



DEPARTAMENTO DE ECONOMÍA

SDT 256

LABOR MARKET PARTICIPATION OF WOMEN IN CHILE 1958-2003

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Santiago, Ago. 2007

**Serie Documentos de Trabajo
N 256**

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Abstract

The purpose of the study is to analyze the trends in the labor market participation of women between 1958 and 2003. Two main sources of primary data are used: the Employment Survey of the University of Chile, which covers the city of Santiago in the 1958-2003 period, and the CASEN socioeconomic household survey, which covers the whole country between 1987 and 2003.. The labor market participation rate of women remained relatively stable during the 1960s and 1970s, and subsequently increased by around 15 percentage points between the mid-1980s and the start of the present century. Education and fertility are identified as factors related to the trends in the labor market participation of women rate. Nevertheless, the most significant increases in labor market participation occur in the context of the economic growth from the mid-1980s and its impact on the availability of employment, job characteristics and salary levels. In addition, preferences or attitudes opposed to the labor market participation of mothers seems to be a significant factor in explaining the relatively low labor market participation of women in Chile.

Keywords:

Labor market, women.

Labor Market Participation of Women in Chile 1958-2003

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* This study forms part of a research project on family-related issues in Chile, sponsored by the Kellogg Foundation. This study benefited from discussions and commentaries in seminars of the project. The comments of Samuel Valenzuela were particularly important for improving on the earlier version. Nevertheless, sole responsibility for the content of the present study lies with the author. . A spanish version can be found in: J Samuel Valenzuela, Eugenio Tironi y Timothy Scully (eds): *El Eslabón Perdido. Familia, modernización y bienestar en Chile*. Taurus, Santiago, 2006.

Introduction and Summary

The purpose of the study is to analyze the trends in the labor market participation of women between 1958 and 2003. Two main sources of primary data are used: the Employment Survey of the University of Chile, which covers the city of Santiago in the 1958-2003 period, and the CASEN socioeconomic household survey, which covers the whole country between 1987 and 2003. The first source of information provides a reasonable approximation of the trends in the variable on a country level, as may be gauged from a comparative analysis with the Population Censuses.

The labor market participation rate of women remained relatively stable during the 1960s and 1970s, and subsequently increased by around 15 percentage points between the mid-1980s and the start of the present century. Two types of trends converge in this aggregate result. On the one hand, the participation of younger women drops due to the extension of the schooling cycle. On the other hand, the participation of women between 25 and 60 years starts to grow slowly from the end of the 1960s, gathers pace from the mid-1980s and finishes up the period with an accumulated growth of around 20 percentage points. Notwithstanding this progress, the labor market participation of women in Chile remains low compared to other countries with a similar level of economic development.

In this study, education and fertility are identified as factors related to the trends in the labor market participation of women rate. Nevertheless, the most significant increases in labor market participation occur in the context of the economic growth from the mid-1980s and its impact on the availability of employment, job characteristics and salary levels. In addition, preferences or attitudes opposed to the labor market participation of mothers seems to be a significant factor in explaining the relatively low labor market participation of women in Chile. This hypothesis needs to be corroborated through a comparative analysis of the determinants of the labor market participation of women.

There are complex interrelations labor market participation, education, fertility, preferences and economic growth. For this reason, the term “related factors” is used rather than determinant factors of the labor market participation of women. A rigorous cause effects analysis goes beyond the scope of the present study, as well as beyond the limits of the available data.

Women with higher levels of education have higher participation levels. The national data show a labor market participation differential of around 20 percentage points among women with higher education with respect to women with up to secondary education; likewise, between the latter and women with only primary education, the participation gap approaches 12 percentage points. These results correspond to the 1987-2003 period and control for the effect of other variables.

The higher levels of schooling can contribute to higher labor market participation in various ways. These include higher salary levels which make the labor market participation decision more attractive. In the 1987-2003 period the salary levels of women with higher education is more than double that of women with secondary education, who in turn earn 40 percent more than women with only primary education. Higher schooling levels are also related to lower fertility rates and to more favorable attitudes to women working, which are factors that contribute to a higher labor market participation of women.

There is also a composition effect. This is because women with higher levels of education participate more in the labor market, and during the course of the period, their relative participation increases.

The long-run statistics indicate a well-defined relationship between the labor market participation of women and the number of children. Women without children had a high labor market participation during the period under analysis, at around 70 percent (excluding domestic help workers who live in the place of work). Meanwhile, women with one or two children have an average labor market participation rate of around 40 percent, while those with three or four children have a corresponding rate of around 30 percent.

If the 1958-62 period is compared to the 1998-2003 period, the participation rate of the group of women without children increases by around 20 percentage points; those with one or two children, by 22 points; and those with three or four children, by 26 points. Thus, the participation gaps among women with different numbers of children declines marginally during the period, although a marked relationship remains between labor market participation and fertility.

Two important results characterize the relationship between labor market participation and number of children of the woman by marital status. First, the effect of children on labor market participation

is significantly higher among women with partners (married or cohabiting) than in the case of women without a partner (single or separated). This result is robust to controls for other variables, such as the number of children or the family income level net of the contribution of the woman, and reflects the role of negative preferences with respect to the labor market participation of women with a partner. Second, a bias is identified in the effect of children on the labor market participation of the aggregate of women, since groups with different marital status compositions are being compared. In the measure to which there is a greater incidence of women without partners among the group of women without children, the differences in participation with respect to women with children are influenced by the effect of the marital status, which overestimates the effect of children on labor market participation.

The role of preferences is revealed in a nationwide public opinion study. Over 60 percent of all respondents in the country express negative attitudes regarding mothers working (negative or moderately negative index), since they consider that the place of women is taking care of the home and family, and that family life suffers if a woman works out of the house. The opposition to mothers working increases as the educational level of the respondents goes down: around 79 percent of people with 0-3 years of schooling have negative opinions on the issue, compared to 44 percent of people with 13 years of schooling and over. This result is congruent with the hypothesis that preferences are one of the links between schooling and the labor market participation of women.

The significant increases in participation in recent decades take place in the context of an economy that has more than doubled its per capita income, producing an ample supply of new job offers and increases in real salaries exceeding 50 percent, which are factors that contributed to the increases in the labor market participation of women. Additionally, there has been a growth in office and services jobs, which are free from the stigmas that have been postulated as a factor working against the employment of married women in the manufacturing and other production sectors.

One factor that seems to discourage the labor market participation of women is the predominance of jobs with long work schedules, which is not very appropriate for incorporating mothers into the labor market. In fact, the mean work schedule of women has remained at around 44 hours per week throughout the over four decades covered by this study. The inertia of hiring practices explains that

situation, as they have not needed to change given the predominantly negative preferences regarding the labor market incorporation of married women.

This study also explores the effect of life cycle on the labor market participation of women. A U-shaped behavior is identified in the case of women with primary or secondary education between 24 and 49 years of age. Thus, the highest participation rate occurs between 20 and 24 years of age, and then drops to a minimum level, which occurs between 25 and 29 years of age for women with primary education, and between 30 and 34 years for those with secondary education. The participation rate recovers later, although not to its initial level, and then declines definitively between 50 and 54 years of age. The pattern described is congruent with the temporary leave of part of the cohort in childrearing age. Meanwhile, women with higher education have a participation rate that grows moderately over time, increasing by around 9 percentage points between 25-29 and 40-44 years of age.

The incorporation of women into the labor market has effects on household income and composition. First, women entering the labor market increase the number of workers per household, and therefore family income. Between 1987 and 2003, the number of individuals working per household increased by around 8 percent (1.45 in 2002 compared to 1.34 in 1985), which is essentially due to the incorporation of women into the labor market. Second, and more importantly, the increased labor market participation of women contributes to the formation of households at a rate faster than the growth of the population. According to the information provided by the population censuses, between 1992 and 2002 the number of households in the country grew by 25.7 percent, which practically doubles the population growth rate for the period (13.3 percent). Its counterpart is a reduction in the average number of individuals living in homes. The determinants of this process are the greater economic independence of families during that decade, which is supported by the incorporation of women into the labor market, as well as a social housing policy targeted at the large-scale provision of housing solutions

This study is organized into four sections. Firstly, the data and the main trends of the labor market participation of women throughout the period are described. The second section looks in detail at the characteristics of the labor market participation of women in Chile, as well as its relationship with developments in education, fertility, preferences, economic growth, life cycle and household structure. The third section presents a multivariate statistical analysis that relates the labor market

participation of women more formally with its related factors. The last section contains a summary and the conclusions of the study.

