we include: age; schooling levels; several variables that indicate the restrictions women face, such as the number of children in various age categories (0-1, 2-5, 6-10, 11-15 years of age) and the number of men and women older than 60 who live in the household. Additionally, a series of dummy variables were included which identify whether or not the mother is the head of the household, if she is married, religion, the existence of a day care near the place of residence or work, household income, compatibility of schedules with the day care center, presence of both parents in her childhood and regional variables.

The results of the estimation show that the profile of participation-age shows a concave relationship, however the age-squared coefficient is not statistically significant. The female rate of participation is positively correlated with schooling, but in this case vocational secondary education increases the likelihood of working and regular secondary education does not while having tertiary education also increases the likelihood of participation.

Likewise, women who declared themselves head of household have a greater probability of being employed. We also see that the more children in the household, the lower the rate of female participation. The negative effect of having children five and younger is not statistically significant, due to the

selection of the sample in which all the women have children in this age range. The only difference found is the presence of older children, which affect significantly labor participation. The presence of men over 60 does not affect the participation decision, but the presence of women over 60 increases participation, which could imply the existence of a substitution effect of external day care with internal day care at the household level. Religion does not turn out to be a statistically significant explanatory variable, but growing up without her father in the household makes a woman more likely to work.

Several variables related to day care centers are also included. We have cost/expected cost of day care and find that women who do not pay or expect day care to be free do not have a higher probability of working; at the same time the actual or perceived cost does not affect participation. These results are very important, because it shows that the cost of the day care center does not affect the participation decision, although this may not accurately depict the entire situation since it includes both actual and perceived cost. As we showed previously, 23% of women say they do/would have no cost, but of women who utilize childcare, 37% do not pay. Meanwhile only 18% of women who do not use childcare estimate that there would not be a cost, showing that the perceived cost could be higher than what actually is. The measurement error in this variable could lead to the results we observe, which is why we use a specification without the actual/perceive cost so this potential problem does not contaminate the other coefficients.

[Insert Table 3]

We also use other perceived and actual characteristics, such as closeness and compatibility of the hours. We find that both variables are positively correlated with participation. Again, this could be an actual observation or an expected

situation, but it shows that changing any of those could lead unambiguously to higher participation.⁷

Table 3 shows relevant conclusions that can be used for the design of policies to facilitate female participation. All else held constant including the cost of day care, women increase their participation if: (i) there is a day care center near their place of residence or work; and (ii) this center has the same schedule as her employment. We will consider changes in all these variables and measure the effects on participation, poverty, income level and income inequality.⁸

5. Simulating the effect of different public policies

Several policy analysis can be done using the previous estimations, for instance, we could simulate the effect of increasing years of schooling on participation and wages, we will focus on policies related to day care centers for two reasons: First, the Chilean Government is expanding the number of day care centers exponentially, which makes more relevant to study the effect of these policies on labor participation, second, day care center policies can be modify in the short run, as the actual expansion shows, while schooling polices are of long term evaluation.

In this section we estimate the effect of three different policies. First we allow all women to have a close day care center (policy 1). Second, we eliminate all incompatibilities between the functioning hours of the day care centers and the

⁷ In the case of closeness and compatibility an endogeneity problem can emerge if perceptions are altered by the fact that women enter into the labor market. If this occurs, then the estimation would not lead to unbiased parameters. We do not have a way to control for that with the current data, however, 86% of the women in this survey worked at some point in their lives, which makes the dataset more likely to have a better prediction that would mitigate the potential endogeneity problem.

⁸ The correlations coefficient of the simultaneous model is not statistically significant, which implies that we could estimate both equations separately.

usual length of the labor day (policy 2) and finally we simultaneously apply both policies 1 and 2 (policy 3).⁹

We assume that all women who want employment will be employed and that women will earn a wage equal to the one predicted by the wage equation, e.g. that possible general equilibrium effects are ignored.

These extreme assumptions will give us an upper bound on the effects of policies on labor participation, since it is almost impossible to reduce all of the limitations of day care centers and schools and/or too costly. For that reason we calculate the effect of similar policies but instead of assuming they affect all women in the same way, the policies affect only half of them. For instance, instead of providing day care in close proximity to all women who do not have it (policy 1), we randomly choose half of them to receive the benefit and then we recalculate the effects on participation, income, poverty and inequality. We follow the same procedure with policy 2 and policy 3. We call these policies “half-policies”.

Table 4 shows the change in the participation rate for all of these policies.