1. DATA AND TRENDS

This study is based on the information provided by the two most important socio-economic surveys that are carried out periodically in Chile: the Employment Survey of the University of Chile and the National Socio-economic Characterization Survey (CASEN). The University of Chile survey provides a long-run series, since it covers the 1958-2003 period, but it only covers the Greater Santiago population, which represents around 40% of the total population of the country. Meanwhile, the CASEN survey provides information for the entire country from 1987 onwards.¹

Are the labor market participation data provided by the Employment Survey representative of the Chilean reality? To examine this point, the Population and Housing Censuses, which are the only source of long-run nationwide socioeconomic information, may be taken for reference purposes.² A comparative analysis indicates that the labor market participation rate recorded by the Employment survey of the University of Chile surpasses the rate provided by the Population Censuses (Table A-1, Appendix) by around 10 percentage points. This disparity is due to differences in the type of questions used in both measurements, as well as their different geographic coverage. However, the trends on the labor market participation of women are relatively similar between both sources. Thus, the data of the Employment Survey of the University of Chile may be used to approximate the trends in the variable on a national level.

The CASEN survey contains income, employment, education, health and housing modules. These are the source of most of the data on poverty, income distribution, access to social services and other socioeconomic variables that are used in Chile. It is a large-scale survey (around 60,000 households in its last version), which is nationally and regionally representative, and is carried out every two or three years.

¹ The National Statistics Institute (INE) has produced a consistent series of statistics since 1986. The advantage of the University of Chile employment survey is its long time coverage.

² However, they are not appropriate information sources for the purposes of this study, since they are very spaced out over time (every 10 years) and microdata is only available for the last two versions.

Table 1.
Labor market participation of women, Santiago 1958-2003
 (participation in % out of total population for each age bracket)

Period	Age bracket				
	15-19	20-24	25-39	40-60	15-60
1958-62	31.8	49.1	41.0	32.7	38.2
1963-67	30.3	47.9	40.2	31.7	37.0
1968-72	21.7	49.6	44.5	33.9	38.2
1973-77	18.3	46.5	43.5	32.8	35.8
1978-82	15.2	46.7	46.0	34.8	37.4
1983-87	14.9	47.4	50.9	36.2	40.4
1988-92	13.3	48.5	51.9	41.4	42.6
1993-97	14.7	49.7	55.7	47.3	46.7
1998-03	15.6	48.0	60.5	52.1	50.1

Source: Author calculation from the Employment Surveys of the University of Chile, respective years

Table 2.
Labor market participation of women, Chile 1987-2003
 (participation in % out of total population for each age bracket)

	15-19	20-24	25-39	40-60	15-60
1987	12,2	40,6	40,0	29,1	32,1
1990	12,9	41,0	43,6	35,1	35,9
1992	16,4	43,9	44,8	37,3	38,2
1994	15,4	44,1	45,7	40,5	40,0
1996	12,6	43,1	48,7	42,4	40,8
1998	12,8	44,1	49,8	41,5	40,9
2000	12,5	43,7	53,6	47,3	44,4
2003	13,5	47,1	50,1	50,7	47,6

Source: Author calculation from the CASEN survey, respective years

The labor market participation rates of women are presented in Tables 1 and 2 for Universidad de Chile and Casen surveys, respectively. The statistics are provided for women aged between 15 and 60 years of age, disaggregated by ages. In the case of the University of Chile, the results are presented as five-yearly averages, using the June measurement for each year.³ In the case of the CASEN survey, the results are presented for each year in which it is carried out.

Thus, since the 1980s the percentage of women that participate in the labor market has grown appreciably, after having been relatively stable during the two preceding decades. According to the University of Chile data, the labor market participation of women remained at an average level of around 37 percent between 1958 and 1980, and then started to grow steadily until reaching 50 percent by the beginning of the present century. Meanwhile, the CASEN data reports that the labor market participation of women nationally increased by around 15 percentage points between 1987 and 2003.

A look at the labor market participation rate by ages indicates that the aggregate trend is a result of processes that operate in opposite directions. On the one hand, the labor market participation rate increased by around 20 percentage points during the 1958-2003 period for women in the 25-39 and 40-60 age brackets. The participation rates of these groups started to increase by 1970, then increased by 10 percentage points in the next two decades, and then grew another 10 percentage points in the 1990s. The factors behind this secular trend include higher levels of schooling, the drop in the fertility rate, economic growth, and the change in the social norms and individual preferences.

Meanwhile, the extension of the educational cycle in recent decades has reduced the labor market participation of younger women. In the case of the 15-19 year old group, the labor market participation rate dropped by half, from a level of around 30 percent in the early 1960s to an average of 15 percent by the late 1990s. Women aged between 20 and 24 have had a relatively stable participation rate due to the balance of the factors pushing towards a higher participation rate and those pushing in the opposite direction.

³ The month of June is used because that is the only month which includes questions on employment income, which is used later on in the study.

The trends described occur over four decades, which are characterized by significant economic and social transformations in Chile (Table A-2). The 1960-1973 period began firstly with a conservative government (Alessandri), was followed by a centrist administration (Frei Montalva) and finished with a socialist government (Allende). Market protection and regulation increased during that period and average per capita income grew by a modest 1.3%. Between 1973 and 1989, the country was ruled by a military dictatorship, which forcefully imposed structural reforms that modified the development pattern of the country towards a trade-oriented free market economy. However, the economy only succeeded in growing by 0.4% during that period due to adverse macroeconomic shocks. Democracy returned to Chile and economic efficiency was matched with social stability in the 1990-2003 period, with a high average per capita economic growth rate of 4.5 per cent. Together with the economic and political development, there have been significant changes in social indicators: the average schooling of women rose from 6.1 to 10.8 years; the infant mortality rate dropped from 99.8 per thousand to 11.2 per thousand, and the average number of children per mother declined from 4.85 to 2.79.⁴

Notwithstanding the developments in recent decades, the labor market participation of women in Chile remains low by international standards. Upon comparing household surveys, the labor market participation of women in Chile is lower than that of the other more economically developed Latin American countries (Table A-3). This is surprising considering that Chile has conditions favoring an higher rate of labor market participation of women in variables such as per capita income level, years of schooling and fertility rate.⁵ The gap in the labor market participation of women applies to all educational groups, suggesting the presence of specific factors that restrict or difficult the incorporation of women into the labor market relative to other countries in the region.

2. FACTORS RELATED TO THE LABOR MARKET PARTICIPATION OF WOMEN

2.1 Background

⁴ The figures represent annual averages for the 1960-1973 and 1990-2003 respective periods. Women's schooling is measured between 25-29 years of age, while the fertility rate is measured between 35 and 39 years of age (Table A-2).

⁵ The international evidence reports a U-shaped function for the relationship between the labor market participation of women and the per capita income level. The recent evidence in this respect indicates that the turning point is US\$2,500 (1985 constant prices), where the participation rate reaches its minimum point of around 35 percent. See Mammen & Paxson (2000).

The issue of labor market participation of women has been the subject of several earlier studies in Chile. One of the most extensive reviews is the work of Lucía Pardo, who describes the labor market participation of women between 1907 and 1982 in detail. She uses the information provided by the population censuses of the period, complemented by the data from the Employment Survey of the University of Chile from 1958 onwards (Pardo 1987, 1987b). The census statistics indicate a labor market participation rate of women of 28.9 percent in 1907, which drops to 19.2 percent in 1930, and then ranges between 20 and 25 percent between the 1940 and 1982 censuses.⁶

There is a large immigration from rural to urban areas during most part of the century. Women from the countryside who migrate to the cities face difficulties combining remunerated work with household duties, either due to the greater distance of the jobs, the lower degree of flexibility of the working schedule or the legal regulations.⁷ Nevertheless, the rural-urban migration process has had a positive net effect on the labor market participation of women. Valenzuela (2006) reports a slight increase in the labor market participation of women in the context of the great migration from the countryside to the city at the beginning of the century. Furthermore, urban life is related to the expansion of the trade and service sectors, which have been identified in the literature as elements that facilitate the incorporation of women into remunerated work.⁸

It is postulated that in the early stages of the economic development process, the labor market participation of women is high, being mainly concentrated in family businesses (agricultural or commerce), with or without remuneration. Subsequently, as the productivity of economies grow, the income level of the head of households increase and this has a liberating effect on the time

⁶ The measurement of the variable from the Census data corresponds to women aged 12 years or over as a proportion of all women in that age group, and therefore the data is not directly comparable to that presented in Tables 1 and 2, which considers the population aged between 15 and 60 years

⁷ Other studies carried out in the country have used the data from the Employment Survey of the University of Chile. One of them decomposes the trends in the labor market participation of women in cohort effects, age and calendar year, showing that the participation rate increases with higher schooling of the younger cohorts and decreases with the number of children (Bravo, Contreras & Rau 2002). Another study analyzes the impact of the demographic factors on the supply of work, including scale and age composition effects, to predict a decrease in the growth of the participation rate in the first decade of the present century as a result of the drop in the fertility rate in previous periods (Paredes & González 2003)..

⁸ The proportion of women working in commerce or services has increased from 55.1 percent in 1920 to 73.9 percent in 1982. Data from the Population Censuses, quoted from Pardo (1987a and b).

available to women, allowing them to concentrate on their domestic functions. At the same time, a stigma comes into effect, penalizing married women for working in manufacturing industries. Industrial goods also start to displace production in family-based firms. As development advances, market salaries continue to rise, and as women's educational level increases, they can obtain new jobs in offices and services (without the earlier stigma). These supply and demand factors explain the large-scale incorporation of women – particularly married women – into the labor market in the highest economic growth phase (Golding 1995).

The evidence from developed countries (United States, Canada, United Kingdom, Germany) shows a sharp growth in the labor market participation of women in the second half of the twentieth century. The greatest increase occurs among married women, whose labor market participation rate increased four-fold in the United States between 1949 and 1980, and twelve-fold in Canada in a similar period (Killingsworth & Heckman 1986). This occurs in the context of a reduction in the fertility rate, an increase in the schooling level of women, an increase in white-collar occupations, and increases in the salary and income levels in the economies. Empirical research has shown that the response in female labor supply to changes in salaries is positive and high, while the response to changes in income level is negative but low; the net effect is a positive relationship between the labor market participation of women and economic development.⁹

2.2 Labor Market Participation of Women and Education

Schooling is one of the most closely related factors to the labor market participation decision. Higher levels of schooling produces more advanced human capital, which makes it possible to obtain higher remuneration in the labor market and makes the decision to work outside the home more attractive. The higher labor income also allows a woman's domestic chores to be replaced by the acquisition of domestic labor-saving devices or services, such as domestic help, nursery schools and domestic appliances.

⁹ This does not necessarily have to be so, since the increase in income can make people demand more free time and less working time.

Schooling also affects indirectly the labor market participation of women, through its effects in fertility, the formation of social norms and individual preferences that favor remunerated work, and higher economic growth and its subsequent impact on job creation.

There is also some degree of inverse causality between schooling and labor market participation. For example, undertaking higher education may be strongly related to the decision to enter the labor market afterwards. In contrast, a woman graduating from secondary school will probably have a lower incentive to continue studying if she does not intend to obtain remunerated employment.

The statistics on the labor market participation of women by level of schooling are presented in Tables 3 and 4 for the University of Chile and CASEN survey data respectively. The statistics are provided for women aged between 25 and 60 years, since we are interested in analyzing the effect of schooling already completed. The schooling brackets that we use correspond to the current categorization of schooling levels: 0-8 years of schooling, corresponding to the primary level (and without schooling); 9-12 years of schooling corresponding to secondary level; and 13 years of schooling or over corresponding to third level education or higher.¹⁰

The long-run data of the University of Chile for the city of Santiago indicate that women with third level education have a significantly higher rate of labor market participation than women with only primary or secondary schooling. Thus, the labor market participation rate of women with 13 years of schooling or more averages around 70 percent; having increased slowly but steadily from 65 percent in the early 1960s to 75 percent by the end of the 1990s. Women with primary and secondary education display patterns of behavior that vary depending on the reference period. Between 1960 and 1985, the participation rate was low but stable at around 35 percent on average for both groups. From the mid-1980s, the participation rates of these women increase, particularly for those with secondary education.

¹⁰ Until the mid-1960s, primary education lasted 6 years and secondary education lasted another 6 years. Also, some kinds of secondary technical education last 5 years rather than the 4 years that regular secondary education lasts today.

Table 3.
Labor market participation of women aged 25-60 by schooling level (percentages),
Santiago 1958-2003

Period	Years of schooling		
	0-8	9-12	13 and over
1958-62	36.4	32.5	----
1963-67	34.5	34.1	66.0
1968-72	36.0	36.9	67.5
1973-77	34.4	36.5	69.2
1978-82	36.2	37.3	70.3
1983-87	37.1	41.3	72.9
1988-92	39.3	42.8	72.0
1993-97	42.9	44.9	75.3
1998-03	44.7	54.7	72.7

Source: Author calculation from the Employment Survey of the University of Chile, respective years

Table 4
Labor market participation of women aged 25-60 by schooling level (percentages),
Chile 1987-2003

Period	Years of schooling		
	0-8	9-12	13 and over
1987	25.0	36.6	68.3
1990	28.4	39.8	69.8
1992	30.6	42.2	70.5
1994	32.6	44.0	64.9
1996	31.7	47.6	73.0
1998	34.9	49.0	73.3
2000	36.2	51.1	72.1
2003	38.6	53.5	74.4

Source: Author calculation from the CASEN Survey, respective years

On the other hand, the CASEN data indicate a clear relationship between schooling and labor market participation. Between 1987 and 2003 the labor market participation of women with secondary schooling exceeded the corresponding rate for women with only primary schooling by 12 to 15 percentage points. Meanwhile, the participation gap between women with third level education and those with only secondary schooling exceeded 20 percentage points throughout the given period.

These statistics represent a first approximation to the relationship between labor market participation and schooling. But we need to compare homogenous groups, controlling by observable variables that may explain some of the differences in the participation rates. For example, women with lower levels of schooling may display low participation rates since they are also older.

In section three of this study, a statistical analysis is carried out to control for the impact of other variables. The results arising thereof validate, in general terms, those described here. The main exception is that, for most of the period, the labor market participation of women with only primary schooling in the city of Santiago is higher than the rate for women with secondary schooling. This result is contrary to that shown by the data that does not control for other variables, and it is related to the high concentration of women with low schooling levels who are employed in domestic service.¹¹

There is empirical evidence on three channels linking schooling with labor market participation. Firstly, higher levels of education are related to higher market wage levels, which make remunerated work a more attractive option than other uses of time. Section 2.5 shows that women with higher education earn over twice what women with only secondary schooling earn, and the latter group earns 40 percent more than women with only primary education. Secondly, schooling is related to a lower fertility rate, which in turn facilitates labor market participation. The evidence provided in Larrañaga (2006) indicates that women with higher education have 2.4 children on average, women with only secondary schooling have 2.7 children on average, and for women with

¹¹ In 1990, around 48 percent of female employment in domestic work in the country was concentrated in Santiago (CASEN 1990).

only primary schooling the corresponding rate increases to 3.3 children.¹² Thirdly, higher levels of education are related to attitudes and preferences that favor women working (section 2.4).

Another finding is the composition effect of increased schooling on labor market participation in the period. If women with more education participate more in the labor market and if the proportion of women with more education increases, then there will be an increase in the participation rate due to the change in the educational composition. Nationwide, in 1987 over 50 percent of women aged between 25 and 60 had primary schooling, 35.9 percent had secondary schooling, and 12.8 percent had higher education. By 2003, the percentages had changed to 32.5, 43.2 and 24.3 percent respectively. An simple calculation shows that the labor market participation of women increases by 5.4 percentage points due to the change in the composition of the educational level.¹³ This is equal to around one quarter of the increase in the variable between 1987 and 2003.

2.3 Labor Market Participation and Fertility

Childrearing and child care have traditionally been entrusted to the mother. These activities can be extremely time intensive, particularly in the case of younger children, and constitute a restrictive factor in the labor market participation of women.

The relationship between fertility and labor market participation is presented in Table 5 for the long-run data of Santiago, and in Table 6 for the nationwide data from 1990 onwards.¹⁴ The statistics are presented for women between 25 and 40 years of age, which is a group that has already completed its educational cycle and whose children can be identified through the household survey information.¹⁵

¹² The statistics mentioned correspond to women aged between 35 and 30 years in the 1988 to 2002 period.

¹³ The calculation is made by multiplying the changes in the educational composition of the population by the average participation rates of each group.

¹⁴ The mother-child pairs can be identified in the CASEN survey which informs family relationship at the nucleus level. This information became available from the 1990 survey.

¹⁵ This is because the survey gathers data on people who live in the household, which excludes children that no longer live with their parents. It can reasonably be assumed that most children of mothers aged under 40 still live with their mothers.

Table 5.
Labor Market Participation Rate by number of children
Women aged between 25 and 40 years (percentages), Santiago 1958-2003

	No children	No children (1)	1-2 children	3-4 children
1958-62	70.8	60.3	32.1	18.9
1963-67	71.9	61.5	33.0	19.2
1968-72	76.2	68.3	36.3	24.5
1973-77	74.8	69.0	36.1	25.6
1978-82	75.8	69.5	38.9	28.9
1983-87	79.5	74.0	41.9	32.8
1988-92	78.1	73.7	44.2	34.8
1993-97	80.3	77.6	48.6	38.3
1998-03	81.9	79.5	54.1	45.3
average	76,7	70,6	40,9	30,1

Source: Databases of the Employment Survey, respective years

Notes: (1) Excludes live-in domestic help

Table 6.
Labor Market Participation Rate by number of children.
Women aged between 25 and 40 years (percentages), Chile 1990-2003

	No children	No children (1)	1-2 children	3-4 children
1990	70,9	68,9	39,7	28,6
1992	71,8	69,2	40,7	30,0
1994	70,8	68,6	43,2	33,2
1996	74,2	72,5	47,3	32,5
1998	74,7	73,3	50,4	39,6
2000	74,5	72,7	52,2	37,3
2003	75,1	73,4	55,3	42,7

Source: Processing of the CASEN Survey databases, respective years

Notes: (1) Excludes live-in domestic help

The long-run statistics indicate a well-defined relationship between the labor market participation of women and the number of children. Women without children had a high rate of labor market participation during the period under analysis, with a rate of around 75% when considering all women, or slightly below 70% when women working as domestic help who live in the household are excluded.¹⁶ Meanwhile, women with one or two children have a labor market participation rate of around 40 percent, while those with three or four children have a participation rate of around 30 percent on average for the period.