[Insert Table 4]

All policies have a positive effect on participation. In the case of the complete policies, the participation rates increase by 6%, for the second policy the increase is 2% and the combination of both policies could increase participation rate by 8%. In the case of half-policies the increments are of 3, 1 and 4 percentage points respectively.¹⁰ All these changes in participation are important given the low level of participation in Chile and how slowly it has increase, for instance, from 1998 to 2006, the participation rate increased by 4

⁹ As mention in previous sections, we do not have an accurate measure of distance or hours of the day care center, however the perceived cost for women is relevant to public policy design, since it implies providing better information if the perceptions of women are wrong or if actually increasing the numbers and hours of daycare centers if their perceptions are closer to reality. At the same time, given some potential endogeneity problems describe in the previous section, the simulations are evidence of a strong correlation of the variables.

¹⁰ We calculate a different means test which shows that all the increments are significant. We performed a bootstrap of 200 repetitions with replacement to perform the test.

percentage points. Our calculations show that the same change can be produced with a combination of policies that affect half of the potential beneficiaries.

In terms of targeting poor households, all policies have little or no effects on poverty, which implies that these policies benefits mainly non-poor households.

¹¹ This can also be observed since the mean income of households who benefit is above the poverty line. ¹² Policy 1 is the one with the worst targeting since the benefited women have the highest income. In general the change in income is range from 6 to 8%.

Statistically, all the policies decrease inequality when measured by the Gini index, but when we use the Theil index the complete policy 1 increases inequality and the rest of the policies have no significant effect on inequality. Despite the fact that some changes in inequality are statistically significant they are very small and almost irrelevant economically.

The results of these simulations show that policies that focus on day care centers will tend to increase labor participation and income for women who enter the work force, however, most of these policies attract middle-income families and the effects on poverty and inequality are very limited.

The results of the simulations are in line with the results found by Medrano (2009) and Encina and Martinez (2009), which indicate that the increasing number of day care center for poor families had not increased labor force participation.

The child care policies have as an objective the development of the children, and even though they could have an effect on labor participation, the evidence shows that that occurs only for middle income women, however we do not study medium and long term effects on participation, which could be important.

¹¹ Policies 1 and 3 statistically decrease poverty.

¹² The poverty line is equivalent to \$37,889 per capita.

Chilean Day Care Policy

In 2005 the Chilean government started an aggressive plan to increase the number of day care centers; this policy was induced by findings in psychological and economic literature that have shown that early child care has powerful and lasting effects on individuals (Cunha and Heckman 2007, Berhman et. al. 2004 and 2007). The government not only increased the number of day care centers, but also promoted the attendance of pre-school centers for children between four and five years old. The budget for those items increased over the next four years by 200.000 million pesos or 363 million dollars.¹³ Our paper shows that these kinds of policies focused on children could also have side effects on women's labor participation, which increases the benefits of the policies. Our simulations show that close to 40,000 women may enter the work force because of the policy,¹⁴ which could lead to an 8% increase in per-capita household income.

These results show set up the expectations of these policies for labor participation, which has always been a concern in Chile given the relatively low female participation.

6. Conclusions

We examine the effects of three different policies on female labor participation, income and inequality. The three policies considered are, i) day care centers close to households or places of employment for women with children under six; ii) increasing the compatibility between the hours day care centers are open and labor hours; and i) and ii) together.

All these policies were selected using a special survey designed to measure the factors related to childcare that affect labor participation. The participation

¹³ Dirección de Presupuesto (2009).

¹⁴ In the case of the half policy with closeness and compatibility.

equation that we estimate shows clearly that these policies could be highly correlated with an increment in female labor force participation.

Our calculations of the policies are extreme because we create a situation where all women benefit fully from the policies. Since those policies are almost impossible or extremely costly to implement, the results can be interpreted as an upper bound of the policy effects. To model a situation closer to reality, we also simulate half-policies, in which we assume that only half of the women would benefit. All of the policies increase labor participation and this range varies from 1-8% showing that the adequate provision, both closeness and compatibility, of day care centers could increase labor force participation of women.

The women who take advantage of the benefit would come from middle-income households, which translate in a very small change in total poverty and a small decrease in inequality rates. The mean increase in household per capita income goes from 6 to 8%. Setting the expectations to the effect of these policies for children that could affect female labor force participation.

The results of the simulations are in line with the results found by Medrano (2009) and Encina and Martinez (2009), which indicate that the increasing number of day care center for poor families had not increased labor force participation.