For all groups the participation rate show significant growth throughout the period. Upon comparing the 1958-1962 five-year period with the 1998-2003 period, we find that the labor market participation rate of women without children, excluding women working as domestic help who live in the household, increases from 67 to 80 percent. In the case of women with one or two children, the increase is from 32 to 54 percent, while for women with three or four children the increase is from 19 to 45 percent. As such, the differences in the participation rate according the number drop during the period, but it does not vanish.¹⁷

The nationwide data for 1990-2003¹⁸ shows a sharp increase in the labor market participation of women, with an increase of around 14 percentage points for women who are mothers; on the other hand, the participation rate of women without children increased by only 4 percentage points.

The relationship between fertility and labor market participation is subject to a composition effect, as in the case of education. This is because the distribution of women by number of children has had significant changes over time. The drop in the fertility rate reduces the proportion of women having three or four children, favoring those who have one or two children; since the latter have a higher labor market participation rate, it follows that the change in the fertility composition explains part of the increase in the general female participation rate.

¹⁶ As per the earlier note, the household surveys do not record the number of children of domestic help workers who live in their place of work without their children.

¹⁷ Further ahead, we will see that the gap between the participation rates of women with and without children is influenced by differences in the marital status between both groups.

¹⁸ It should be kept in mind that the CASEN data is more precise, since it includes information on nucleuses within the household, thus allowing for a better identification of mothers and children. In contrast, the Employment Survey does not report on nucleuses, which makes it difficult to identify mothers and children in homes where there are more than one nucleus. In these cases, an identification strategy is utilized. See Larrañaga, 2006.

The relationship between labor market participation and number of children may be due to preferences, salaries or labor market restrictions. The first factor applies when the woman has a marked preference to remain in the home rather than working outside the home. The preferences may be influenced by social norms or family roles, and as such the concept of “preference” should be adequately qualified. The second factor is relevant when the salary that the woman can earn in the market is insufficient to compensate the costs of working outside the home, considering that doing so entails certain costs such as childcare and other domestic chores. The third factor is related to characteristics of the jobs, which can facilitate or restrict the labor market participation of the mother, such as working schedule and place of work.

These factors interact with each other in determining the probability of labor market participation. Thus, the probability of labor market participation will be low for women with a marked preference for household activities, who have access to low salaries in full time jobs. On the other hand, the probability of labor market participation will be high when preferences, salary and employment characteristics point in the right direction.

The evidence shows that these factors may help to explain the low labor market participation rates of women with children in Chile. The following section shows that a large proportion of the population expresses opinions of disapproval to a mother working outside the home. Likewise, the section on growth and jobs shows the existence of working conditions that discourage the incorporation of women into the labor market, in terms of salary levels and lack of part time jobs.

The importance of the preference factor also appears in the relationship between labor market participation and the number of children by marital status of the mother. Table 7 presents the participation rates between women who are mothers and those who are not, by marital status, using the information provided by the CASEN surveys in the 1990-2003 period.¹⁹ The marital status variable is classified into two groups, married or cohabiting, and single, separated or others. These categories have similar behaviors, according to the disaggregated information.

¹⁹ The Employment Survey of the University of Chile does not carry information on marital status.

The results show that motherhood affects labor market participation only in the case of women who are married or who cohabit and not in the case of single or separated women. In fact, in the first group there is a difference of around 25 percentage points in the participation rate depending on whether the woman is a mother or not; meanwhile, in the second group the participation rate among women who are mothers and those who are not is practically the same, although the analysis in the third section indicates that there is a difference in the case of women with three or more children. This segment of women has a high participation rate, around 75 percent, and is a quantitatively significant group: single and separated women represented one third of all women aged between 25 and 40 in 2003, being fairly evenly distributed between mothers and non-mothers (Table A-5, Appendix).

These data suggest the existence of a significant negative preference factor in the labor market participation decision of mothers who live with their partner (married or cohabiting). This given that single or separated mothers face similar problems in the other aspects affecting the decision to opt for remunerated work outside the home, such as salary levels or job characteristics, but they display a participation rate similar to women without children.

The identification of preferences as a determinant of the labor market participation of mothers is carried out after having discarded other possible factors that could explain the differences in the participation of mothers according to marital status. One of these is the available income level in the household, since it may be that the married mother may not need to work if her spouse puts up all the household income, while a single or separated mother may not have that option. However, the information presented in Table A-6 of the Appendix discards this hypothesis, since that difference in participation applies to mothers with different marital statuses across all income levels. The disparity in participation rate according to marital status is not accounted for by the number of children either, considering that married women have more children. Table A-6, that only considers mothers with one or two children, shows that differences in the participation rate remain even after controlling for number of children.

Table 7.
Labor Market Participation Rate by number of children
Women aged between 25 and 40 years (percentages), Chile 1990-2003

	Married or Cohabiting			Single or Separated		
	With children	No children	total	With children	No children	total
1990	29,8	53,9	31,1	71,5	73,3	72,5
1992	30,7	56,4	32,5	69,1	76,1	73,2
1994	34,1	58,8	36,0	71,7	74,5	73,4
1996	35,5	67,2	37,7	76,2	76,4	76,3
1998	40,2	69,3	42,3	75,9	76,4	76,1
2000	40,8	73,2	43,2	76,6	74,7	75,6
2003	45,1	71,7	47,3	77,3	76,2	76,7

Source: CASEN databases, respective years

2.4 Preferences

The economic behavior is determined by preferences, prices and income. Preferences indicate what individuals want to do and prices and income indicate what they actually can do. In consumption decisions in a supermarket, the preferences consist of the tastes for different goods. On the other hand, the time allocation decision between remunerated work and household activities is influenced by more complex preferences, which are influenced by values and norms.

Preferences play a role in the labor market participation decision when remunerated work is an option, such as when there is other income entering the household. On the other hand, preferences are less important in the decision to work when this is compulsory, such as in the case of people who are the only income providers in the household.

The preferences are not directly observable. One methodology used to reveal information on preferences is based on the actual behavior of people. The method reveals a preference for situation A over situation B when the individual chooses A when she could have chosen B. A rigorous application of the methodology requires data that is not available on the labor market participation

of women. However, the evidence presented for women with a partner and without one suggests that there is a significant preference factor behind the decision to not participate by women with partners. That is, women who have the choice of whether to work or not, decide to not work. That they have the opportunity to work is inferred by the working decision taken by women, who, while not having a partner, are comparable in terms of number of children, level of schooling and other household income.

This conclusion is reinforced by data from public opinion surveys, which are another source of information on the preferences of the population. Recent evidence in the area comes from the survey on family and values undertaken by the Centro de Estudios Públicos (CEP) in December 2002.²⁰ The findings of the study are internationally comparable, since the survey was part of a global survey on women and family under the coordination of the International Social Survey Programme.²¹

Based on different questions from the survey, an index was constructed to measure attitudes regarding women working out of the home. Specifically, four questions were considered related to perceptions on whether a woman should or should not work in the following circumstances: “After getting married and before having children”, “When she has a child of pre-school age”, “After the youngest child starts to attend school” and “After the children leave home”. The resulting index gave a score of 9.7 on a scale of 1-20, from less favorable to more favorable, placing Chile in the second last position (least favorable) of the ranking of 24 countries that took part in the study.²²

Table 8 presents the distribution of responses by the Chilean population with respect to the abovementioned index, classified into four categories depending on level of acceptance or disapproval. Over 60 percent of all respondents displayed a negative or moderately negative attitude towards women engaging in remunerated work. The negative opinions against women working get stronger the lower the educational level of the interviewees: around 79 percent of individuals with 0-3 years of schooling have negative opinions on the issue, compared to 44 percent among

²⁰ This is the most prestigious institution for public opinion studies in Chile.

²¹ See information in www.issp.com.

²² Most of the participating countries are OECD states and Eastern European countries. In this ranking, Chile only outranked the Philippines.

individuals with 13 or more years of schooling. This finding is consistent with the hypothesis that preferences are one of the links between schooling and the labor market participation of women.²³

Other information gathered in the abovementioned survey suggests similar patterns. Thus, 82 percent of respondents consider that “family life suffers when a woman works full-time”; 63 percent agree with the statement that “a pre-school age child suffers if his/her mother works”; 54 percent consider that “being a housewife is as gratifying as having remunerated work”; and finally, although not less surprisingly, 43 percent think that “the role of the man is to earn money, while the role of the woman is to take care of the home and family” (other 15 percent are unsure about this statement).

Table 8.
Distribution of response percentages, index of attitudes to women working

Years of schooling	Negative Attitude	Moderately Negative Attitude	Moderately Positive Attitude	Positive Attitude	Total
0-3	37.6	41.1	15.8	5.5	100.0
4-6	29.5	44.5	18.3	7.7	100.0
9-12	19.5	41.6	27.2	11.7	100.0
13 y más	7.9	35.6	37.1	19.4	100.0
	20.5	40.7	26.5	12.3	100.0

Source: Centro de Estudios Públicos, December 2002

Contreras and Plaza (2004) undertake a statistical analysis of the labor market participation of women based on the data of the abovementioned survey. The authors construct a “machismo” index based on the attitudes of women with regard to remunerated work and household activities, as well as an index of values regarding issues such as divorce and others. The findings show that women with “machismo” attitudes and conservative values have a substantially lower participation rate than other women. The comparison is carried out for homogenous groups in variables such as schooling

²³ The results described are influenced by the age factor, since older people are averse to women working, and also have lower levels of education. However, the relationship between schooling level and attitudes to women working persists even after controlling for age.

level, marital status and number of children. As such, they postulate that preferences are a significant factor in the labor market participation decision of women, as well as the factors that are directly linked to the costs and benefits of remunerated work, such as the number of children and the salary levels available.

The negative preferences of a large proportion of the population regarding women working may partly explain the low rate of labor market participation of women in Chile. This is suggested by the international survey on women and work mentioned above, as well as by the lack of alternative explanations. This is nevertheless a hypothesis that needs to be verified through a comparative study of the determinants of the labor market participation of women. It is also worth noting that the relationship between preferences and labor market participation may have some reversed causality. Thus, while it is likely that women with negative attitudes to work will not participate in the labor market, it is also possible that some women that do not participate in the labor market for objective market reasons may rationalize their conduct in terms of values and preferences.

2.5 Employment demand, job and salary characteristics

2.5.1 Employment demand and economic activity

The high growth in economic activity that characterizes the Chilean economy from the mid-1980s has been a significant factor behind the increase in the labor market participation of women. This is highlighted by the correlation between per capita income and the labor market participation rate of women, which was 0.936 in the 1987-2003 period (Table 9).²⁴ On the other hand, the relationship between economic activity and the labor market participation of women is much weaker in previous periods of low economic growth. The correlation between both variables was 0.352 from 1960 to 1973, and 0.197 between 1974 and 1989, suggesting that changes in the participation rate are caused by other factors.

²⁴ The correlation is measured through the Pearson Coefficient. It takes values between -1.0 and +1.0, which represent a perfect negative and positive correlation respectively; meanwhile a value near zero indicates that there is no relation between the variables.

On the other hand the correlation between the unemployment rate of men and the labor market participation of women ranges between 0.4 and 0.5. The most interesting point is the sign of the correlation coefficient, which, being positive, indicates that the labor market participation of women is countercyclical: the incorporation of women into the labor market increases in recessionary periods when male unemployment increases.²⁵ This occurs as women who are normally dedicated to studying or household duties enter the labor market to try to make up the fall in income arising from the loss of work of the head of household or his reduced income.

The sharp increase in the labor market participation of women during the period of highest economic growth occurs in the context of rising real wages. The mean wage of women who work 33 hours or more per week increased by 63.2 percent in real terms between 1990 and 2003 (Table 10).²⁶ The wage increase covers women with different levels of schooling, even though women with only secondary education obtain somewhat lower salaries than the rest (40 versus 65 percent).

The trend of the real wage is caused by increases in labor demand due to the economic growth of the period. The higher wage is a key factor behind the expansion in the labor market participation of women, since for many women the market wage now exceeds the reservation wage.²⁷

Table 9
Correlations between female labor market participation and economic activity

	1960-1973	1974-1986	1987-2003
Correlation of women's participation with:			
• Per capita income	0.352	0.197	0.936
• Male unemployment rate	0.419	0.392	0.471
• Female employment rate	0.899	0.703	0.851

Source: Databases of the Employment Survey of the University of Chile.

²⁵ The sign of the coefficient of male unemployment and the labor market participation of women is robust to control by per capita income.

²⁶ The information comes from the CASEN survey data. The series starts in 1990, because the 1987 survey does not contain information on hours worked.

²⁷ By the end of the 1990s, there was an increase in unemployment as a result of a recessionary cycle in the economy. However, real wages did not decline but continued growing, albeit at a slower pace. This is the effect of rigidities associated to wage indexation practices in the public sector and minimum wage. See Cowan et al (2004), and Martinez, Morales and Valdés (2001).

Table 10
Salaries of women with 33 hours of work or more per week, Chile 1990-2003
(000s of pesos, November 2003 values)

	Years of Schooling			Total
	0-8	9-12	13 and over	
1990	76.9	110.6	212.5	133.6
1992	88.0	122.2	234.1	143.6
1994	90.6	128.5	246.6	160.0
1996	97.5	146.8	296.5	182.1
1998	104.2	159.3	342.9	209.1
2000	110.9	153.0	350.8	210.4
2003	115.1	156.1	348.6	217.5

Source: author calculation from CASEN Survey, respective years

2.5.2 Female Employment

There has been a sharp expansion in office and service jobs in recent decades. Women's share of total employment of these types of jobs increased by around 30 percentage points during the period under analysis (Table 11). The so-called white collar jobs are free from the stigma affecting married women working, according to authors such as Goldin (1995). As such, this development has facilitated the incorporation of women into the labor market in the Chilean case.

Meanwhile, the average working week of women has remained surprisingly high and stable at around 44 hours per week; 75 percent of women in the labor market work over 38 hours per week (Table 11). This occurs throughout the period under analysis, regardless of the development stage of the economy.²⁸ The nationwide data of the CASEN survey confirms the trends observed in the longer-term data of the University of Chile, even though they capture a possible shift in trends in more recent years (Table A-8 of the Appendix).

²⁸ The statistic includes salaried women and independent female workers, but excludes live-in domestic help workers, since they have a longer working week which is not comparable to the rest of the female working population

Table 11
Female Employment, Santiago

	Weekly hours of work (1)			% White collar	% Independent workers
	Average	median	Percentile 25		
1958-62	45.4	48.0	37.8	42.3	19.3
1963-67	43.8	46.4	36.0	45.6	18.1
1968-72	43.9	45.0	37.3	50.9	19.5
1973-77	42.4	43.0	36.2	54.5	20.0
1978-82	44.6	44.8	40.0	56.0	16.9
1983-87	44.1	45.4	38.4	56.4	13.7
1988-92	45.7	46.8	40.0	59.2	15.9
1993-97	45.2	48.0	40.0	66.8	15.6
1998-03	43.5	48.0	37.3	67.5	15.9

Source: author calculation from University of Chile Employment Surveys .

Notes: (1) Excludes live-in domestic help.

There are no significant legal or institutional factors in Chile preventing a reduced work time. The legislation allows hiring for part-time work, and allows most of the costs of firms to be adjusted proportional to the duration of the working schedule. In this context, the extended working time in female employment reflects the predominance of traditional hiring practices in a market dominated by the decisions of employers, who have not needed to adapt their employment structures. On the other hand, most married women remained dedicated to household duties out of preference rather than due to employment characteristics (section 2.4). Thus, the predominance of the extended working schedule is the result of employment demand as well as supply factors. This situation has been changing in recent years since the large-scale incorporation of women to the labor market occurs in the framework of a more flexible working schedule.

2.5.3 Salary differentials between men and women

The evidence presented shows that the incorporation of women into the labor market has taken place in the context of increasing salaries since 1990, reflecting the predominance of demand factors in the labor market dynamics. What has happened to the wage gap between women and men?. To isolate the effect of other factors that contribute to the wage gap it is necessary to compare homogenous groups in terms of education, work experience and type of job. This is done

regressing wages on these variables and a dummy variable for the gender of the worker for each year in the 1958-2003 period. The gender wage gap is the coefficient of the dummy variable and it is shown in Table 12 for the whole group of salaried workers and by schooling level.

The results show a decreasing trend in the gender wage gap. Upon comparing groups that are homogenous in experience, hours of work and type of work, we find that women's salaries as a proportion of men's salaries increased from around 50 percent in the early 1960s to around 75 percent by the end of the period. The largest salary differential between men and women is found among employees with higher education.²⁹ These data reflect the employment composition of technicians and professionals, since women are over represented in relatively lower paying jobs, such as teachers and non-doctor health workers.³⁰

Table 12
Adjusted salary differential: women versus men, Santiago 1958-2003

	Primary Education	Secondary Education	Higher Education	All
1958-62	53.7	54.8	55.1	53.8
1963-67	61.1	64.5	50.3	60.5
1968-72	60.0	62.7	51.7	59.8
1973-77	64.1	66.5	60.4	63.6
1978-82	70.1	72.8	49.3	66.8
1983-87	73.1	75.8	61.9	71.6
1988-92	75.4	78.1	59.6	71.8
1993-97	69.1	76.9	54.3	68.0
1998-03	72.7	79.9	72.0	75.6

Source: Mincer equation coefficient, from University of Chile Employment Survey.