References

- Baker, Michael, Gruber, Jonathan and Milligan, Kevin. (2005). "Universal childcare, maternal labor supply and family well-being." *NBER Working Paper*, 11832.
- Berhman, Jere, Cheng Yingmei and Todd, Petra. (2004). "Evaluating Preschool Programs When Length of Exposure to the Program Varies: A Nonparametric Approach." *Review of Economics and Statistics*, 86(1): 108-132.
- Berhman, Jere, Glewwe Paul. and Miguel, Edward. (2007). "Methodologies to Evaluate Early Childhood Development Programs." *The World Bank, Doing Impact Evaluation Series, N° 9, Poverty Reduction and Economics Management, Thematic Group on Poverty Analysis, Monitoring and Impact Evaluation*.
- Berlinski, Samuel and Galiani, Sebastián, 2007. The effect of a large expansion of pre-primary school facilities on preschool attendance and maternal employment. *Labour Economics* 14, 665–680.
- Blau, David and Currie, Janet. (2006). Who's minding the kids? Preschool, day care, and after school care. In: Welch, F., Hanushek, E. (Eds.), *The Handbook of Education Economics*. North Holland, Amsterdam, Elsevier Science.
- Cascio, Elizabeth (2006). "Public preschool and maternal labor supply: Evidence from the introduction of kindergartens into american public schools." *NBER Working Paper*, 12179.
- Contreras, Dante and Plaza, Gonzalo. (2010). "Cultural Factors in Women's Labor Force Participation in Chile." *Feminist Economics*. 16(2): 27-42.
- Contreras, Dante, Bravo, David and Puentes, Esteban. (2005) "Female labour force participation in greater Santiago, Chile: 1957-1997. A synthetic cohort analysis." *Journal of International Development*, 17(2): 169-186.
- Cunha, Flavio. and Heckman, James. (2007). "The technology of Skill Formation". *American Economic Review*, 97(2): 31-47.
- Dirección de Presupuestos (2010). Informe de la Finanzas Públicas. Dirección de Presupuesto, Ministerio de Hacienda, Gobierno de Chile.
- Duflo, Esther. (2001). "Schooling and labor market consequences of school construction in Indonesia: Evidence from and unusual policy experiments." *American Economic Review*, 91(4): 795-813.
- Encina, Jenny and Martinez, Claudia. (2009). "Efecto de una mayor cobertura de salas cuna en la participación laboral femenina: Evidencia de Chile." *Series documentos de Trabajo N°303*, Department of Economics, Universidad de

Chile.

Gelbach, Jonah. (2002). "Public education for young children and maternal labor supply." *The American Economic Review* 92: 307–322.

Hekman, James. (1974). "Sample Selection Bias as a Specification Error." *Econometrica*, 47(1): 153-161.

Killingsworth, Mark. and Heckman, James. (1986). "Female Labor Supply: A Survey." *Handbook of Labor Economics, Vol.1*. In: O. Ashenfelter, R. Layard and D. Card (Eds.). North Holland, Amsterdam, Elsevier Science.

Medrano, Patricia. (2009). "Public Day Care and Female Labor Force Participation: Evidence from Chile." *Series documentos de Trabajo N°306*, Department of Economics, Universidad de Chile.

Muchnick, Eugenia, Vial, Isabel, Strüver, Andreas, and Harbat, Bettina. (1991). "Oferta de Trabajo Femenino en Santiago." *Cuadernos de Economía*, 28(85): 463-489.

Pardo, Lucía. (1987). "Participación de las mujeres en la Fuerza de Trabajo: Tendencias y Características." *Revista Economía y Administración*, 62:27-50.

Tables

Table 1: Descriptive Statistics

	whole sample	women that work	women that do not work
Number of Children less than 3 years old	0,53	0,53	0,54
Number of Children Between 3 and 5 years old	0,77	0,80	0,76
Number of Children between 6 and 10 years old	0,55	0,45	0,60
Number of Children between 11 and 15 years old	0,36	0,34	0,37
Does/Would not pay for day care	0,23	0,23	0,23
Children go to day care	0,24	0,39	0,16
Day care close by	0,81	0,90	0,76
Attending hours compatible	0,73	0,76	0,72
Mother has spouse	0,80	0,69	0,86
Chronic Disease	0,05	0,04	0,05
Protestant	0,17	0,14	0,18
Catholic	0,77	0,79	0,76
South	0,22	0,18	0,24
Central	0,17	0,19	0,16
Santiago	0,47	0,50	0,46
North	0,08	0,08	0,08
Went to a primary private school with no charge	0,12	0,13	0,11
Went to a primary private school with charge	0,11	0,14	0,09
Went to a primary rural school	0,12	0,09	0,13
Poverty	0,39	0,23	0,48
HH Income in Pesos (460 pesos per dollar in 1998)	313.937	436.545	249.498