The conditional wage gap between men and women has declined for all education subgroups, although the trend has been more systematic among workers with secondary education. That relative salaries of women have increased in the context of increases in the female labor supply can be explained by two factors: an even higher demand for female labor, and/or a reduction in salary

²⁹ The change in the trend observed during the 1998-2003 period in the case of higher education may be due to a change in the coding of the answers in the survey.

³⁰ The regression controls for job type, but at the level of nine main groups.

discrimination. Since the regressions include jobs as control variables, the trends partly reflect a reduction in the salary discrimination against women.

2.6 Life Cycle

The labor market participation of women varies throughout their life cycle, in accordance with the stages of maternity and childrearing. Thus, the lower participation rate of women is partly explained by the fact that one fraction is entering and leaving the labor market. We do not have panel data to track the employment history of individuals over time, but we can study the dynamic behavior of population subgroups by means of synthetic cohorts. These consist of representative samples of the same cohort over various periods of time. Cross section representative sample can provide information on the behavior of the group (cohort), even when we do not have data for the actual people themselves.

For example, consider the case of the cohort of women aged between 20 and 24 in the 1987 CASEN survey. In the 1992 CASEN survey, we can examine its evolution when they turn 25 to 29 years of age; in the 1998 CASEN survey, we have the cohort when they turn 31 to 35 years of age; and in the 2003 CASEN survey, between 36 and 40 years of age.

The labor market participation rate in a given year is determined by three main factors: i) the effect of macroeconomic factors, such as a higher economic growth rate, which causes the labor supply to increase in response to higher wages; ii) specific effects of the cohort, such as average schooling, which affects the participation rate of the cohort throughout her life; iii) effects related to the life cycle, in which the participation rate in a given year depends on the age of the cohort in that year.

In order to examine the life cycle effect, it is necessary to isolate the effect of the first two factors. The macroeconomic effect is computed as the common yearly variation in the participation rate that is common to all cohorts. The cohort effect is computed as the difference between the average participation rate of the cohort and the average participation of all the cohorts. Then, the macroeconomic and the cohort effects are extracted in order to obtain the life cycle effect. The

procedure is carried out in the CASEN surveys of 1987, 1992, 1998 and 2003, averaging the life cycle results reported by different cohorts.³¹

The results are presented in Table 13 for each educational level. They are expressed as an index that takes the value of 100 for the participation rate of the cohort at 20-24 years of age, in the case of women with primary or secondary education; for those with higher education, the 25-29 age group is taken as the base level, considering their later entry into the labor market.

Table 13
Life cycle index in the labor market participation of women

Years of schooling	Age brackets						
	20-24	25-29	30-34	35-39	40-44	45-49	50-54
0-8	100.0	85.9	93.2	98.4	101.9	97.7	92.0
9-12	100.0	91.8	86.6	97.3	93.4	97.1	83.9
Over 12		100.0	101.2	105.5	109.4	106.9	95.1

Source: author calculation from the 1987, 1992, 1998 and 2003 CASEN surveys.

The results obtained show a U-shaped behavior for the labor market participation of women with primary or secondary education between 24 and 49 years of age. Thus, the highest participation rate occurs between 20 and 24 years of age, and then drops to a minimum level, that occurs between 25 and 29 years for women with primary education, and between 30 and 34 years for those with secondary education. Subsequently, the participation rate picks up, although not to its initial level, and eventually starts its final decline between 50 and 54 years of age. The pattern described is consistent with the temporary leave of part of the cohort in the childrearing age.³² Meanwhile,

³¹ This occurs as there are different cohorts in the 1987 and 2003 surveys that report on the life cycle of 20-24, and 25-29 years olds, etc.

³² There are practically no differences in the age at which women with only primary or secondary education have children. The average age of mothers upon the birth of the first child is 22.4 years for women with primary education and 23.3 years for women with secondary education. The respective figures for the second child are 26.1 and 26.9 years on average. (Calculations in the 2000 CASEN survey, considering women aged between 35 and 40 years).

women with higher education have a participation rate that grows moderately over time, increasing by around 9 percentage points between 25-29 and 40-44 years of age.

2.7 Labor Market Participation and Household Structure

The incorporation of women into the labor market has potential significant effects on the household. It is expected to increase income, the decision making role of women in the household as well the autonomy of women. Table 14 presents nationwide information for the 1987-2003 period regarding the proportion of women out of total workers, average household size, average number of working individuals per household, and the percentage of households headed by women. Table A-11 of the Appendix presents similar information for the long-run statistics of the University of Chile in the case of Santiago.

Two main effects have to be highlighted. First, women entering the labor market increase the number of workers per household, and therefore family income. Between 1987 and 2003, the number of individuals working per household increased by around 8 percent (1.45 in 2002 compared to 1.34 in 1985), which is essentially due to the incorporation of women into the labor market.³³ Second, and more importantly, the increased labor market participation of women contributes to the formation of households at a rate faster than the growth of the population. According to the information provided by the population censuses, between 1992 and 2002 the number of dwellings in the country grew by 25.7 percent, which practically doubles the population growth rate for the period (13.3 percent).³⁴ This process is related to the rise in living standards associated to economic growth, the incorporation of women into the labor market, and a social housing policy targeted at the large-scale provision of housing solutions (Larrañaga 2004).

³³ The labor market participation rate of men remains constant, so the average number of male workers per household remains constant as long as households grow at the same rate as the population.

³⁴ Information from the Population and Housing Censuses of the respective years.

Table 14
Labor Market Participation and Household Characteristics

	Female participation 15-60	% of women out of total workers 15-60 years	Household size	Working individuals per household	Female head (%)
1987	32,1	31.4	4.28	1.34	21.5
1990	35,9	32.7	4.08	1.39	20.0
1992	38,2	33.0	3.97	1.43	20.5
1994	40,0	33.9	3.90	1.40	21.3
1996	40,8	34.4	3.96	1.47	21.9
1998	40,9	36.3	3.91	1.43	22.8
2000	44,4	36.8	3.88	1.41	23.1
2003	47,6	37.9	3.78	1.45	26.2

Source: author calculation from CASEN surveys

3. PROBABILITY OF LABOR MARKET PARTICIPATION

This section contains a statistical analysis whose purpose is to estimate coefficients relating the probability of labor market participation of women and its associated factors. The regressions presented should be interpreted in the purely statistical sense of conditional expectations; that is, the mean value of a variable conditional in given values of the right hand side variables. This is a more powerful tool of analysis than the two-variable relations presented in the previous section as the contribution of third factors is controlled for. However, the analysis does not identify causal effects, which are likely to go in both directions. Thus, for example, the woman-as-head-of-household condition can influence the labor market participation decision; however, it is also possible that the labor market participation of women makes the formation of households headed by women feasible.³⁵

³⁵ The literature acknowledges multiple links among decisions concerning labor market participation, fertility and education. The identification of causal effects in this context is demanding in the required data (instrumental variables).

The probabilities are estimated through probit regressions, in which the “explained” variable takes values (1, 0) in cases in which the person participates or does not participate in the labor market, respectively. The “explanatory” variables are schooling, measured by primary, secondary and third level; household income, which excludes the remuneration of the woman (if she works), classified in five quintiles; the age of the woman, classified in four ranges; number of children and head of household condition. Categorical forms are used for the explanatory variables since this offers a better interpretation of the results. Family income excludes the remuneration of the woman, since we are interested in the relation between the labor market participation decision and other household income.

The estimation is applied to the population of women aged between 25 and 45 years. Women aged less than 25 are excluded, to isolate the effect of variations in the study cycle throughout the period under analysis. In turn, the exclusion of women aged over 45 responds to the difficulty in identifying the “number of children” variable in the household surveys in the case of mothers that do not live with their children, which is more likely as the woman gets older.

The regression analysis is based on the data of the University of Chile and CASEN surveys. In the former case, the results are expressed in terms of five-yearly averages of the regression coefficients obtained in annual estimates of the participation equation. In the case of the CASEN survey, the results distinguish by the marital status of the women: i) married or cohabiting; ii) single or separated. The estimated coefficients show the marginal change in the probability of participation in response to the change in the explanatory variable.

Table 15 presents the results of schooling and age for the University of Chile data. The first column shows the coefficient of secondary education (9-12 years of schooling); which is to be interpreted as the variation in the probability of participating with respect to women with only primary education (0-8 years). So, in the 1958-62 period, women with up to secondary education had a probability of labor market participation that was seven percentage points less than that of women with only primary education, comparing homogenous groups in other observable characteristics.

During most of the period women with secondary education show a somewhat lower probability of labor market participation compared to women with only primary education. On the other hand, from the mid-1960s, women with higher education have a positive participation gap of around 25

percentage points with respect to women with only primary education. Therefore, the participation gap with respect to women with secondary education is even greater, except in the last five-year period.

The relationship between labor market participation and age is analyzed taking the 25-29 age bracket as the reference group. Thus, women aged 30-34 present a conditional probability of labor market participation throughout the period which is around five percentage points higher than the 25-29 age group, which probably reflects the greater frequency of leaving the labor force for maternity purposes of the reference group. More generally, a pattern is configured where participation is an increasing function of age throughout the middle life cycle (25-39), and starts to decline from 40 years of age.

The national data shows relatively similar results for the 1987-2003 period (Table 16). The main difference with the previous results is a closer relationship between educational level and participation rate. In fact, the national data show that women with secondary education have a participation that is over ten percentage points higher than those with only primary education. The most significant differences occur among women with different marital statuses. For women married or cohabiting there is a 35 percent point gap in the participation rate between those with higher and primary education; and of around 25 points between higher and secondary education. On the other hand, for women single or separated the participation gap drops to only an average of 5 points between higher and secondary education. The relationship between participation and age is steeper in the case of women with partners, which relates to the incidence of childrearing in labor market participation. To interpret this result, consider that the number of children is being controlled for, so the life cycle effect for women is carried out for women with similar numbers of children.

Table 15
Conditional Probability of labor market participation of women aged 25-45, Santiago

	9-12 years of schooling (1)	13 years of schooling and over (1)	age 30-34 (2)	Age 35-39 (2)	age 40-45 (2)
1958-62	-7.0	14.6	1.1	1.7	-2.8
1963-67	-5.1	26.2	4.2	0.2	-2.2
1968-72	0.4	28.3	5.8	8.6	1.7
1973-77	-1.2	26.5	5.0	3.8	0.6
1978-82	-2.1	27.1	4.5	4.5	4.0
1983-87	-0.4	28.4	2.6	9.5	3.4
1988-92	-2.5	26.1	8.1	9.9	8.8
1993-97	-5.5	19.1	6.0	8.6	7.4
1998-03	10.4	22.8	4.7	7.6	7.1

Source: Databases of the Employment Survey of the University of Chile

Notes: (1) With respect to women with 0-8 years of schooling

(2) With respect to women between 25-29 years of age

Table 16
Conditional Probability of labor market participation of women 25-45, Chile 1987-2003

	9-12 years of schooling (1)	13 years of schooling and over (1)	age 30-34 (2)	Age 35-39 (2)	age 40-45 (2)
All					
• 1987	9.6	34.7	5.8	9.0	8.5
• 1992	11.8	32.2	6.0	10.2	9.1
• 1998	13.0	30.8	4.1	5.1	6.5
• 2003	15.8	30.6	3.6	7.3	7.3
Married/Cohabiting					
• 1987	7.1	39.2	6.7	12.2	14.1
• 1992	8.5	37.0	6.3	13.2	13.3
• 1998	8.8	32.4	4.1	5.8	7.8
• 2003	13.9	35.0	1.8	7.4	9.1
Single/Separated					
• 1987	13.4	22.5	6.0	3.4	1.0
• 1992	16.1	20.5	5.6	3.0	3.1
• 1998	17.7	22.9	4.0	4.7	6.6
• 2003	16.4	20.8	6.9	7.5	6.4

Source: Databases of the CASEN survey

Notes: (1) With respect to women with 0-8 years of schooling

(2) With respect to women between 25-29 years of age

Next we examine the relationship between number of children and labor market participation of women. Table 17 shows the result for the long run data of the University of Chile. There is a large participation gap favoring women without children. When the comparison is carried out between women with a child and women without a child, the gap ranges between 25 and 30 points, except in the last decade, when it drops to around 20 points. When the comparison is carried out between women with two children and women without children, the gap ranges between 30 to 35 percentage points. This means that a woman with two children has a participation rate around 5 points lower than that of women with one child. Similar disparities are found in the case of women with three children compared to those with two, as in the case of those with four or more children relative to those with three. All in all, the most significant effect on labor market participation occurs among women with children versus women without children, while the number of children has a secondary impact on the probability of participation. However, this result is subject to a composition bias which is solved when the effect of marital status is taken into account.

The results on a national level are presented in Table 18, which shows that the relationship between participation and number of children largely depends on the marital status of women. For women without a partner, there are no participation differences among those who have and those who do not have a child, while in the case of women with a partner, the participation gap ranges between 10 and 15 percentage points. When women with two children are compared to women without children, the participation gap is around 5 points on average for women without a partner and around 20 points for women with a partner. The labor market participation gap among women with children and those without children continues to increase with the number of children, although the differences tend to decline depending on the marital status of the woman.

Table 17**Conditional Probability of labor market participation of women aged 25-45, Santiago**

	1 child (1)	2 children (1)	3 children (1)	4 children and over (1)
1958-62	-24.1	-31.8	-35.7	-41.0
1963-67	-25.2	-31.7	-37.3	-43.0
1968-72	-29.4	-37.4	-39.5	-46.5
1973-77	-27.4	-34.8	-37.2	-41.2
1978-82	-25.2	-35.7	-37.4	-41.0
1983-87	-29.0	-38.4	-41.5	-40.3
1988-92	-24.9	-35.9	-40.2	-40.7
1993-97	-22.0	-31.1	-39.2	-37.6
1998-03	-16.4	-27.6	-31.8	-32.9

Source: Databases of the Employment Survey of the University of Chile

Notes: (1) With respect to women without children

Table 17**Conditional Probability of labor market participation of women aged 25-45, Santiago**

	1 child (1)	2 children (1)	3 children (1)	4 children and over (1)
<i>All</i>				
• 1987	-19.6	-31.8	-33.3	-34.0
• 1992	-20.0	-30.0	-32.1	-34.9
• 1998	-17.1	-28.0	-30.2	-34.0
• 2003	-12.2	-22.7	-27.2	-32.3
<i>Married/Cohabiting</i>				
• 1987	-10.4	-17.6	-18.8	-19.8
• 1992	-13.6	-20.0	-21.8	-25.0
• 1998	-15.8	-22.5	-23.9	-26.7
• 2003	-12.8	-19.8	-23.1	-26.4
<i>Single/Separated</i>				
• 1987	0.7	-8.5	-12.4	-14.2
• 1992	-0.7	-5.1	-9.5	-10.5
• 1998	1.3	-4.5	-5.5	-13.2
• 2003	1.7	-1.4	-4.9	-16.9

Source: Databases of the CASEN survey

Notes: (1) With respect to women without children

The results show that children have a greater effect on the labor market participation of the total of women than when the analysis is done separately by subgroups with partner and without partner. This may appear strange since the result of the aggregate should represent a mid-point of the results of the subgroups. This is clarified when one considers that there are different compositions of women with or without partners by number of children. Specifically, there is a greater proportion of women without partners that do not have children, and there is a higher proportion of women with partners among those who have children. The comparison on the total group level includes two types of effects, by number of children and by marital status, which produces the bias indicated above.

Table A-12 of the Appendix presents the results for family income in the case of Santiago. The probability of labor market participation of women depends on the family income level (net of the contribution of the woman) through a U-type function. For women from the middle strata (second to fourth quintiles), the probability of participation is even and higher than in the first and fifth quintiles. The first quintile includes households that have low incomes when the contribution of the woman is excluded, which explains their greater labor market participation. Meanwhile, the woman head-of-household condition is associated with a probability of participation of around 30 points higher with respect to women who are not heads of household. This figure remains stable from the early 1980s.

The CASEN survey data (Table A-13) show similar results regarding the U-shaped form of the relationship between participation and household income net of the contribution of the woman. However, the differences in the participation rates by income quintiles are significantly less pronounced than in the case of the University of Chile data. This may be due to differences in the income data capture, since the CASEN survey has a complete module on the area, including items such as own-consumption, and imputed rent for own-housing, while the employment survey is really targeted at capturing labor income.

The marital status of the woman also influences the relationship between female labor market participation and household income, since the relationship is clearer than in the case of women without partners. In contrast, the labor market participation of women with partners is relatively indifferent to household income, after controlling for variables such as the level of schooling and the number of children.

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Statistical Appendix

Table A-1.
Labor market participation of women aged 15-60 (percentages):
Employment Survey in Santiago and Population Census at a national level

	<i>Universidad de Chile, Santiago</i>	Census, urban national	Census, rural national	<i>Censos, total national</i>
1960	38,7	29,5	9,8	24,2
1970	38,1	26,6	10,0	23,1
1982	37,7	29,3	11,6	26,6
1992	42,5	34,7	13,6	31,7
2002	50,4	43,1	21,9	40,6

Source: Processing of the Employment Survey and CASEN databases, as well as the 1992 and 2002 censuses. For the previous censuses, the information reported in Pardo is used (1987a), 41-64.