Note: Authors' Calculations based on SERNAM survey

Table 2: Wage Equation

Variable: Log of Hourly Wage	Model 1	Model 2	Model 3
Secondary education	0,277*** (0,015)	0,277*** (0,015)	0,279** (0,014)
Secondary vocational education	0,194 (0,160)	0,195 (0,153)	0,200 (0,143)
Tertiary education	1,080*** (0,000)	1,080*** (0,000)	1,090*** (0,000)
Primary Private No Charge	0,265** (0,026)	0,265** (0,026)	0,264** (0,027)
Primary Private	0,269** (0,026)	0,270** (0,025)	0,268** (0,026)
Primary Rural	-0,291** (0,044)	-0,290** (0,043)	-0,293** (0,040)
South	-0,325*** (0,006)	-0,327*** (0,004)	-0,313*** (0,005)
Central	-0,389*** (0,000)	-0,390*** (0,000)	-0,387*** (0,000)
North	0,043 (0,780)	0,043 (0,776)	0,043 (0,773)
Tenure	0,005*** (0,001)	0,005*** (0,001)	0,005*** (0,001)
Tenure Squared	-1,8e5** (0,014)	-1,8e5** (0,013)	-1,8e5** (0,013)
Constant	4,260*** (0,000)	4,250*** (0,000)	4,230*** (0,000)

Note: Authors' Calculations based on SERNAM survey; Standard errors in parentheses

Significant at 10%, ** significant at 5%, *** significant at 1%

Table 3: Participation Equation

Participation	Model 1	Model 2	Model 3
Age	0,076** (0,045)	0,077** (0,039)	0,076** (0,041)
Age Squared	-0,001 (0,124)	-0,001 (0,110)	-0,001 (0,115)
Secondary education	0,063 (0,609)	0,061 (0,613)	0,082 (0,488)
Secondary vocational education	0,374** (0,018)	0,373** (0,017)	0,391** (0,011)
Tertiary education	0,786*** (0,000)	0,771*** (0,000)	0,799*** (0,000)
Head of HH	0,479*** (0,006)	0,483*** (0,005)	0,480*** (0,005)
Number of children less than 3 years old	0,060 (0,516)	0,055 (0,552)	0,049 (0,593)
Number of children between 3 and 5 years old	0,105 (0,243)	0,102 (0,252)	0,096 (0,278)
Number of children between 6 and 10 years old	-0,224*** (0,002)	-0,229*** (0,001)	-0,226*** (0,001)
Number of children between 11 and 15 years old	-0,109*** (0,199)	-0,108*** (0,187)	-0,099*** (0,218)
Number of females 60 years old or more	0,289* (0,054)	0,279* (0,061)	0,270* (0,056)
Number of males 60 years old or more	-0,001 (0,996)	-0,008 (0,963)	
Does not pay for day care	-0,053 (0,680)	-0,047 (0,688)	
Payment to day care	0,000 (0,972)		
Attending hours of day care center are compatible	0,189* (0,092)	0,199* (0,072)	0,184* (0,085)
Day care center close	0,634*** (0,000)	0,632*** (0,000)	0,661*** (0,000)
Has spouse	-0,633*** (0,000)	-0,633*** (0,000)	-0,624*** (0,000)
Chronic Illness	-0,006 (0,980)		
Protestant Religion	-0,209 (0,331)		
Catholic Religion	-0,132 (0,473)		
Non labor income	0,000 (0,739)		
Father absent	0,383*** (0,047)	0,385*** (0,041)	0,352*** (0,057)
Mother absent	-0,198 (0,784)	-0,197 (0,784)	
South	-0,162 (0,200)	-0,166 (0,170)	
Central	-0,036 (0,787)	-0,020 (0,882)	
North	-0,024 (0,889)	-0,024 (0,891)	
Constant	-2,160*** (0,003)	-2,320*** (0,000)	-2,380*** (0,000)
athrho	0,233 (0,291)	0,240 (0,230)	0,264 (0,218)
Insigma	-0,386*** 0,000	-0,386*** 0,000	-0,382*** 0,000

Authors' Calculations based on SERNAM survey; Standard errors in parentheses

Significant at 10%, ** significant at 5%, *** significant at 1%

Table 4: Policy Effects

	Complete Policies				Half Policies		
	Base Line	Policy 1	Policy 2	Policy 1+2	Policy 1	Policy 2	Policy 1+2
Participation Rates	0,346	0,411	0,367	0,431	0,379	0,356	0,389
Poverty	0,392	0,390	0,392	0,391	0,391	0,392	0,391
Theil	0,348	0,348	0,348	0,348	0,348	0,348	0,348
Gini	0,454	0,453	0,454	0,453	0,454	0,454	0,453
Income Before		50.718	46.049	49.573	50.567	45.665	49.638
Income After		53.680	49.981	52.677	53.537	49.556	52.799

Authors calculations based on previous estimates

Policy 1: Closeness of day care center

Policy 2: Compatibility of attending hours and working hours

Policy 1 + Policy 2: Both policies at the same time