Note: The census data report the labor market participation of women aged 12 years and older. The adjustment to the 15-60 age bracket was carried out using the age structure of 1992 and the participation rates by age bracket in the respective years.

Table A-2
Social and Economic Indicators, Chile 1960-2003

	1960-1973	1974-1986	1987-2003
GDP growth, per capita %	1,3	0,4	4,5
Male unemployment rate %	5.3	12.4	8.1
Female employment rate %	35.8	32.1	41.8
Female participation rate %	37.5	37.6	46.5
Years of schooling, women 25-29	6.72	9.1	10.79
Infant mortality rate, per 1000	99.8	34.7	11.2
Number of children, women 35-39	4.85	3.75	2.79

Source: Central Bank for GDP data; Employment Survey of the University of Chile for labor statistics; Population Censuses for schooling and fertility data; Ministry of Health for infant mortality rate.

Table A-3
Labor market participation of women (percentages) in Latin American countries

Country	year	total	Years of schooling				
			0-3	4-6	7-9	10-12	13 and over
Argentine urb	2002	46	27	33	36	48	68
Brasil	2001	53	36	47	51	67	80
Chile	2003	45	22	29	33	47	66
Colombia	2002	57	40	51	50	65	74
México	2002	45	29	38	40	47	
Perú	2001	54	50	57	50	55	65
Uruguay	2002	50	15	36	51	61	74
Venezuela	2003	56	35	52	54	60	74

Source: ECLAC, based on special tabulations of the household surveys of the respective countries.

Table A-4
Schooling structure, women aged 25-54

Period	% Primary education	% Secondary education	% Higher education
Santiago			
1958-62	67.6	28.8	3.4
1963-67	67.3	28.9	3.7
1968-72	62.3	31.5	6.0
1973-77	60.2	32.6	7.0
1978-82	52.0	38.4	9.4
1983-87	43.2	44.2	12.5
1988-92	36.0	49.5	14.3
1993-97	28.7	52.6	18.6
1998-03	24.7	49.9	25.3
Average	47.3	40.6	12.0
National			
1990	44.9	36.2	18.8
2000	33.0	43.3	23.8

Source: Tabulations of the Employment Surveys of the University of Chile 1958-2003 and CASEN surveys 1990 and 2000.

Table A-5
Distribution by marital status and children, women aged 25-40 (percentages)
Chile 1990-2003

	Married or Cohabiting		Single or Separated		total
	With children	Without children	With children	Without children	
1990	65.2	4.0	14.1	16.7	100.0
1992	64.3	5.0	12.5	18.1	100.0
1994	65.2	5.4	11.9	17.5	100.0
1996	66.1	4.8	13.6	15.5	100.0
1998	64.2	5.0	14.5	16.3	100.0
2000	63.5	5.2	15.7	15.6	100.0
2003	61.3	5.4	16.1	17.2	100.0

Source: Processing of CASEN databases, respective years

Table A-6
Labor market participation of women (percentages) with 1-2 children, by marital status and household income quintile (net of the contribution of the woman), Chile 2003

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	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Married or Cohabiting	86.3	71.1	77.9	76.5	74.9	78.4
Single or Separated	43.3	42.9	46.2	50.3	58.3	48.0
Total	60.8	48.5	52.5	55.9	61.4	55.3

Source: Databases of the 2003 CASEN survey

Table A-7
Labor market participation rate by children and education, women aged 25-40 (percentages),
Chile 1990-2003

	Primary education		Secondary education		Higher education	
	With children	Without children	With children	Without children	With children	Without children
1990	26.6	51.0	33.2	72.0	61.9	84.9
1992	27.8	54.5	35.1	73.2	63.1	84.7
1994	29.0	57.7	38.1	73.7	63.9	80.7
1996	30.0	47.4	41.7	78.2	65.7	81.1
1998	34.4	49.9	44.6	77.9	68.2	82.9
2000	34.7	50.9	47.1	77.9	65.7	81.0
2003	37.1	49.8	50.4	77.5	69.6	80.6

Source: Processing of CASEN databases, respective years

Table A-8
Working hours, women, Chile 1990-2003

	Average	Median	Percentile 25	% Self-employed
1990	47,9	48	40	19,4
1992	48,1	48	40	18,8
1994	46,2	48	40	22,5
1996	44,7	45	40	20,0
1998	49,4	48	40	20,6
2000	46,4	48	40	18,7
2003	42,7	45	40	19,0

Source: Processing of CASEN databases, respective years

Table A-9
Female Employment Structure by types of jobs, Santiago 1958-2003

<i>Period</i>	<i>Professionals and Technicians</i>	<i>Office worker</i>	<i>Services</i>	<i>Blue collars</i>	<i>Domestic help (1)</i>
Santiago					
1958-62	8.8	12.6	20.9	24.6	33.1 (28.5)
1963-67	9.3	15.0	21.3	24.7	29.7 (25.3)
1968-72	10.9	16.6	23.5	22.4	26.7 (21.4)
1973-77	12.5	17.7	24.3	21.7	23.8 (14.4)
1978-82	10.4	20.1	25.6	17.7	26.3 (14.8)
1983-87	9.6	20.9	26.0	15.4	28.2 (14.8)
1988-92	10.6	22.7	25.9	16.3	24.5 (11.3)
1993-97	12.3	25.3	29.2	12.6	20.6 (6.9)
1998-03	11.1	23.9	32.5	10.7	21.8 (5.7)
Average	10.6	19.4	25.5	18.4	26.1 (15.9)

Source: Tabulations of the Employment Surveys of the University of Chile 1958-2003

Notes: (1) Corresponds to live-in domestic help

Table A-10
Adjusted salary differential: women versus men, Chile 1990-2003

	Years of schooling			
	0-8	9-12	13 and over	All
1990	64.1	68.7	67.1	67.7
1994	73.4	72.3	64.7	71.2
1998	78.9	76.6	71.0	75.6
2003	80.4	76.6	77.5	77.6

Source: Mincer equation coefficient, with CASEN databases, respective years

Table A-11
Labor Market Participation and Household Characteristics, Santiago 1958-2003

	Female Participation rate 15-60	% of women out of total workers 15-60	Household size	Workers per household	Female head, % household
• 1958-62	38.2	31.9	4.41	1.43	19.4
• 1963-67	37.0	31.2	4.45	1.43	19.0
• 1968-72	38.2	32.7	4.38	1.44	21.1
• 1973-77	35.8	31.4	4.31	1.38	19.1
• 1978-82	37.4	33.3	4.13	1.42	20.2
• 1983-87	40.4	34.9	3.96	1.43	20.6
• 1988-92	42.6	35.2	3.77	1.51	21.0
• 1993-97	46.7	36.4	3.62	1.56	20.7
• 1998-03	50.1	38.6	3.67	1.56	21.8

Source: Processing of Employment Survey databases, respective years

Table A-12
Conditional Probability of the labor market participation of women, aged 25-45, Santiago

	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Female head
1958-62	-17.8	-18.1	-13.8	-5.6	34.3
1963-67	-16.6	-16.2	-11.0	-3.3	38.8
1968-72	-16.3	-17.6	-13.4	-6.7	29.6
1973-77	-13.5	-16.8	-14.3	-12.0	35.6
1978-82	-20.3	-19.5	-18.6	-9.2	30.4
1983-87	-17.5	-17.5	-17.2	-9.9	28.1
1988-92	-14.0	-12.8	-9.7	-5.3	27.2
1993-97	-12.9	-10.7	-7.4	-2.7	28.9
1998-03	-12.1	-10.9	-10.1	-11.1	29.0

Table A-13
Conditional Probability of labor market participation of women, aged 25-45, Chile 1987-2003

	Quintile 2	Quintile 3	Quintile4	Quintile 5	Female head
All					
• 1987	-6.8	-3.8	-3.0	2.6	32.4
• 1992	-5.6	-4.6	-0.7	6.3	33.5
• 1998	-4.1	-2.9	-4.4	2.2	31.8
• 2003	-6.9	-5.7	-5.1	-4.4	26.6
Married / Cohabiting					
• 1987	-3.5	-1.5	-0.2	1.2	21.6
• 1992	-0.7	-0.3	1.1	7.2	19.8
• 1998	-1.5	-0.4	-0.9	4.5	25.2
• 2003	-1.4	-1.7	-1.5	-1.5	19.9
Single / Separated					
• 1987	-11.7	-12.2	-14.9	0.2	7.5
• 1992	-10.7	-11.6	-4.5	3.9	12.9
• 1998	-6.8	-5.3	-10.2	-1.3	10.3
• 2003	-11.5	-7.0	-7.0	-8.5	10.2

Source: Databases, Employment Survey of the University of Chile
 Note: coefficients with respect to quintile 1.